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United States
Department of
Agriculture

Forest Service

Tongass
National
Forest
R10-MB-318b

April 1996

Helicopter Landings in Wilderness

Draft Environmental Impact Statement

Volume 1

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Dear Reviewer:

This is a copy of the Draft Environmental Impact Statement (EIS) for the proposed Helicopter Landings in Wilderness Project, Tongass National Forest, Alaska.

This Draft EIS describes a no action alternative, as well as seven action alternatives designating landing sites for helicopters within Wilderness in the Tongass National Forest for general public access. Access would be only to areas where such use had been established prior to the designation of these areas as Wilderness. Allowance of certain motorized use is consistent with the 1980 Alaska National Interest Lands Conservation Act (ANILCA) and with the procedures in section 4(d)(1) of the 1964 Wilderness Act. Given Congressional recognition in ANILCA that certain motorized access to Wilderness is permitted, it is appropriate to use the discretion granted to authorize helicopter access in Alaska Wildernesses administered by the USDA Forest Service.

I have identified Alternative 3B as the Preferred Alternative. This alternative recognizes the unique access challenges of Alaska Wilderness, protects Alaska Wilderness values, and is consistent with the other forms of motorized access to Alaska Wilderness as provided by ANILCA. This alternative also maintains access frequencies to specific sites at levels which occurred prior to Wilderness designation, and responds to public comment received by the Forest Service on this issue.

This alternative, as well as the others, will be examined before preparation of a Final EIS, taking into consideration public comments as well as additional information and analysis. To be most useful, comments on this Preferred Alternative and the other alternatives in this document should focus on particular aspects that you either like or dislike. The alternative I finally select may be the same as the Preferred Alternative, a modified version of the Preferred Alternative, or an entirely different alternative within the range of those displayed in the Draft EIS.

The comment period on the Draft EIS will be at least 60 days from the date on which notice of availability of the Draft EIS is published in the Federal Register, anticipated to be May 10. The deadline for comments is anticipated to be July 12.

Federal court decisions have established that reviewers of Draft EISs must structure their participation so that it is meaningful and alerts an agency to their position and contentions. Environmental objections that could have been raised at the Draft stage may be waived if not raised until after completion of the Final EIS. This is so substantive comments and objections are made available to the Forest Service at a time when we can meaningfully consider them and respond to them in the Final EIS.

As Regional Forester of the Alaska Region, I am the official responsible for the final decision.

Please send written comments to Bill Tremblay, P.O. Box 309, Petersburg, AK 99833, or call (907) 772-3841 for additional information or if you would like additional copies of the Draft EIS. The Final EIS is expected to be completed in October 1996.

Sincerely,

PHIL JANIK
Regional Forester



Helicopter Landings in Wilderness

Draft Environmental Impact Statement

U.S.D.A. Forest Service, Alaska Region Tongass National Forest, Chatham, Stikine and Ketchikan Areas

Lead Agency:

U.S.D.A. Forest Service
Alaska Region
Tongass National Forest
Chatham Area
Stikine Area
Ketchikan Area

Responsible Official:

Phil Janik, Regional Forester
Alaska Region - Region 10
709 West 9th Street, Juneau, AK 99801

For Further Information, Contact:

Bill Tremblay, Team Leader
Tongass National Forest
Stikine Area
P. O. Box 309
Petersburg, AK 99833

Marti Marshall
Tongass National Forest
Chatham Area
204 Siginaka Way
Sitka, AK 99835

Grady McMahan
Tongass National Forest
Ketchikan Area
Federal Building
Ketchikan, AK 99901

Abstract: This draft environmental impact statement (DEIS) describes seven alternatives that would allow for the use of helicopters within Wilderness on the Tongass National Forest for the purpose of general public access to areas where use had been established prior to the designation of these areas as Wilderness. Another alternative, the no action alternative, is also described in detail. Allowance of this use is consistent with the 1980 Alaska National Interest Lands Conservation Act (ANILCA) and with the provisions available to the agency found in section 4 (d) (1) of the 1964 Wilderness Act. There are 19 Wildernesses designated within the Tongass National Forest, of which 12 may be affected by the decisions in this document. A total of 135 access areas, ranging from a few acres to over 12,000 acres, are evaluated in this analysis.

Reviewers should provide the Forest Service with their comments during the review period of the Draft Environmental Impact Statement (DEIS). This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the Final Impact Statement, thus avoiding undue delay in the decision-making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act (NEPA) process so that it is meaningful and alerts the agency to the reviewer's position and contentions. Comments on the DEIS should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

Hydrogen Peroxide in Water

David G. Semak, Ph.D., University of Michigan

David G. Semak, Ph.D., University of Michigan
Department of Chemistry, 4810 S. State St., Ann Arbor, MI 48106-1346

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Summary

Summary

Summary

Overview of Project

This draft environmental impact statement (DEIS) describes seven alternatives that would allow for the use of helicopters within Wilderness on the Tongass National Forest for the purpose of general public access to areas where use had been established prior to the designation of these areas as Wilderness. Another alternative, the no action alternative, is also described in detail. Allowance of this use is consistent with the 1980 Alaska National Interest Lands Conservation Act (ANILCA) and with the provisions available to the agency found in section 4 (d) (1) of the 1964 Wilderness Act. There are 19 Wildernesses designated within the Tongass National Forest, of which 12 may be affected by the decisions in this document. A total of 135 access areas, ranging from a few acres to over 12,000 acres, are evaluated in this analysis.

Decisions to be Made

The Regional Forester will decide whether or not to allow helicopter landings for access by the general public in areas that were used prior to Wilderness designation. If helicopter landings are approved, the Regional Forester will decide which areas will be designated and what restrictions, if any, will be established. If helicopter landings are approved, the decision will be a non-significant amendment to the Tongass Land Management Plan.

Allocation of helicopter access between non-guided visitors, private helicopter owners and helicopter companies is not part of this project. The decision to issue specific special use permits is not part of this project and would be made at the Forest or Ranger District. If general public helicopter access is allowed, a portion of that access could be guided if authorized by special use permit(s). Guiding "includes the provision of assistance such as supervision, protection, education, training, transportation, interpretation and guiding services. It includes such personal services as leading, teaching, cooking, packing or otherwise assisting recreationists in their pursuit of a natural resource based outdoor recreation experience (Forest Service Manual 2721.53c)."

Proposed Action

The Forest Service, Tongass National Forest, proposes to authorize the establishment of helicopter access areas within Wilderness for use by individuals and helicopter companies transporting the general public. Only areas that were used as helicopter access areas prior to Wilderness designation are being considered. This proposed action is in response to requests from individuals and helicopter companies. Alternatives to the Proposed Action, in response to public scoping comments, are presented in Chapter 2.

The Proposed Action designates 41 helicopter access areas within seven of the 19 Wildernesses on the Tongass National Forest. The seven Wildernesses are Endicott River, Kootznoowoo (Admiralty Island), Misty Fiords National Monument, South Etolin, South Prince of Wales, Stikine-LeConte and Tracy Arm-Fords Terror. Between one and 25 helicopter access areas per Wilderness are designated. The number of landings authorized is a maximum of five or a maximum of 25 per access area per year based on historical use. (A detailed description of the Proposed Action can be found in Chapter 2 of this DEIS on pages 2-10 to 2-11.)

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The Regional Forester, as delegated by the Chief of the Forest Service in Forest Service Manual 2326.04, has discretionary authority to approve this use according to 36 CFR 293.6(d):

The Chief, Forest Service, may permit, subject to such restrictions as he deems desirable, the landing of aircraft . . . at places within any Wilderness where these uses were established prior to the date the Wilderness was designated by Congress . . .

General public access is to natural areas and does not include improvement of helicopter access areas through any manipulation of the natural environment such as clearing vegetation, leveling terrain or removing other obstacles.

General public access as used in the Proposed Action includes all helicopter landings for recreational purposes including transportation, guiding and tours. Recreational purposes may be any Wilderness-oriented activity such as hiking, camping, sightseeing, photography etc. Transportation in a helicopter operated by an individual or a helicopter company is included. Guiding and tours (see definition above) are also included. No allocation between the types of landings (private or guided) will be made under this EIS. Decisions about allocation and granting any permits will be made by the Tongass Forest Supervisors and District Rangers, as appropriate.

Also, access for activities authorized under legal authorities other than Section 4(d)(1) of the Wilderness Act (such as emergencies, mineral exploration, maintaining communication sites) is not included in this project. Fixed-wing airplane, motorboat and snow machine access to Tongass Wildernesses is also not included in this analysis; such motorized access is allowed under Section 1110 of ANILCA.

Purpose and Need

The underlying purpose and need to which the Forest Service is responding in proposing this action is to allow the use of helicopters for general public access where this use was established prior to designation of Wilderness, while managing Tongass National Forest Wildernesses to preserve Wilderness character. This project responds to the request to reinstate helicopter landings at over 400 areas identified as used for general public access prior to designation of Tongass Wildernesses by ANILCA and the Tongass Timber Reform Act. Helicopter operators state there is demand by the public to reinstate this access and have provided evidence of that use (see pages 2-1 to 2-3.)

Currently, helicopter access by the general public is prohibited by regulation (36 CFR 261.16). However, Section 4(d)(1) of the Wilderness Act permits the Regional Forester to authorize the landing of aircraft [in this case helicopters] where this use existed prior to Wilderness designation (36 CFR 293.6(d)). Refer to pages 1-5 to 1-7 for additional information.

Project Location

There are 19 designated Wildernesses on the Tongass National Forest comprising over one-third of the Forest or approximately 5.8 million acres (see Map 1). Helicopter access areas were identified in 17 of these: Chuck River, Coronation Island, Endicott River, Karta River, Kootznoowoo (Admiralty Island), Maurelle Islands, Misty Fiords National Monument, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Stikine-LeConte, Tebenkof Bay, Tracy Arm-Fords Terror, Warren Island and West Chichagof-Yakobi. No helicopter access areas were identified in Pleasant-Lemesurier-Inian Islands and Kuiu Wildernesses.

Background and Management Direction

This section of Chapter 1 provides background information on the Wilderness Act, ANILCA, Forest Service policy and Wilderness management direction. It also explains the legal basis for motorized access in Wilderness and provides the necessary background for why the Forest Service is preparing this draft EIS and under what authorities or regulations it is allowed to do so. As explained in the following pages, the Forest Service has authority to authorize helicopter landings in Wilderness for general public access. There is no evidence that the discretion to authorize such landings has been previously exercised for any Wilderness. .

The National Wilderness Preservation System was created by Congress in the 1964 Wilderness Act. The Wilderness Act defined Wilderness and established a national Wilderness policy. The Wilderness Act also designated several Wildernesses and called for study of lands suitable for Wilderness designation throughout public lands in the United States. ANILCA, signed into law on December 2, 1980, established Wilderness in the Tongass National Forest including 14 of the 19 Wilderness areas addressed in this document. The Tongass Timber Reform Act of November 28, 1990 amended ANILCA and designated five additional Wildernesses in the Tongass National Forest: Chuck River, Karta River, Kuiu, Pleasant-Lemesurier-Inian Islands and South Etolin. It also added the Young Lake Addition to Admiralty Island National Monument Wilderness. The Admiralty Island National Monument Land Management Act of 1990 amended ANILCA to change the name of Admiralty Island National Monument Wilderness to Kootznoowoo Wilderness. Tongass Wilderness is managed under the Wilderness Act as amended by ANILCA. Pertinent sections of both laws and related regulations and policy are quoted below.

All of the following management direction provides guidance for management of the Tongass Wildernesses. Generally, Wilderness is to be managed in a natural state providing opportunities for solitude. With specific exceptions, motorized access is not allowed. In Alaska, exceptions for motorized access by motorboats, snow machines and fixed-wing airplanes [not helicopters] are provided in ANILCA and such use cannot be prohibited unless detrimental to the resource values of the area. Helicopter access **may be allowed**, however, under the Wilderness Act where its use was established prior to designation of an area as Wilderness. The Wilderness Act provides discretion in allowing helicopter use; whereas ANILCA provides for prohibition of allowed motorized access only if there is a resource problem. Given Congressional recognition in ANILCA that certain motorized access to Wilderness areas is permitted, it may be more appropriate to use the discretion granted in the Wilderness Act to authorize helicopter access in Alaska Wilderness areas where such use was established prior to Wilderness designation. However, using the discretion authorized in the Wilderness Act to grant such access in other Wilderness areas in the United States may be less appropriate.

Wilderness Act

The Wilderness Act 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 . . . 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 . . . generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; . . . has outstanding opportunities for solitude or a primitive and unconfined type of recreation; . . . may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Summary

The Wilderness Act also established national Wilderness policy and states, in part,

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.

It also states—

Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer the area for such other purposes for which it may have been established as also to preserve its wilderness character.

Section 4(d)(6) states—

Commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.

Section 707 of ANILCA states, "Except as otherwise expressly provided for in this Act [ANILCA], wilderness designated by this Act shall be administered in accordance with applicable provisions of the Wilderness Act."

Motorized Access

Section 4(c) of the Wilderness Act states, in part, "except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be . . . no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport . . ."

Section 4(d)(1) of the Wilderness Act states that "the use of aircraft [both fixed-wing and helicopters] and motorboats, where these uses have already become established, may be permitted to continue subject to such regulations as the Secretary of Agriculture deems desirable."

Section 1110 of ANILCA specifically allows the use of airplanes [fixed-wing] and motorboats for traditional activities in Alaskan Wildernesses. It provides for "the use of snow machines (during periods of adequate snow cover . . .), motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities . . ." It further states that these methods of access shall not be prohibited unless, after public notice and hearing in the vicinity of the affected Wilderness, it is found that such use would be "detrimental to the resource values of the . . . area."

Section 1110 of ANILCA is not so restrictive as to bar helicopter use. It is noted that the section provides that "other methods of transportation" are permissible within Alaska Wilderness areas "where such use is permitted by this Act or other law." The other law as it pertains to the intent of this section is the 1964 Wilderness Act.

Federal regulations (36 CFR 293.6) provide further direction and authority regarding the administration of aircraft and commercial uses in Wilderness administered by the Forest Service and state,

Except as provided in the Wilderness Act, subsequent legislation establishing a particular Wilderness unit or . . . [other regulations], and subject to existing rights, there shall be in National Forest Wilderness no commercial enterprises; . . . no aircraft landing strips; no heliports or helispots, no use of motor vehicles, motorized equipment, motorboats, or other forms of mechanical transport; no landing of aircraft; no dropping of materials, supplies, or persons from aircraft

The regulations (36 CFR 293.6(c)) delegate authority to the Chief of the Forest Service to authorize administrative use of aircraft to meet the minimum requirements for authorized activities to protect and administer the Wilderness and its resources and for use in emergencies involving the health and safety of persons, damage to property and other purposes.

Authority to approve pre-existing aircraft landing is provided in 36 CFR 293.6(d) which states,

The Chief, Forest Service, may permit, subject to such restrictions as he deems desirable, the landing of aircraft and the use of motorboats at places within any wilderness where these uses were established prior to the date the Wilderness was designated by Congress . . . The Chief may also permit the maintenance of aircraft landing strips, heliports, or helispots which existed when the Wilderness was designated by Congress . . .

This authority has been delegated by the Chief, Forest Service, to the Regional Foresters in Forest Service Manual 2326.04.

Forest Service Wilderness Management Direction

In addition to the above, general Wilderness management direction relevant to this project is found in ANILCA, the Forest Service Manual and the Alaska Region Recreation Strategy for Wilderness. Section 101(b) of ANILCA states,

It is the intent of Congress to . . . preserve in their natural state extensive unaltered Arctic tundra, boreal forest and coastal rain forest ecosystems . . . to preserve wilderness resource values and related recreational opportunities including, but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wildlands . . . and to maintain opportunities for scientific research and undisturbed ecosystems.

The Forest Service Manual (FSM 2320.3) states, "Where there are alternatives among management decisions, wilderness values shall dominate over all other considerations except where limited by the Wilderness Act, subsequent legislation or regulations." The Alaska Region Recreation Strategy for Wilderness states as a purpose, "We manage wilderness as an enduring resource for present and future generations. Alaska wilderness in the year 2000 will remain uniquely wild and untrammled within the National Wilderness Preservation System."

Current Alaska Forest Service regional policy is found in a supplement to the Forest Service Manual 2326.1 (Region 10 Supplement 2300-95-2) and states,

Helicopter landing for other than authorized administrative use, emergency use, or other authorized uses specifically allowed by the Wilderness Act or ANILCA will only be allowed at approved landing areas where it has been

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determined that the use by the public was established on a more or less regular basis prior to December 2, 1980, for the . . . original wildernesses and prior to November 28, 1990, for the areas established by the Tongass Timber Reform Act.

Tongass Land Management Plan

The Tongass Land Management Plan Amended Winter 1985-86 and 1991 (Tongass Plan) provides land and resource management direction for the Tongass National Forest. The EIS for the Tongass Plan was programmatic in nature and focused on forest-wide issues. If helicopter access is allowed, the Record of Decision will also amend the Tongass Plan.

The Tongass National Forest is in the process of revising the Tongass Plan. This Helicopter Landings in Wilderness EIS is scheduled to be completed before the Tongass Plan revision is completed. For the purpose of this EIS, the standards and guidelines of the existing Tongass Plan will be used. Proposed standards and guidelines in the proposed revised Tongass Plan may also be used, as long as they do not conflict with existing standards and guidelines.

The existing Tongass Plan states "Wilderness will be managed as directed by the 1964 Wilderness Act, as amended." There is little other specific management direction for Wilderness in the Tongass Plan. The proposed revised Tongass Plan (August 1991) states, "Maintain a wilderness setting consistent with ANILCA on the 5.8 million acres of Wilderness on the Tongass." It states the following as the desired future condition of Tongass Wildernesses:

. . . to provide for 1) the protection and perpetuation of essentially primitive biophysical and ecological conditions . . . and 2) a high degree of remoteness from the sights and sounds of human activity and related opportunities for solitude and primitive recreation. Scientific study of natural ecosystem dynamics is encouraged using research methods which are appropriate for use in Wilderness settings.

The areas are characterized by extensive unmodified natural environments. Natural processes and conditions are not measurably affected by the past and current actions of users. The area provides extremely high probability for independence, closeness to nature, and self-reliance in an environment that offers a high degree of challenge and risk.

The proposed revised Tongass Plan (1991) provides the following direction on general public helicopter access:

The landing of helicopters by the general public will be limited to specific sites designated by the Regional Forester. Designated landing sites will require proof of established repeated public use occurring prior to December 2, 1980 for the . . . original ANILCA wildernesses and prior to November 28, 1990 for the Wilderness Areas established by the Tongass Timber Reform Act.

Stikine-LeConte Wilderness Plan Appeal

On November 26, 1984, the Regional Forester signed a Decision Notice for the Stikine-LeConte Wilderness Plan. On December 14, 1984, an appeal of the decision was filed. On August 11, 1986, the Chief of the Forest Service issued a final decision addressing, among

other items, "Whether use of helicopters by the general public for recreational access to wilderness in Alaska is consistent with law and Forest Service policy."

The Chief found, "as a matter of Forest Service policy, we believe that expanding the types of air access [helicopters] into Alaska wilderness areas should not be encouraged unless the types were used in an area on a more or less regular basis as of the date of ANILCA." The Chief also found that ANILCA was not so restrictive as to bar helicopter use.

In researching the discretion provided by the Wilderness Act, the Forest Service determined that "established use" is (1) not restricted to individuals who had previously used helicopters to access the Wilderness, (2) is not limited to pre-Wilderness levels or types of use (i.e., personal vs. commercial) and (3) is not limited to pre-Wilderness levels of use (USDA Forest Service 1995).

The Regional Forester was directed to revise existing Wilderness plans and regional manual direction to conform to this decision and that future management plans must also be consistent with this decision. At that time, five Wilderness plans had been prepared and they are summarized below. When revision of the Tongass Land Management Plan began in 1987, there was intent to evaluate helicopter access areas within Wilderness in the revision. Information was collected from helicopter companies and others. When the level of analysis necessary to evaluate the helicopter access areas appeared to be too detailed for the Forest Plan, other options were considered and the Forest Service decided to prepare this EIS.

None of the Wilderness plans have been revised to conform to the Chief's decision or to incorporate other more recent policy such as that adopted in the Forest Service Manual and handbook. Policy direction in the regional supplement to Forest Service Manual 2326 was revised to conform to the Chief's decision and this policy overrides any inconsistencies in the Wilderness plans. No additional Wilderness plans have been prepared pending revision of the Tongass Plan. The following sections explain the Recreation Opportunity Spectrum and summarize the management plans prepared for five of the Tongass Wildernesses.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a method of classifying recreation opportunities. ROS is a tool that is used extensively in this document. It defines key characteristics of an area, considering physical, social and administrative settings. The spectrum ranges from Primitive to Semi-Primitive Non-Motorized and Motorized to Urban. The entire Tongass National Forest has been inventoried using ROS. Primary ROS classes found in Wilderness are Primitive, Semi-Primitive Non-Motorized and Semi-Primitive Motorized. Appendix A provides additional details about the ROS and ROS management guidelines applicable to this EIS.

Tongass Wilderness Management Plans

Wilderness management "direction" (plans) was completed for five of the 19 Tongass Wildernesses: Admiralty Island National Monument [Kootznoowoo], Endicott River, South Baranof, Stikine-LeConte and Tracy Arm-Fords Terror. These plans were all prepared between 1982 and 1984. The Endicott River and Tracy Arm-Fords Terror documents are similar, providing Wilderness management objectives and specific management direction.

The Stikine-LeConte document contains only management direction. The Admiralty (Kootznoowoo) and South Baranof documents fall somewhere in between.

These plans were prepared early in the evolution of the ROS classification system. They divided the Primitive ROS class into Primitive I and Primitive II. Primitive I was the most

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pristine ROS class, followed by Primitive II. Today, both Primitive I and Primitive II are considered the Primitive ROS class.

Issues

The following were identified to be significant issues related to the Proposed Action raised by the public and/or the Forest Service during scoping. Each of these issues was important in formulation of alternatives, and each alternative responds to at least one of the issues. The environmental consequences of the action alternatives have been analyzed in terms of these issues. All these issues are discussed in terms of the location (number of Wildernesses with access areas and their distribution) and intensity of helicopter use (number of landings).

1. Wilderness.

Helicopter use in Wilderness could impact Wilderness values such as solitude, sense of isolation, sense of remoteness, self-reliance, challenge and risk and the untrammelled natural character. People are concerned about noise associated with helicopter landings and related over flights, increased presence of other visitors and visual intrusions of helicopters in remote, pristine, natural settings. Concerns were also expressed about the cumulative effects of all forms of motorized access on Wilderness values.

2. Access for Wilderness-Oriented Activities.

Some people want to use helicopters for access into Wilderness, while others are concerned about increasing impacts of motorized access into Wilderness. Some people desire helicopter access because of the inherently difficult access of Tongass Wildernesses for people with health, age, physical ability, time constraint and safety concerns. Others desire non-motorized access that emphasizes challenge and risk and which is not subject to mechanized influences.

3. Cultural Resources.

Helicopter access and increased visitation in Wilderness could adversely affect the integrity of cultural resources eligible for the National Register of Historic Places. Helicopter access and increased visitation may affect yet undiscovered cultural resources. There may also be opportunities to enhance public understanding of cultural resources. Potential direct effects (physical, auditory, visual, spiritual) and indirect effects (looting, vandalism, unintentional damage) were concerns.

4. Wildlife and Vegetation.

Helicopter landings in Wilderness may impact wildlife. Direct, indirect and cumulative effects of this impact on wildlife, especially threatened, endangered and sensitive species (including Steller sea lions, goshawks and bald eagles) and species of special interest (including waterfowl, mountain goats and brown bears) were of concern. Concerns regarding the effects of additional people, noise and timing of flights, flight routes and the potential for harassment of wildlife were also mentioned. Concerns were expressed about direct effects on sensitive plants.

5. Recreation.

There is concern that changes in recreation use patterns may occur because of helicopter use in Wilderness. Helicopters may displace some visitors and degrade primitive recreation experiences sought in Wilderness. Conversely, helicopters provide access for Wilderness-dependent recreation activities for some people with physical ability or time restrictions.

Helicopters transport people to remote areas, spread out use and provide access in seasons of little or no use.

6. Subsistence.

Concerns were expressed about the effects of helicopter access on subsistence activities and resources.

Alternatives Considered in Detail

Upon completion of the additional scoping period in April and May 1995, the team reviewed all public comments received, the issues and preliminary alternatives. Additional fine-tuning of the alternatives occurred responding to the public comments. Alternative 3 became Alternative 3A. Alternative 3B was created, identical to Alternative 3 except that the number of landings to be authorized would be limited to historical use. This change responded to public comments requesting an alternative mirroring historic distribution and use levels for access areas.

Eight alternatives developed by the team are considered in detail in this EIS. Table 2-1 gives a brief display of the alternatives considered in detail. Narrative descriptions, tabular displays and maps of each alternative follow. Each alternative responds to several of the issues. Several alternatives respond to the same issue in different manners.

Alternative 1 - No Action

The No Action Alternative would not authorize helicopter access areas for general public access within Wildernesses of the Tongass National Forest. Helicopter landings would not be authorized at areas where they had occurred prior to Wilderness designation. As explained in Chapter 1, authorizing helicopter landings for general public access in Wilderness is discretionary under Section 4(d)(1) of the Wilderness Act. Other helicopter landings including those necessary for administration of the Wildernesses and for emergencies would continue as authorized under other authorities.

Alternative 2 Proposed Action

Alternative 2 (Maps 2-1 to 2-9) is the Proposed Action presented in the September 2, 1994, scoping document corrected for errors. The scoping document incorrectly listed four access areas as having up to 50 landings a year historically, when they had up to 25 landings. Alternative 2 would authorize 41 access areas for general public access within seven of the 19 Tongass National Forest Wildernesses. Helicopter access is proposed for access areas within Endicott River, Kootznoowoo (Admiralty Island), Misty Fiords, South Etolin, South Prince of Wales, Stikine-LeConte, and Tracy Arm-Fords Terror Wildernesses.

Alternative 2 contains three access areas, MF-133, TA-06 and TA-18, that are not found in any of the other action alternatives because they were found to contain cultural resources eligible for the National Register of Historic Places after the Proposed Action was developed.

The number of landings authorized per access area would be based upon historical use and would be limited to five per access area per year or 25 per access areas per year (see Table 2-2). Cabin permits would be required for landing at public recreation cabins.

Alternative 3A and Alternative 3B

Alternatives 3A and 3B (Maps 2-10 to 2-23) would authorize 129 helicopter access areas for general public access to Tongass Wildernesses. These access areas meet the criteria displayed on page 2-5. They would include access areas within 12 Wildernesses. Alternatives 3A and 3B are identical except for the number of landings that would be authorized. Alternative 3A would limit the number of landings to three landings per day per access area for those access areas within the Primitive ROS class (66 access areas) and six landings per day per access

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area for those access areas within the Semi-Primitive ROS classes (63 access areas). The access areas classified as Roded Modified (KO-18, KO-22 and KO-23) and Roded Natural (SL-12) are included as Semi-Primitive as that would be the desired future condition. They are currently influenced either by recent timber harvest on adjacent lands or (in the case of SL-12) by existing heavy uses. (The access areas in Alternatives 3A and 3B are listed in Table 2-3).

As noted above, Alternative 3B is identical to Alternative 3A except that the number of landings would be limited to historic use of up to either five or 25 landings a year per access area. Table 2-3 displays the ROS class, maximum number of landings per year for each access area in Alternatives 3A and 3B.

Cabin permits would be required for landings in access areas within one-half mile of public recreation cabins. This would allow helicopter landings within three large access areas, (PC-1, PC-2 and SL-5) for activities other than public recreation cabin use. Other access areas with public recreation cabins are smaller (less than one mile diameter), and it is assumed that all landings near the cabin would be associated with use of the cabin.

Alternative 4

Alternative 4 would authorize 38 helicopter access areas (Maps 2-24 to 2-31) providing general public access to developed sites within six of the Tongass Wildernesses. All cabin sites with identified past landing use (28), five shelters and five trail heads would be designated for helicopter landings (see Table 2-4). Cabin site landings would require cabin permits to minimize conflicts with other cabin users. There would be no limit on the number of cabin site landings. Landings at other access areas would be limited to historical use levels as in Alternative 2.

Alternative 5

Alternative 5 (Maps 2-32 to 2-38) would authorize 31 helicopter access areas in very remote locations with no other motorized access. No other motorized access was defined by the planning team as being at least one-half day's walk from a location accessible by motorboat, airplane or vehicle. The one-half day walk was based upon the collective judgement of the planning team.

Most of Alternative 5's access areas are within large Wildernesses including Kootznoowoo (Admiralty Island), Misty Fiords National Monument and Stikine-LeConte. Four access areas are within the Endicott River Wilderness and two access areas are within Tracy Arm-Fords Terror Wilderness. As in Alternatives 3B and 4, the number of helicopter landings per access area would be limited to the historical use documented in helicopter operator affidavits (see Table 2-5).

Alternative 6

Alternative 6 (Maps 2-39 to 2-52) would authorize 97 helicopter access areas within 12 Wildernesses. This alternative would concentrate helicopter access in areas already receiving motorized use (see Table 2-6). Motorized use includes having motorized access (within one-half day walk from motorized access) and/or being located under a heavily used flight path. Under this alternative, helicopters would be used for continued general public access to cabins, shoreline areas and areas under flight paths such as the flight-seeing routes within Misty Fiords. There would be no helicopter landings in the more remote areas which currently do not have motorized access or use.

As in Alternative 3A, Alternative 6 would limit the number of landings to three landings per day per access area for those access areas within the Primitive ROS class (40 access areas) and six landings per day per access area for those access areas within the Semi-Primitive ROS classes (57 access areas). The three access areas classified as Roded Modified (KO-18, KO-22 and KO-23) and the one access area classified as Roded Natural (SL-12) are included as Semi-Primitive as that would be the desired future condition.

Alternative 7

Alternative 7 (Maps 2-53 and 2-54) is a subset of the access areas in Alternative 5. It only includes those "special" places with no other alternative access. It would have four access areas in two Wildernesses (see Table 2-7).

"Special" places are defined as those helicopter access areas deemed locally (and possibly regionally) unique with a drawing power demonstrated by high past use and/or currently considered of high importance. These are often "one of a kind" locations with special geological or physical (more permanent) attributes (rather than vegetation or wildlife). Proximity to population centers may be a consideration.

Alternatives Considered but Eliminated from Detailed Study

Six alternatives, described below, were considered and evaluated by the planning team. For the reasons listed below, each of these alternatives was eliminated from detailed study.

Alternative A

Consider all access areas identified in helicopter operator affidavits. This alternative was eliminated because it is beyond the scope of this analysis. Several helicopter access areas were identified as used for purposes other than general public access such as mining or administrative use - uses of Wilderness which are authorized under different authorities. It also included access areas located on private and state lands. This alternative included about 500 access areas. (A precise figure was not calculated for this alternative because access areas identified by more than one operator that were eliminated by the inventory criteria were not consolidated.)

Alternative B

Authorize all 440 helicopter access areas that were used for general public access prior to Wilderness designation. This alternative was eliminated because it does not meet the purpose and need to authorize general public access while protecting the Tongass Wilderness character. It also did not consider other Wilderness resources such as sensitive wildlife and cultural resources.

Alternative C

No restrictions on helicopter access at all. This alternative was eliminated because it is illegal and does not meet the purpose and need. As described in Chapter 1, the Wilderness Act only authorizes general public helicopter access where the use was established prior to designation of the area as Wilderness.

Alternative D

Consider all high importance helicopter access areas identified by the helicopter operators. This alternative was eliminated because it did not meet the purpose and need as it did not protect Wilderness character and other resource values. It also did not consider sensitive wildlife and cultural resources. This alternative included 162 access areas.

Alternative E

Consider all medium and high importance helicopter access areas identified by the helicopter operators within the Primitive ROS class. This alternative was eliminated because it was so similar to Alternatives 3A and 3B and provided less protection of Wilderness values. This alternative included 161 access areas.

Summary

Alternative F

Limited winter use only of all access areas where there are no conflicts with wildlife. This alternative was eliminated because it does not fully meet the purpose and need to authorize general public access while protecting Wilderness character. Winter access is included in all the action alternatives considered in detail (Alternatives 2, 3A, 3B, 4, 5, 6 and 7). This alternative included 261 access areas.

Comparison of Alternatives

Items Common to All Alternatives

Of the 135 access areas being considered in this analysis for helicopter use, 94 are accessible by other methods of motorized transportation and 38 of these areas have existing public facilities.

In Chapter 4 the Subsistence analysis (page 4-122) states that the potential foreseeable direct, indirect and cumulative effects from the action alternatives in this draft EIS do not present a significant possibility of a significant restriction of subsistence uses of wildlife, fish or other foods.

Comparison of Potential Effects

Alternative 1, No Action

The No Action alternative would maintain the current level for remoteness from sights and sounds within Wilderness. No helicopter use for access by the general public is authorized. Of all the alternatives, this alternative would best preserve the Wilderness character. There is no change in access to or the recreation use of these areas for the present. There would be no additional effects to the vegetation, soils, or wildlife. This alternative has the least potential to affect cultural resources.

Alternative 2, Proposed Action

This alternative was presented as the Proposed Action in the September 2, 1994, scoping document. The scoping document incorrectly listed four access areas as having 26 to 50 landings historically when actually only up to 25 landings occurred.

This alternative would authorize 41 access areas within seven wildernesses (See Figure 2-9). Twenty-nine of these areas are accessible by other methods of motorized transportation and nine of these areas have public facilities. The remaining 12 access areas are in remote locations. The impact to the Wilderness character is low to moderate. The anticipated use for access and the impacts upon recreation within the seven Wildernesses is considered to be low. There are 22 areas which have a moderate probability to affect the vegetation and soils. Brown bear may be affected in four areas and mountain goats may be affected in 13 areas. There are three areas with cultural resources present but overall there is a low potential to affect undiscovered cultural resources. There are five access areas within four eligible Wild and Scenic River corridors.

Alternative 3A

The alternative would authorize 129 access areas for general public use within 12 Wildernesses. There are 38 access areas with public recreation facilities and 32 remote access areas. Of the 129 access areas, 94 can be reached by other motorized means of transportation. It could have the greatest effect upon the Wilderness character as it allows the most use of helicopters which diminishes opportunities for challenge and risk, remoteness, solitude, sense

of isolation. It allows the most potential increase in access and recreation use of the action alternatives. Thirty-six areas are considered to have a moderate potential to affect soils or vegetation and 82 access areas are considered to have a high potential to affect soils or vegetation. The potential to affect wildlife could occur at 21 access areas for brown bear, at 26 access areas for mountain goats, at 12 access areas for Vancouver Canada geese and two for bald eagles. This alternative has the highest potential to affect wildlife of all of the action alternatives. This alternative poses the greatest potential to affect cultural resources as 11 areas are located in what may be sacred landscapes. There are 56 access areas within 21 eligible Wild and Scenic River corridors.

Alternative 3B

This alternative is similar to Alternative 3A in that it would authorize 129 access areas for general public use within 12 Wildernesses. However, the level of use for this alternative is held to historic levels, which are substantially less than is proposed in Alternative 3A. There are 38 access areas with public recreation facilities and 32 remote access areas. Of the 131 access areas, 94 can be reached by other motorized means of transportation. It would have an effect upon the Wilderness character as it allows use at the same number of access areas as in Alternative 3, thereby diminishing opportunities for challenge and risk, remoteness, solitude, sense of isolation. It allows for a high increase in access and a moderate increase in recreation use. Eighty-three access areas are considered to have a moderate potential to affect soils or vegetation. The potential to affect wildlife could occur at 21 access areas for brown bear, at 26 access areas for mountain goats, at 12 access areas for Vancouver Canada geese and two for bald eagles. This alternative has the second highest potential to affect wildlife of the action alternatives. There are 11 areas that may be sacred landscapes in this alternative but the potential to affect cultural resources is less than in alternative 3A. There are 56 access areas within 21 eligible Wild and Scenic River corridors.

Alternative 4

This alternative would authorize 38 access areas where there are existing public facilities in six Wildernesses. As these areas already have access by other methods of motorized transportation available, the impacts to the Wilderness character will be moderate except where winter use may increase. Recreation use would likely occur at current levels but could increase in the winter or shoulder season as noted. Six access areas are considered to have moderate and 24 areas area considered to have a high potential to affect soils or vegetation. The potential to affect wildlife could occur at five access areas for brown bear, seven access areas for mountain goats and three access areas for Vancouver Canada geese. There is a low potential risk to cultural resources in this alternative. There are 15 access areas within seven eligible Wild and Scenic River corridors.

Alternative 5

This alternative would authorized 31 access areas that are considered remote in five Wildernesses. There are no public facilities reached by this alternative. The impacts to Wilderness character will be less than in alternative 3A but are similar to alternative 3B since the landings areas in remote locations are the same and affect previously isolated areas where challenge and risk, remoteness and isolation are high. There is a moderate to high effect on access to these areas. Opportunities for recreation would be expanded in these remote locations, which may conflict with some wanting more challenge and risk. Eighteen access areas are considered to have moderate potential to affect soils or vegetation. The potential to affect wildlife could occur at 11 access areas for brown bear and nine access areas for mountain goats. There is a very low potential to affect cultural resources although there are eight locations that may be sacred landscapes. There are 12 access areas within five eligible Wild and Scenic River corridors.

Summary

Alternative 6

This alternative would authorize 97 access areas. Motorized access is already available to 94 of these areas and the other three areas are currently affected by the sights and sounds of other motorized transportation methods. There are 38 public facilities reached by this alternative. A high impact to access and a moderate impact to recreation is expected. There are 29 access areas considered to have moderate potential and 57 areas considered to have a high potential to affect soils or vegetation. The potential to affect wildlife could occur at eight access areas for brown bear, 19 access areas for mountain goats, 12 access areas for Vancouver Canada geese, and two access areas for bald eagles. There is a moderate potential for risk to cultural resources and no areas that may be sacred landscapes. There are 44 access areas within 19 eligible Wild and Scenic River corridors.

Alternative 7

This alternative would authorize 4 access areas within two Wildernesses that are considered special in terms of potential or historical use. There are no public facilities at these locations. There are low to moderate impacts to the Wilderness character. It does little to provide access into Wildernesses and has a low potential to impact recreation use. Four access areas are considered to have a moderate potential to affect soils or vegetation. Mountain goats may be affected in four areas. There is a very low potential to affect cultural resources and no sacred landscapes. There is one access area located within one eligible Wild and Scenic River corridor.

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Chapter One

Purpose and Need

Chapter One

Purpose and Method

Chapter 1

Purpose and Need

This environmental impact statement (EIS) is being prepared in accordance with the National Environmental Policy Act implementing regulations (40 CFR 1500-1508), the U. S. Department of Agriculture Forest Service guidelines for implementing the National Environmental Policy Act (Forest Service Manual 1950 and Forest Service Handbook 1901.15), the Forest Service appeal regulations (36 CFR 215), the Wilderness Act and its regulations (36 CFR 293) and the Alaska National Interest Lands Conservation Act (ANILCA).

The goal of this Draft EIS is to provide a basis for comparing the alternatives developed to the proposed action and to disclose the environmental effects associated with each of the alternatives. The information provided should enable the decision-maker to make an informed decision regarding future management of the Tongass National Forest.

This Draft EIS is also designed to solicit public comments for consideration in development of the Final EIS. You are encouraged to carefully read all of Chapter 1 before reviewing other sections of this Draft EIS. Throughout this EIS, the term "access area" is used to denote a place where helicopters had landed prior to Wilderness designation. The word "wilderness" is capitalized throughout this document, except in some direct quotes, to indicate designated "Wilderness" is being addressed.

Chapter 1 of the EIS, Purpose and Need, presents the following:

- * Decision to be Made
- * Proposed Action
- * Purpose and Need
- * Project Location
- * Background and Management Direction
- * Public Involvement
- * Issues
- * Public Scoping Comments
- * Availability of Planning Record

Overview

Decision to be Made

The Regional Forester will decide whether or not to allow helicopter landings for access by the general public in areas that were used prior to Wilderness designation. Allowance of this use is consistent with the 1980 Alaska National Interest Lands Conservation Act (ANILCA) and with the provisions available to the agency found in section 4 (d) (1) of the 1964 Wilderness Act. If helicopter landings are approved, the Regional Forester will decide which areas will be designated and what restrictions, if any, will be established. If helicopter landings are approved, the decision will be a non-significant amendment to the Tongass Land Management Plan.

1 Purpose and Need

Allocation of helicopter access between non-guided visitors, private helicopter owners and helicopter companies is not part of this project. The decision to issue specific special use permits is not part of this project and would be made at the Forest or Ranger District. If general public helicopter access is allowed, a portion of that access could be guided if authorized by special use permit(s). Guiding "includes the provision of assistance such as supervision, protection, education, training, transportation, interpretation and guiding services. It includes such personal services as leading, teaching, cooking, packing or otherwise assisting recreationists in their pursuit of a natural resource based outdoor recreation experience (Forest Service Manual 2721.53c)."

Proposed Action

The Forest Service, Tongass National Forest, proposes to authorize the establishment of helicopter access areas within Wilderness for use by individuals and helicopter companies transporting the general public. Only areas that were used as helicopter access areas prior to Wilderness designation are being considered. This proposed action is in response to requests from individuals and helicopter companies. Alternatives to the Proposed Action, in response to public scoping comments, are presented in Chapter 2.

The Proposed Action designates 41 helicopter access areas within seven of the 19 Wildernesses on the Tongass National Forest. The seven Wildernesses are Endicott River, Kootznoowoo (Admiralty Island), Misty Fiords National Monument, South Etolin, South Prince of Wales, Stikine-LeConte and Tracy Arm-Fords Terror. Between one and 25 helicopter access areas per Wilderness are designated. The number of landings authorized is a maximum of five or a maximum of 25 per access area per year based on historical use. (A detailed description of the Proposed Action can be found in Chapter 2 of this DEIS on pages 2-9 to 2-11.)

The Regional Forester, as delegated by the Chief of the Forest Service in Forest Service Manual 2326.04, has discretionary authority to approve this use according to 36 CFR 293.6(d):

The Chief, Forest Service, may permit, subject to such restrictions as he deems desirable, the landing of aircraft . . . at places within any Wilderness where these uses were established prior to the date the Wilderness was designated by Congress . . .

General public access is to natural areas and does not include improvement of helicopter access areas through any manipulation of the natural environment such as clearing vegetation, leveling terrain or removing other obstacles.

General public access as used in the Proposed Action includes all helicopter landings for recreational purposes including transportation, guiding and tours. Recreational purposes may be any Wilderness-oriented activity such as hiking, camping, sightseeing, photography etc. Transportation in a helicopter operated by an individual or a helicopter company is included. Guiding and tours (see definition above) are also included. No allocation between the types of landings (private or guided) will be made under this EIS. Decisions about allocation and granting any permits will be made by the Tongass Forest Supervisors and District Rangers, as appropriate.

Also, access for activities authorized under legal authorities other than Section 4(d)(1) of the Wilderness Act (such as emergencies, mineral exploration, maintaining communication sites) is not included in this project. Fixed-wing airplane, motorboat and snow machine access to Tongass Wildernesses is also not included in this analysis; such motorized access is allowed under Section 1110 of ANILCA.

Purpose and Need

The underlying purpose and need to which the Forest Service is responding in proposing this action is to allow the use of helicopters for general public access where this use was established prior to designation of Wilderness, while managing Tongass National Forest Wildernesses to preserve Wilderness character. This project responds to the request to reinstate helicopter landings at over 400 areas identified as used for general public access prior to designation of Tongass Wildernesses by ANILCA and the Tongass Timber Reform Act. Helicopter operators state there is demand by the public to reinstate this access and have provided evidence of that use (see pages 2-1 to 2-3.)

Currently, helicopter access by the general public is prohibited by regulation (36 CFR 261.16). However, Section 4(d)(1) of the Wilderness Act permits the Regional Forester to authorize the landing of aircraft [in this case helicopters] where this use existed prior to Wilderness designation (36 CFR 293.6(d)). Refer to pages 1-4 to 1-5 for additional information.

Project Location

There are 19 designated Wildernesses on the Tongass National Forest comprising over one-third of the Forest or approximately 5.8 million acres (see Map 1). Helicopter access areas were identified in 17 of these: Chuck River, Coronation Island, Endicott River, Karta River, Kootznoowoo (Admiralty Island), Maurelle Islands, Misty Fiords National Monument, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Stikine-LeConte, Tebenkof Bay, Tracy Arm-Fords Terror, Warren Island and West Chichagof-Yakobi. No helicopter access areas were identified in Pleasant-Lemesurier-Inian Islands and Kuiu Wildernesses.

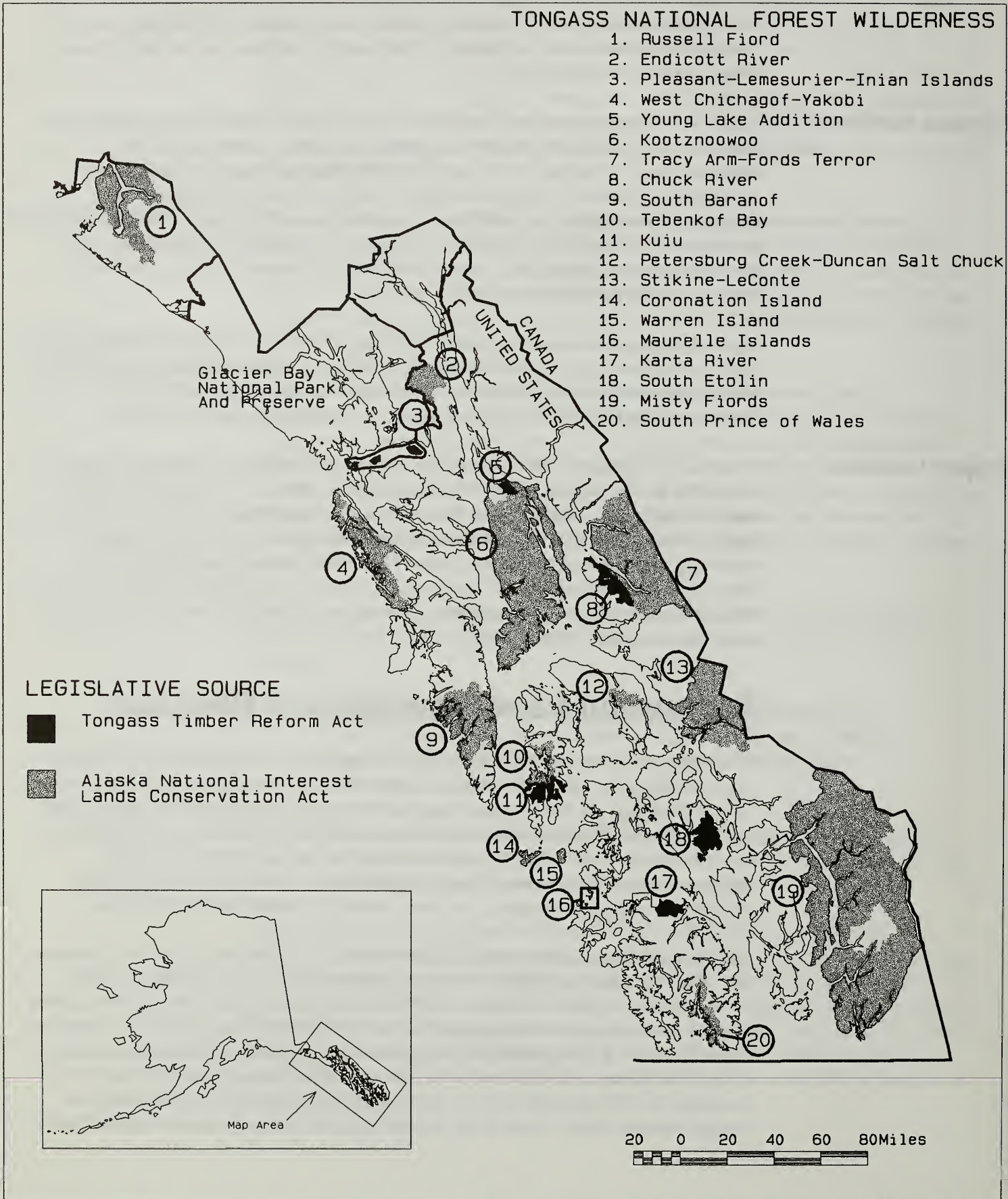
Background and Management Direction

This section of Chapter 1 provides background information on the Wilderness Act, ANILCA, Forest Service policy and Wilderness management direction. It also explains the legal basis for motorized access in Wilderness and provides the necessary background for why the Forest Service is preparing this draft EIS and under what authorities or regulations it is allowed to do so. As explained in the following pages, the Forest Service has authority to authorize helicopter landings in Wilderness for general public access. There is no evidence that the discretion to authorize such landings has been previously exercised for any Wilderness.

The National Wilderness Preservation System was created by Congress in the 1964 Wilderness Act. The Wilderness Act defined Wilderness and established a national Wilderness policy. The Wilderness Act also designated several Wildernesses and called for study of lands suitable for Wilderness designation throughout public lands in the United States. ANILCA, signed into law on December 2, 1980, established Wilderness in the Tongass National Forest including 14 of the 19 Wilderness areas addressed in this document. The Tongass Timber Reform Act of November 28, 1990 amended ANILCA and designated five additional Wildernesses in the Tongass National Forest: Chuck River, Karta River, Kuiu, Pleasant-Lemesurier-Inian Islands

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Map 1. Project Area.



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and South Etolin. It also added the Young Lake Addition to Admiralty Island National Monument Wilderness. The Admiralty Island National Monument Land Management Act of 1990 amended ANILCA to change the name of Admiralty Island National Monument Wilderness to Kootznoowoo Wilderness. Tongass Wilderness is managed under the Wilderness Act as amended by ANILCA. Pertinent sections of both laws and related regulations and policy are quoted below.

All of the following management direction provides guidance for management of the Tongass Wildernesses. Generally, Wilderness is to be managed in a natural state providing opportunities for solitude. With specific exceptions, motorized access is not allowed. In Alaska, exceptions for motorized access by motorboats, snow machines and fixed-wing airplanes [not helicopters] are provided in ANILCA and such use cannot be prohibited unless detrimental to the resource values of the area. Helicopter access **may be allowed**, however, under the Wilderness Act where its use was established prior to designation of an area as Wilderness. The Wilderness Act provides discretion in allowing helicopter use; whereas ANILCA provides for prohibition of allowed motorized access only if there is a resource problem. Given Congressional recognition in ANILCA that certain motorized access to Wilderness areas is permitted, it may be more appropriate to use the discretion granted in the Wilderness Act to authorize helicopter access in Alaska Wilderness areas where such use was established prior to Wilderness designation. However, using the discretion authorized in the Wilderness Act to grant such access in other Wilderness areas in the United States may be less appropriate.

Wilderness Act

The Wilderness Act 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 . . . 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 . . . generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; . . . has outstanding opportunities for solitude or a primitive and unconfined type of recreation; . . . may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

The Wilderness Act also established national Wilderness policy and states, in part,

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.

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It also states—

Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer the area for such other purposes for which it may have been established as also to preserve its wilderness character.

Section 4(d)(6) states—

Commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.

Section 707 of ANILCA states, "Except as otherwise expressly provided for in this Act [ANILCA], wilderness designated by this Act shall be administered in accordance with applicable provisions of the Wilderness Act."

Motorized Access

Section 4(c) of the Wilderness Act states, in part, "except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be . . . no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport . . ."

Section 4(d)(1) of the Wilderness Act states that "the use of aircraft [both fixed-wing and helicopters] and motorboats, where these uses have already become established, may be permitted to continue subject to such regulations as the Secretary of Agriculture deems desirable."

Section 1110 of ANILCA specifically allows the use of airplanes [fixed-wing] and motorboats for traditional activities in Alaskan Wildernesses. It provides for "the use of snow machines (during periods of adequate snow cover . . .), motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities . . ." It further states that these methods of access shall not be prohibited unless, after public notice and hearing in the vicinity of the affected Wilderness, it is found that such use would be "detrimental to the resource values of the . . . area."

Section 1110 of ANILCA is not so restrictive as to bar helicopter use. It is noted that the section provides that "other methods of transportation" are permissible within Alaska Wilderness areas "where such use is permitted by this Act or other law." The other law as it pertains to the intent of this section is the 1964 Wilderness Act.

Federal regulations (36 CFR 293.6) provide further direction and authority regarding the administration of aircraft and commercial uses in Wilderness administered by the Forest Service and state,

Except as provided in the Wilderness Act, subsequent legislation establishing a particular Wilderness unit or . . . [other regulations], and subject to existing rights, there shall be in National forest Wilderness no

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commercial enterprises; . . . no aircraft landing strips; no heliports or helispots, no use of motor vehicles, motorized equipment, motorboats, or other forms of mechanical transport; no landing of aircraft; no dropping of materials, supplies, or persons from aircraft

The regulations (36 CFR 293.6(c)) delegate authority to the Chief of the Forest Service to authorize administrative use of aircraft to meet the minimum requirements for authorized activities to protect and administer the Wilderness and its resources and for use in emergencies involving the health and safety of persons, damage to property and other purposes.

Authority to approve pre-existing aircraft landing is provided in 36 CFR 293.6(d) which states,

The Chief, Forest Service, may permit, subject to such restrictions as he deems desirable, the landing of aircraft and the use of motorboats at places within any wilderness where these uses were established prior to the date the Wilderness was designated by Congress The Chief may also permit the maintenance of aircraft landing strips, heliports, or helispots which existed when the Wilderness was designated by Congress

This authority has been delegated by the Chief, Forest Service, to the Regional Foresters in Forest Service Manual 2326.04.

In addition to the above, general Wilderness management direction relevant to this project is found in ANILCA, the Forest Service Manual and the Alaska Region Recreation Strategy for Wilderness. Section 101(b) of ANILCA states,

It is the intent of Congress to . . . preserve in their natural state extensive unaltered Arctic tundra, boreal forest and coastal rain forest ecosystems . . . to preserve wilderness resource values and related recreational opportunities including, but not limited to hiking, canoeing, fishing, and sport hunting, within large arctic and subarctic wildlands . . . and to maintain opportunities for scientific research and undisturbed ecosystems.

The Forest Service Manual (FSM 2320.3) states, "Where there are alternatives among management decisions, wilderness values shall dominate over all other considerations except where limited by the Wilderness Act, subsequent legislation or regulations." The Alaska Region Recreation Strategy for Wilderness states as a purpose, "We manage wilderness as an enduring resource for present and future generations. Alaska wilderness in the year 2000 will remain uniquely wild and untrammled within the National Wilderness Preservation System."

Current Alaska Forest Service regional policy is found in a supplement to the Forest Service Manual 2326.1 (Region 10 Supplement 2300-95-2) and states,

Helicopter landing for other than authorized administrative use, emergency use, or other authorized uses specifically allowed by the Wilderness Act or ANILCA will only be allowed at approved landing areas where it has been determined that the use by the public was established on a more or less regular basis prior to December 2, 1980, for the . . . original wildernesses

Forest Service Wilderness Management Direction

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and prior to November 28, 1990, for the areas established by the Tongass Timber Reform Act.

Tongass Land Management Plan

The Tongass Land Management Plan Amended Winter 1985-86 and 1991 (Tongass Plan) provides land and resource management direction for the Tongass National Forest. The EIS for the Tongass Plan was programmatic in nature and focused on forest-wide issues. If helicopter access is allowed, the Record of Decision will also amend the Tongass Plan.

The Tongass National Forest is in the process of revising the Tongass Plan. This Helicopter Landings in Wilderness EIS is scheduled to be completed before the Tongass Plan revision is completed. For the purpose of this EIS, the standards and guidelines of the existing Tongass Plan will be used. Proposed standards and guidelines in the proposed revised Tongass Plan may also be used, as long as they do not conflict with existing standards and guidelines.

The existing Tongass Plan states "Wilderness will be managed as directed by the 1964 Wilderness Act, as amended." There is little other specific management direction for Wilderness in the Tongass Plan. The proposed revised Tongass Plan (August 1991) states, "Maintain a wilderness setting consistent with ANILCA on the 5.8 million acres of Wilderness on the Tongass." It states the following as the desired future condition of Tongass Wildernesses:

. . . to provide for 1) the protection and perpetuation of essentially primitive biophysical and ecological conditions . . . and 2) a high degree of remoteness from the sights and sounds of human activity and related opportunities for solitude and primitive recreation. Scientific study of natural ecosystem dynamics is encouraged using research methods which are appropriate for use in Wilderness settings.

The areas are characterized by extensive unmodified natural environments. Natural processes and conditions are not measurably affected by the past and current actions of users. The area provides extremely high probability for independence, closeness to nature, and self-reliance in an environment that offers a high degree of challenge and risk.

The proposed revised Tongass Plan (1991) provides the following direction on general public helicopter access:

The landing of helicopters by the general public will be limited to specific sites designated by the Regional Forester. Designated landing sites will require proof of established repeated public use occurring prior to December 2, 1980 for the . . . original ANILCA wildernesses and prior to November 28, 1990 for the Wilderness Areas established by the Tongass Timber Reform Act.

Stikine-LeConte Wilderness Plan Appeal

On November 26, 1984, the Regional Forester signed a Decision Notice for the Stikine-LeConte Wilderness Plan. On December 14, 1984, an appeal of the decision was filed. On August 11, 1986, the Chief of the Forest Service issued a final decision addressing, among other items, "Whether use of helicopters by the general public for recreational access to wilderness in Alaska is consistent with law and Forest Service policy."

The Chief found, "as a matter of Forest Service policy, we believe that expanding the types of air access [helicopters] into Alaska wilderness areas should not be encouraged unless the types were used in an area on a more or less regular basis as of the date of ANILCA." The Chief also found that ANILCA was not so restrictive as to bar helicopter use.

In researching the discretion provided by the Wilderness Act, the Forest Service determined that "established use" is (1) not restricted to individuals who had previously used helicopters to access the Wilderness, (2) is not limited to pre-Wilderness levels or types of use (i.e., personal vs. commercial) and (3) is not limited to pre-Wilderness levels of use (USDA Forest Service 1995).

The Regional Forester was directed to revise existing Wilderness plans and regional manual direction to conform to this decision and that future management plans must also be consistent with this decision. At that time, five Wilderness plans had been prepared and they are summarized below. When revision of the Tongass Land Management Plan began in 1987, there was intent to evaluate helicopter access areas within Wilderness in the revision. Information was collected from helicopter companies and others. When the level of analysis necessary to evaluate the helicopter access areas appeared to be too detailed for the Forest Plan, other options were considered and the Forest Service decided to prepare this EIS.

None of the Wilderness plans have been revised to conform to the Chief's decision or to incorporate other more recent policy such as that adopted in the Forest Service Manual and handbook. Policy direction in the regional supplement to Forest Service Manual 2326 was revised to conform to the Chief's decision and this policy overrides any inconsistencies in the Wilderness plans. No additional Wilderness plans have been prepared pending revision of the Tongass Plan. The following sections explain the Recreation Opportunity Spectrum and summarize the management plans prepared for five of the Tongass Wildernesses.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a method of classifying recreation opportunities. ROS is a tool that is used extensively in this document. It defines key characteristics of an area, considering physical, social and administrative settings. The spectrum ranges from Primitive to Semi-Primitive Non-Motorized and Motorized to Urban. The entire Tongass National Forest has been inventoried using ROS. Primary ROS classes found in Wilderness are Primitive, Semi-Primitive Non-Motorized and Semi-Primitive Motorized. Appendix A provides additional details about the ROS and ROS management guidelines applicable to this EIS.

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Tongass Wilderness Management Plans

Wilderness management "direction" (plans) was completed for five of the 19 Tongass Wildernesses: Admiralty Island National Monument [Kootznoowoo], Endicott River, South Baranof, Stikine-LeConte and Tracy Arm-Fords Terror. These plans were all prepared between 1982 and 1984. The Endicott River and Tracy Arm-Fords Terror documents are similar, providing Wilderness management objectives and specific management direction. The Stikine-LeConte document contains only management direction. The Admiralty (Kootznoowoo) and South Baranof documents fall somewhere in between.

These plans were prepared early in the evolution of the ROS classification system. They divided the Primitive ROS class into Primitive I and Primitive II. Primitive I was the most pristine ROS class, followed by Primitive II. Today, both Primitive I and Primitive II are considered the Primitive ROS class. Very brief summaries of each of the plans follow.

Endicott River Wilderness Management Guidelines

General Wilderness management objectives included: "To perpetuate for present and future generations a long-lasting system of high quality wilderness . . . To provide opportunities for public use, enjoyment, and understanding of wilderness and the unique experiences dependent upon a wilderness setting. . . . To maintain the primitive character of wilderness as a benchmark for comparison with lands that have been developed." Specific management objectives for the Endicott River Wilderness are, "Maintain the present balance of Recreation Opportunity Spectrum [ROS] classifications and acres . . . Minimize adverse impacts to existing users and uses."

Management direction is to "maintain the area's most primitive state by retaining and wherever appropriate, enhancing solitude and primitive recreation opportunities." "The management emphasis is to minimize modification of the wilderness resource but still accommodate, administrate and monitor existing uses."

The plan does not specifically mention helicopters. In the Primitive ROS class, the plan indicates that aircraft use would be infrequent and aircraft probably would not land. In the Semi-Primitive ROS classes, aircraft are "of a daily nature, but of short duration and limited impact."

Kootznoowoo Wilderness Management Direction

The Admiralty Island National Monument [Kootznoowoo] Wilderness Management Direction (as amended) "centers on maintaining an enduring system of high quality wilderness, while providing for public access and use consistent with ANILCA." Commonly known as the "Admiralty Plan," this document established programmatic and area specific management direction. It established the existing [1982] ROS classes as the desired future condition for the Kootznoowoo Wilderness. Guidelines on numbers of encounters between visitors and motorized access within these ROS classes are contained in the plan. The plan does not mention general public use of helicopters. It does allow administrative use of helicopters "in a manner to avoid adverse effects on the wilderness and visitors."

ROS class guidelines prohibit motorized use within the most primitive ROS class (Primitive I) and within Semi-Primitive Non-Motorized ROS class. Primitive II guidelines state that "influence of access by motorized boats and aircraft is relatively temporary." This inconsistency of allowing motorized access in the more restrictive Primitive II class and not in Semi-Primitive Non-Motorized class has not been corrected. Some of the alternatives would authorize helicopter access within Primitive I areas which would not be consistent with the plan. A decision to implement one of those alternatives would amend the plan.

Additionally, the Admiralty Plan ROS social setting guidelines specify much more restrictive numbers of encounters than those recommended in this analysis. The Admiralty plan specifies no more than one encounter per week. Any alternative that would authorize helicopter access within Primitive I areas would allow up to three encounters per day.

South Baranof Wilderness Management Direction

Management direction calls for maintaining approximately the existing [1982] mix of ROS classes with over 98 percent of the Wilderness falling within the Primitive ROS class. The goal of the direction was to preserve the Wilderness character of the areas while providing an "opportunity for the public to use and enjoy the unique features and resources available within the Wilderness without adversely affecting the wilderness character." The South Baranof document is the only Wilderness plan that mentioned general public use of helicopters and states that "aircraft (amphibious fixed wing or helicopter) land on many freshwater lakes (at all Forest Service recreation cabin locations), and on protected saltwater coves and bays."

The management direction, however, states that motorized use is not permitted in Primitive I ROS class. In Primitive II ROS class, influence by aircraft is "relatively temporary." In Semi-Primitive Motorized areas, aircraft use is daily but of short duration.

Stikine-LeConte Wilderness [Management Plan]

Management direction generally calls for maintaining the existing [1984] mix of Recreation Opportunity Spectrum classes. The plan allows for limited developments and uses according to the Wilderness Act and ANILCA. The most pristine portions of the Wilderness were to be maintained with low density recreation use and a high quality wilderness setting. "Moderate density" recreation would be allowed in those areas classified as Semi-Primitive Motorized, i.e., those portions of the Wilderness with regular motorized access. The Stikine-LeConte plan provides specific management direction for recreation, special uses, commercial activities, fire management and wildlife habitat management.

The plan states that traditional forms of access will be allowed. ROS class guidelines do not mention aircraft.

Tracy Arm-Fords Terror Wilderness Management Prescriptions

General Wilderness management objectives include: "To perpetuate for present and future generations a long-lasting system of high quality wilderness . . . To provide opportunities for public use, enjoyment, and understanding of wilderness and the unique experiences dependent upon a wilderness setting. . . . To maintain the primitive character of wilderness as a benchmark for comparison with lands that have been developed." Specific management

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objectives include: "Disperse concentrated visitor use to protect and/or enhance the wilderness resource . . . Maintain the present balance of Recreation Opportunity Spectrum classifications and acres [1983] . . . Minimize adverse impacts to existing users and uses." The direction states, ". . . maintain the area's most primitive state by retaining, and wherever appropriate, enhancing solitude and primitive recreation . . . The management emphasis is to minimize modification of the wilderness resource but still accommodate, administrate, and monitor existing uses."

Helicopters are not specifically mentioned in this document. Primitive ROS class guidelines indicate that aircraft use is occasional or infrequent and that aircraft probably would not land. For the Semi-Primitive ROS classes, the document states that aircraft are of a daily nature but of short duration and limited impact.

Wild and Scenic River Management

As part of the proposed Tongass plan revision, all rivers in the Tongass National Forest were evaluated for eligibility for the National Wild and Scenic Rivers System. It was determined that 112 rivers were eligible because they were free-flowing; possessed at least one outstandingly remarkable fish, wildlife, recreation, scenic, geologic, cultural, historic or ecologic value and represented their geographic area well. Forty-one of these rivers are within Wilderness. Of the 41 within the Wilderness, there are 21 rivers that have at least one helicopter access area within their identified corridor. The rivers and their eligibility class are in Chapter 3 (page 3-16).

Management of wild and scenic rivers within Wilderness is addressed in Section 10(b) of the Wild and Scenic Act and in Forest Service Manual (2354.42e) which says,

Manage rivers that are entirely or partially within a component of the National Wilderness Preservation System to preserve the wilderness resources including solitude, natural environments, and opportunities for primitive, unconfined activities that offer challenge. Resolve any conflicts between provisions of the Wilderness Act and provisions of the Wild and Scenic Rivers Act in favor of the more restrictive of the provisions unless a specific exception is stated.

The Forest Service Manual (2354.42q) says,

Airfields in existence at the time of [Wild River] designation may remain if needed. Do not develop new airfields. Normally do not permit the landing of aircraft except for emergencies and then only at facilities that existed prior to designation. Develop airfield management and maintenance direction as needed.

There are no restrictions on airfields in Scenic or Recreational River designations. The manual (FSM 2354.42o) also says the following about motorized use,

Permit motorized use if such use is compatible with other management direction, public use of the resource, and resource attributes of the river . . . Normally motorized use will be prohibited in a wild river area.

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No rivers in the Tongass National Forest have been designated as Wild, Scenic or Recreational rivers. No recommendations have been made to date. In the interim, all eligible rivers will be managed to maintain their highest level of eligibility as directed in Forest Service Handbook 1909.12 Chapter 8.12.

In both the Wild and Scenic Rivers Act and the Wilderness Act, the use of aircraft is discretionary where such use was established prior to the designation of these areas by either law. Section 1110 of ANILCA allows for the continued access for traditional activities by other motorized methods on conservation system lands in Alaska which includes Wild and Scenic Rivers and Wildernesses. To allow helicopters to land within areas eligible for or designated as Wild and Scenic River within a Wilderness, is within the authority delegated to the Regional Forester.

Public Involvement

The regulations that implement the National Environmental Policy Act require "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action." This process is called "scoping."

Scoping for this analysis began in 1988 as part of scoping for the Tongass Land Management Plan Revision. Scoping comments are summarized in the Analysis of the Management Situation for the Tongass National Forest (USDA Forest Service 1990). The first scoping for this project as a separate analysis occurred in August 1992. Letters were mailed to a Tongass-wide mailing list; advertisements were placed in local newspapers and public meetings were held in Juneau, Ketchikan, Petersburg, Sitka and Wrangell. Based upon the results of this early scoping, the Forest Service decided to prepare an EIS.

Formal scoping for the EIS began with publication of a Notice of Intent to prepare an EIS in the *Federal Register* on August 31, 1994. A "scoping package" was mailed to individuals and organizations on a Tongass-wide mailing list. The scoping package displayed the Proposed Action. While no public meetings were planned, a public meeting was held in Sitka on September 28, 1994, in response to requests from Sitka residents. Newspaper advertisements were placed in the *Island News*, *Juneau Empire*, *Ketchikan Daily News*, *Petersburg Pilot*, *Sitka Sentinel* and *Wrangell Sentinel* for several days in September 1994. These advertisements and the scoping package explained the project and invited comments. News stories appeared in the *Juneau Empire*, *Ketchikan Daily News*, *Petersburg Pilot* and *Sitka Sentinel* about the project during the scoping. The project was also mentioned in *USA Today*, the *Seattle Times* and the *Anchorage Daily News*.

The 1994 "scoping package" and Notice of Intent stated that the focus of the study was limited to non-commercial landings for recreational purposes. Forest Service employees and the general public were confused about what the term "non-commercial landings" meant. Based on comments received, the Forest Service decided to change the scope of the EIS to include all helicopter access for recreational purposes including tours, sight seeing, guiding and other commercial recreation purposes. A revised Notice of Intent was published in the *Federal Register* on March 31, 1995, and a project update was mailed to the project mailing list on March 31, 1995.

Issues

The following were identified to be significant issues related to the Proposed Action raised by

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the public and/or the Forest Service during scoping. Each of these issues was important in formulation of alternatives, and each alternative responds to at least one of the issues. The environmental consequences of the action alternatives have been analyzed in terms of these issues. All these issues are discussed in terms of the location (number of Wildernesses with access areas and their distribution) and intensity of helicopter use (number of landings).

1. Wilderness.

Helicopter use in Wilderness could impact Wilderness values such as solitude, sense of isolation, sense of remoteness, self-reliance, challenge and risk and the untrammelled natural character. People are concerned about noise associated with helicopter landings and related over flights, increased presence of other visitors and visual intrusions of helicopters in remote, pristine, natural settings. Concerns were also expressed about the cumulative effects of all forms of motorized access on Wilderness values.

2. Access for Wilderness-Oriented Activities.

Some people want to use helicopters for access into Wilderness, while others are concerned about increasing impacts of motorized access into Wilderness. Some people desire helicopter access because of the inherently difficult access of Tongass Wildernesses for people with health, age, physical ability, time constraint and safety concerns. Others desire non-motorized access that emphasizes challenge and risk and which is not subject to mechanized influences.

3. Cultural Resources.

Helicopter access and increased visitation in Wilderness could adversely affect the integrity of cultural resources eligible for the National Register of Historic Places. Helicopter access and increased visitation may affect yet undiscovered cultural resources. There may also be opportunities to enhance public understanding of cultural resources. Potential direct effects (physical, auditory, visual, spiritual) and indirect effects (looting, vandalism, unintentional damage) were concerns.

4. Wildlife and Vegetation.

Helicopter landings in Wilderness may impact wildlife. Direct, indirect and cumulative effects of this impact on wildlife, especially threatened, endangered and sensitive species (including Steller sea lions, goshawks and bald eagles) and species of special interest (including waterfowl, mountain goats and brown bears) were of concern. Concerns regarding the effects of additional people, noise and timing of flights, flight routes and the potential for harassment of wildlife were also mentioned. Concerns were expressed about direct effects on sensitive plants.

5. Recreation.

There is concern that changes in recreation use patterns may occur because of helicopter use in Wilderness. Helicopters may displace some visitors and degrade primitive recreation experiences sought in Wilderness. Conversely, helicopters provide access for Wilderness-

dependent recreation activities for some people with physical ability or time restrictions. Helicopters transport people to remote areas, spread out use and provide access in seasons of little or no use.

6. Subsistence.

Concerns were expressed about the effects of helicopter access on subsistence activities and resources.

Several topics were raised which were determined to be important to the public and, while they were not used to guide preparation of alternatives, are addressed below.

A. Mass commercial tourism and outfitting and guiding.

There were many concerns about the effects on Wilderness resources from commercial tours and outfitter-guided groups accessing Wilderness by helicopter. Concerns focused on noise associated with helicopter landings and related flights over Wilderness, especially if more than one helicopter were traveling together, the visual intrusions of helicopters especially with repetitive flights and the increased presence of visitors. There were concerns that outfitter-guides would market Wilderness opportunities with access by helicopter and greatly increase the number of landings and people in Wilderness. Because these concerns all relate to impacts on the Wilderness resource and values of Wilderness, this issue is included in the Wilderness issue. The Wilderness issue focuses on numbers of people and landings and the resulting impacts to the Wilderness resource. Each alternative developed includes an upper limit on the amount of use which would be authorized. The Forest Supervisor and/or District Ranger would determine allocation of outfitter-guide use and personal use if a decision to allow helicopter landings is made as a result of this analysis.

B. Economics.

The economic costs and benefits to local communities were a concern. The potential for increased economic return to communities if helicopter access areas are authorized was mentioned. Concerns about the potential for loss of business by existing Wilderness outfitter-guides seeking Wilderness/wildland experiences were mentioned. While there are no major differences between the economic effects of each alternative, the effects are displayed in Chapter 4 (pages 4-117 to 119).

C. Adequacy of Affidavits as Proof of Past Use.

The adequacy and accuracy of affidavits provided by helicopter operators as proof of past use was questioned. Some stated that they did not believe the information provided by helicopter operators in their affidavits, and others stated other forms of proof such as flight logs, dated photographs, etc. should be required. The affidavits attesting to past use were required by the Forest Service after determining that other forms of documentation were not available, nor were such forms of documentation required by existing federal regulations. See Chapter 2 (page 2-1) for additional discussion of the affidavits.

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D. Different Interpretations of the Wilderness Act and ANILCA.

There was disagreement with the Forest Service interpretation that the Wilderness Act allows helicopter access to continue. There was also disagreement with the Forest Service interpretation that ANILCA Section 1110 does not include helicopters. These are legal issues to be resolved outside of this EIS process.

E. Detailed Proposed Action.

The presence of the detailed Proposed Action in the scoping document was a concern. People thought the Forest Service had already made a decision outside of the National Environmental Policy Act process. The Forest Service interprets the regulations implementing the National Environmental Policy Act to require a detailed Proposed Action prior to initiating the EIS process. A detailed Proposed Action is provided in scoping documents to enable the public to better review projects in the early planning stages. A full range of alternatives, including the alternative of no action, is considered in detail in this EIS.

F. Administration, Monitoring and Enforcement

Concerns were expressed about the ability of the Forest Service to administer, monitor and enforce a program of helicopter landings in Wilderness. Many questions were asked about how the Forest Service would implement a decision authorizing helicopter landings and skepticism was expressed that the agency had the resources to effectively administer, monitor and enforce a program. A section on implementation and monitoring is included in Chapter 2 of this EIS.

G. Other Topics.

Other topics mentioned included use of helicopters for hunting, caches, air pollution, garbage, littering, helicopters in Tongass Land Management Plan Land Use Designation II (LUD II) areas and desire for a comprehensive solution to Wilderness issues at specific locations such as Chief Shakes Hot Springs. These were all determined not to be significant issues to be addressed specifically in this EIS. Use of helicopters for hunting is not allowed. They are specifically prohibited by state and federal rules. Fuel caches are not allowed. Air pollution, garbage and littering are covered under concern for Wilderness resources. Management of LUD II areas and other issues in Wilderness management are beyond the scope of this project.

Safety, both the possible hazards associated with flying in helicopters and the possible increased safety provided Wilderness visitors by the presence of helicopters in Wilderness, was mentioned. These concerns are important, but are beyond the scope of this analysis.

Availability of Planning Record

The Planning Record is a comprehensive project file documenting the process of development of this EIS. Important supporting documents and maps from the Planning Record are located at the Tongass National Forest Supervisor's offices in Ketchikan, Sitka and Petersburg. The complete planning record is in the Stikine Area Forest Supervisor's Office in Petersburg, Alaska. The planning record is open to the public.

Chapter 2

Chapter Two

Alternatives

Chapter Two

Alternatives

Chapter 2

Alternatives

Each alternative presented in this EIS represents a different response to the issues discussed in Chapter 1. Seven action alternatives were developed that meet the purpose and need of the project. The No Action Alternative is also a viable alternative as authorizing helicopter landings in Wilderness is discretionary. To solicit public comments during scoping, a detailed Proposed Action was developed as a proposal the Forest Service could implement. It remains in this draft EIS as Alternative 2. This chapter describes the process used to develop alternatives, the alternatives considered but eliminated from detailed study, and the eight alternatives considered in detail. It also compares the alternatives and identifies the preferred alternative.

Access areas range from less than five acres to over 14,000 acres. An access area card (Appendix C) was prepared for each access area included in the alternatives considered in detail. The access area cards contain detailed maps and pertinent information about the access areas including frequency of past use, recreation, alternative access, Wilderness setting, cultural resources, soils, vegetation, wildlife and sensitive species. The cards were used by planning team members in analyzing the alternatives. Appendix C also contains summary tables displaying information about those access areas not included in detailed alternatives, including why they were eliminated from detailed study.

Formulation of Alternatives

The project interdisciplinary team (team) was responsible for developing the proposed action and the subsequent alternatives. They first developed a detailed Proposed Action (Alternative 2) for public scoping. After public scoping, they continually revisited initial assumptions and criteria and reviewed public comments as they developed alternatives to the proposed action. This chapter begins with how the team developed the Proposed Action and continues with how the team developed the other alternatives. Figure 2-1 depicts the process used to arrive at the alternatives considered in detail in this EIS.

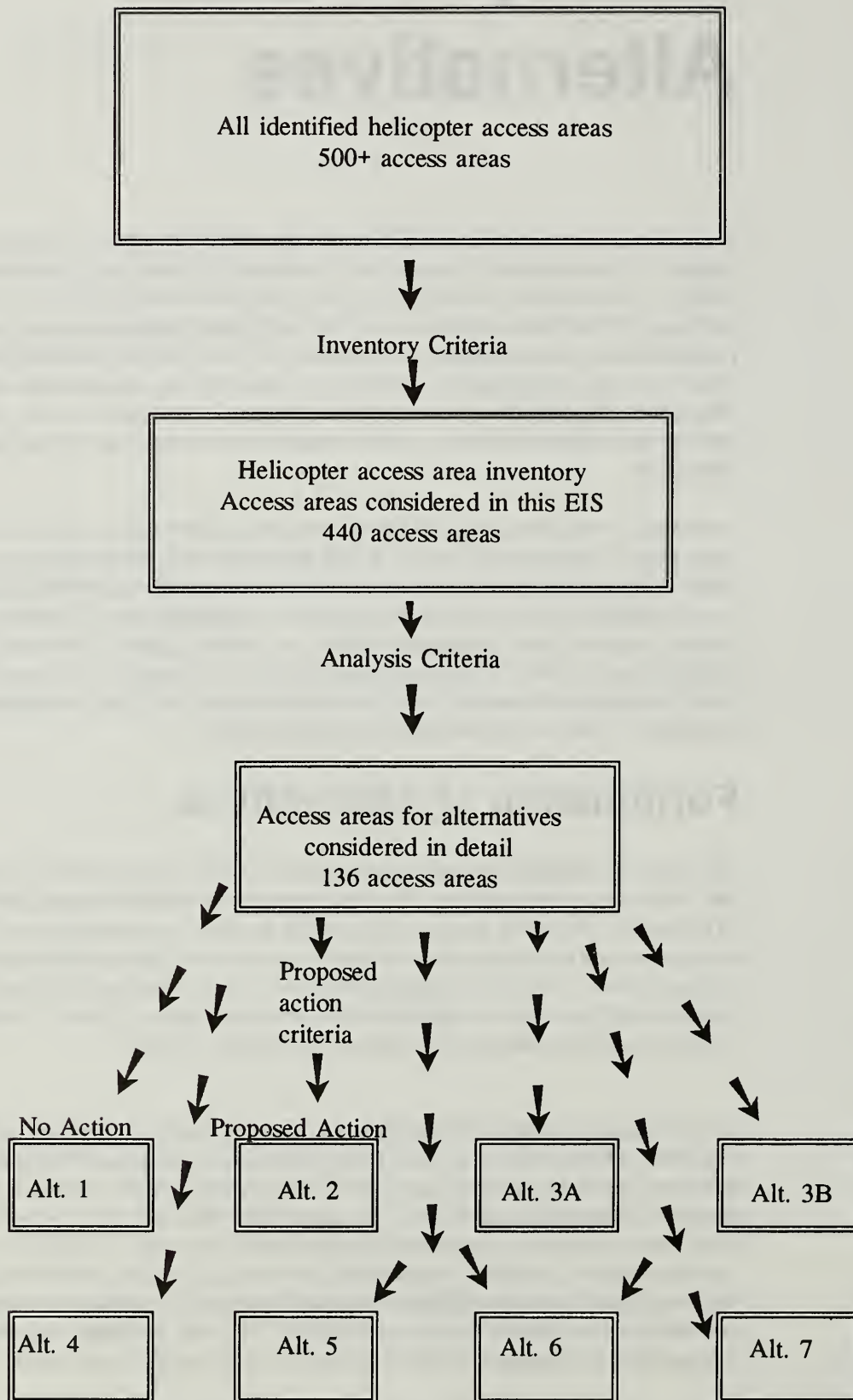
Inventory

To develop an inventory of helicopter access areas, the team used the best information available. Information was solicited from helicopter operators and Wilderness users. Initially, helicopter operators provided letters documenting previous helicopter use in Wilderness. An attempt to locate flight logs to verify the information was made but it was discovered that flight logs were not kept to the detail needed to substantiate use. There is no requirement by agencies regulating aviation for maintaining site-specific landing information. Therefore, it was determined that sworn affidavits provided by helicopter operators attesting to prior use provided the most reliable information available. In 1994, helicopter operators provided sworn affidavits attesting to previous helicopter use of specific access areas.

The team determined which helicopter access areas identified in affidavits from the helicopter operators would be considered in the EIS. To be evaluated in this EIS a helicopter access area had to possess the following three characteristics (inventory criteria):

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Figure 2-1. Alternative Development Process



Note: The Proposed Action is not the Preferred Alternative

Inventory Criteria

- * The helicopter use is for general public access not helicopter access authorized by ANILCA or other law (such as mining, research, communication sites, or administrative use by the Forest Service or other agencies);
- * The proposed access area is a "feasible" access area; not an area covered by dense forest or a cliff; it was somewhere a helicopter might be able to land; and
- * The proposed access area is on National Forest land (not private land, below mean high tide, etc.).

High, Medium and Low Importance Rating

The identification of whether an access area was of either high, medium or low importance was based on information provided by helicopter operators. Areas of high importance were identified as having a high frequency of past use and/or a high interest for continued use. Areas of medium importance were of either generally less use or of moderate interest. Areas of low importance were identified by past low use or by little to no interest expressed for its continued use.

Where there were differences among operators in the identification of the importance of the area for continued use, the highest rating was identified for the area as it was perceived to be a better measure of the area's potential use.

Analysis

Applying the inventory criteria to the access area identified in the affidavits, the team identified 440 access areas to be evaluated in this EIS. The team then developed two additional sets of criteria (analysis criteria and Proposed Action criteria) to be used to develop the Proposed Action. The analysis criteria, listed immediately below, were factors the team used to eliminate access areas from further consideration. These were criteria the team believed captured high quality Wilderness values and were measurable. For example, the Primitive Recreation Opportunity Spectrum (ROS) Class represents the most remote, wild and pristine portions of the Wildernesses where opportunities for solitude and primitive and unconfined recreation are likely to be greatest. Other important related Wilderness values such as wildlife, cultural resources and research opportunities were also included. Importance of access areas to helicopter operators was also considered as a measure of importance to the public. The analysis criteria used to begin to develop the Proposed Action follow.

Analysis Criteria

- * Access areas identified as low importance by the helicopter operators were eliminated as they were believed to be of low importance to the general public and will help meet agency direction in maintaining the Wilderness character.
- * Access areas within Primitive or Semi-Primitive Non-Motorized Recreation Opportunity Spectrum (ROS) inventory were eliminated unless rated as high importance by a helicopter operator. This criterion was an attempt to balance between preserving the most remote and pristine portions of Wilderness and considering public demand for access (as measured by the helicopter operator importance rating).
- * Access areas with the following wildlife conflicts were eliminated: within 330 feet of an eagle tree; within 1000 feet of a marine mammal rookery/haulout or within 1500 feet of an

2 Alternatives

osprey or peregrine falcon nest. This criterion is consistent with existing regulations, memoranda of understanding or proposed standards for sensitive species. (See the wildlife section of Chapter 4 and Appendix B for additional details on sensitive species.)

- * Access areas with potential for conflicts with cultural resources eligible for the National Register of Historic Places were eliminated.
- * Access areas within established research natural areas or research natural areas identified in the Proposed Revised Tongass Land Management Plan were eliminated.

Application of these criteria to the 440 access areas resulted in approximately 150 access areas to be considered in detail. The other access areas were eliminated from detailed consideration.

Development of the Proposed Action

An additional set of criteria was considered for the development of the Proposed Action. The Proposed Action criteria were criteria believed important to consider in deciding whether an access area should be in the Proposed Action. No one criterion by itself provided a sufficient reason to include or eliminate an access area. Rather, a combination of these criteria were considered in determining whether or not an access area would be in the Proposed Action. The Proposed Action criteria were:

Proposed Action Criteria

- * Alternative access by trail, boat, airplane, or by cross country in reasonable time was evaluated. One-half day was considered to be a reasonable time and was determined based upon the best professional judgment of the team. One-half day travel time allows a visitor to make a round-trip in one day.
- * Other access areas serving same purpose within proximity (less than one-half day travel on foot) were evaluated.
- * "Setting substitute(s)" available either outside of Tongass Wilderness or in other Tongass Wildernesses were evaluated. These included features such as glaciers and opportunities such as wildlife viewing.
- * Whether the access area is on or near the border of Wilderness and/or another access area is available nearby in non-Wilderness was evaluated.
- * Other wildlife concerns were considered, such as meeting the wildlife standards and guidelines in the proposed revised Tongass Land Management Plan.
- * Potential rare plant concerns (access areas having potential for rare plants - usually alpine locations) were evaluated.
- * Potential for subsistence conflicts was evaluated. Deer hunting areas were used as an indicator. Some special areas used to hunt moose and mountain goats were also considered.
- * Potential for conflicts with established outfitter/guides was evaluated by looking at proposed access areas within outfitter/guide operating areas.
- * Potential for conflicts with other users was evaluated using the best available information from the access area inventory files and public comments.

Alternatives 2

- * Access areas at concentrated use areas, such as White Sulphur Hot Springs in West Chichagof/Yakobi Wilderness, were evaluated.
- * Other air traffic was also considered, such as access areas beneath flight-seeing routes.
- * Consistency with approved plans, such as the five approved Wilderness plans, was considered.
- * High importance ratings of access areas were also considered as measures of public demand.
- * "Special" values of the access area were considered.

Application of the analysis criteria to the 440 access areas resulted in approximately 150 access areas available to be considered for the Proposed Action. As stated above, no one criterion in the Proposed Action criteria included or eliminated an access area from the Proposed Action. Combinations of the Proposed Action criteria were used to determine whether an access area should be included in the Proposed Action or not.

For example, if there were several access areas in proximity to each other, the access area that had the least conflicts as measured by the above criteria was selected to remain in the Proposed Action. The other access areas were dropped from further consideration.

After the 1994 public scoping process ended, the team reviewed public comment and developed additional action alternatives. As part of this process, previous work and issues were also reviewed. The team reviewed both the analysis and Proposed Action criteria they had used to develop the Proposed Action (Alternative 2) and modified the analysis criteria (pages 2-3 and 2-4) as described below to develop other action alternatives

Responding to public comments from helicopter operators that "medium" importance helicopter access areas should be addressed, those medium importance access areas occurring within Semi-Primitive Non-Motorized ROS class were added.

The team determined that all access areas to be included in alternatives considered in detail should meet these revised analysis criteria. They were the minimum requirements to meet the purpose and need of the project. They discussed, sometimes at length, other alternatives which are presented in the section entitled Alternatives Considered but Eliminated from Detailed Study.

Assumptions Common to All Action Alternatives

The following activities were assumed likely to occur using helicopter access: beach-combing, cabin and shelter access, camping, canoeing/kayaking, clamming, climbing, collecting ice, educational trips, fishing, hiking, hot springs access, ice field and glacier access, photography, picnicking, recreating, searching for solitude, sight seeing, skiing including cross country and extreme skiing, and wildlife viewing.

A key tool used in developing the alternatives is the Recreation Opportunity Spectrum (ROS). This is a method of classification that defines key characteristics of areas considering physical, social and managerial settings. The spectrum ranges from Primitive to Urban. Seven classes are defined along a continuum: Primitive, Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Roaded Modified, Rural and Urban.

Development of Alternatives

2 Alternatives

ROS can be used to assess the existing condition of Wilderness, assist in its management and describe possible impact of future actions or activities. This is possible by identifying specific characteristics for the ROS classes and then describing guidelines for them. The ROS classes generally recognized as acceptable in Wilderness are Primitive, Semi-Primitive Non-Motorized and Semi-Primitive Motorized. Some exceptions occur along the borders of Wilderness due to outside influences. Exceptions also occur due to provisions of the enabling legislation, such as mining or motorized access (e.g., motor boats, float planes).

The alternatives include both locations and amount of use. Amount of use was either identified as "historic use levels" or "ROS levels". ROS levels are limited by using the social guideline for the number of encounters a visitor might expect for the ROS class in Wilderness. These limits are based on regional and national guidelines. Authorizations will normally not exceed these limits. For each access area in a Primitive ROS class, no more than three landings a day will be authorized. For the two Semi-Primitive ROS classes no more than six landings a day will be authorized.

A related item to the social setting involves group size. Large groups detract from the experiences sought in the Primitive and Semi-Primitive settings, and Wilderness managers often resolve this matter by identifying a maximum group size. Research on group size was done for the Tongass Land Management Plan Revision (Humphrey 1995). Studies on group size were reviewed, as well as guidelines used in other Wildernesses. The conclusion was that a group size of twelve was generally appropriate for Wilderness, and will be used in the pending Tongass plan revision. This assumption is used in this EIS. One helicopter can carry up to six people according to recent work done by the Juneau Ranger District (Helicopter Glacier Tours EIS 1995, Environmental Assessment for Helicopter Landing Tours in the Skagway and Haines Area 1995). Therefore, two helicopters would be required to carry the maximum group size. Thus for those areas allowing up to six landings a day, three groups of two helicopters each could be allowed. However, a group of three helicopters, carrying 18 persons, would not be allowed to land together as they would exceed the maximum group size of 12 persons.

For the purposes of this analysis, an average season of 135 days is used. This figure was selected by the team after analysis which included review of numbers used in other helicopter use environmental documents (USDA Forest Service 1994, 1995), staff knowledge of the tourism industry season in Southeast Alaska, review of selected weather records and in-depth discussion. One-hundred thirty-five days includes the period from approximately May 1 through September 15, which is the primary recreation season in southeast Alaska. The number of use days was not increased to account for off-season use because the team recognized that helicopters would not be able to fly every day during the primary season and that there would not likely be demand for the maximum allowable number of helicopter landings at most areas every day of this season.

Multiplying the maximum number of landings per day by the estimated season of use results in a maximum number of 405 landings a year for each access area within Primitive ROS class and 810 landings a year for each access area within Semi-Primitive ROS classes. Because most public recreation cabin sites are Semi-Primitive ROS and cabin visitors stay an average of three nights, for purposes of analysis 250 landings a year was set as the maximum number of cabin site helicopter landings.

Alternatives Considered but Eliminated from Detailed Study

Six alternatives, described below, were considered and evaluated by the planning team. For the reasons listed below, each of these alternatives was eliminated from detailed study.

Alternative A

Consider all access areas identified in helicopter operator affidavits. This alternative was eliminated because it is beyond the scope of this analysis. Several helicopter access areas were identified as used for purposes other than general public access such as mining or administrative use - uses of Wilderness which are authorized under different authorities. It also included access areas located on private and state lands. This alternative included about 500 access areas. (A precise figure was not calculated for this alternative because access areas identified by more than one operator that were eliminated by the inventory criteria were not consolidated.)

Alternative B

Authorize all 440 helicopter access areas that were used for general public access prior to Wilderness designation. This alternative was eliminated because it does not meet the purpose and need to authorize general public access while protecting the Tongass Wilderness character. It also did not consider other Wilderness resources such as sensitive wildlife and cultural resources.

Alternative C

No restrictions on helicopter access at all. This alternative was eliminated because it is illegal and does not meet the purpose and need. As described in Chapter 1, the Wilderness Act only authorizes general public helicopter access where the use was established prior to designation of the area as Wilderness.

Alternative D

Consider all high importance helicopter access areas identified by the helicopter operators. This alternative was eliminated because it did not meet the purpose and need as it did not protect Wilderness character and other resource values. It also did not consider sensitive wildlife and cultural resources. This alternative included 162 access areas.

Alternative E

Consider all medium and high importance helicopter access areas identified by the helicopter operators within the Primitive ROS class. This alternative was eliminated because it was so similar to Alternatives 3A and 3B and provided less protection of Wilderness values. This alternative included 161 access areas.

Alternative F

Limited winter use only of all access areas where there are no conflicts with wildlife. This alternative was eliminated because it does not fully meet the purpose and need to authorize general public access while protecting Wilderness character. Winter access is included in all the action alternatives considered in detail (Alternatives 2, 3A, 3B, 4, 5, 6 and 7). This alternative included 261 access areas.

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Alternatives Considered in Detail

Table 2-1. Alternatives Considered in Detail.

Alternative Number and Description	# access areas	Maximum # Landings per year	Wildernesses with access areas
1. No action alternative; no landings authorized for general public access.	0	0	N/A
2. Proposed Action; general public access authorized at areas meeting criteria on page 2-4; cabin landings require cabin permits; number of landings limited to historic use.	41	325	Endicott River, Kootznoowoo, Misty Fiords, South Etolin, South Prince of Wales, Stikine-LeConte, Tracy Arm-Fords Terror
3A. General public access authorized at areas meeting criteria listed on page 2-5 (no major resource conflicts); cabin landings require cabin permits; number of landings at other areas limited to 3 a day or 6 a day per area depending on ROS class.	129	65,165	Endicott River, Karta River, Kootznoowoo, Misty Fiords, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Stikine-LeConte, Tracy Arm-Fords Terror, West Chichagof
3B. General public access authorized at areas meeting criteria listed on page 2-5 (no major resource conflicts); cabin landings require cabin permits; number of landings limited to historic use.	129	1,265	Endicott River, Karta River, Kootznoowoo, Misty Fiords, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Stikine-LeConte, Tracy Arm-Fords Terror, West Chichagof
4. General public access authorized for developed sites, including public recreation cabins, shelters and trail heads; cabin landings require cabin permits; landings at other areas limited to historic use.	38	7,295	Kootznoowoo, Misty Fiords, Petersburg Creek-Duncan Salt Chuck, South Baranof, Stikine-LeConte, West Chichagof
5. General public access at areas in very remote locations with no other access; number of landings limited to historical use.	31	435	Endicott River, Kootznoowoo, Misty Fiords, Stikine-LeConte, Tracy Arm-Fords Terror
6. General public access at areas where there is already motorized use; cabin landings require cabin permits; landings at other areas limited to 3 a day or 6 a day per area depending on ROS class.	97	49,775	Endicott River, Karta River, Kootznoowoo, Misty Fiords, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Stikine-LeConte, Tracy Arm-Fords Terror, West Chichagof
7. General public helicopter access at areas that are "special" places with no other access; landings limited to 3 a day or 6 a day per area depending on ROS class.	4	2,430	Stikine-LeConte, Tracy Arm-Fords Terror

Alternatives 2

Upon completion of the additional scoping period in April and May 1995, the team reviewed all public comments received, the issues and preliminary alternatives. Additional fine-tuning of the alternatives occurred responding to the public comments. Alternative 3 became Alternative 3A. Alternative 3B was created, identical to Alternative 3 except that the number of landings to be authorized would be limited to historical use. This change responded to public comments requesting an alternative mirroring historic distribution and use levels for access areas.

Eight alternatives developed by the team are considered in detail in this EIS. Table 2-1 gives a brief display of the alternatives considered in detail. Narrative descriptions, tabular displays and maps of each alternative follow. Each alternative responds to several of the issues. Several alternatives respond to the same issue in different manners.

Alternative 1 - No Action

The No Action Alternative would not authorize helicopter access areas for general public access within Wildernesses of the Tongass National Forest. Helicopter landings would not be authorized at areas where they had occurred prior to Wilderness designation. As explained in Chapter 1, authorizing helicopter landings for general public access in Wilderness is discretionary under Section 4(d)(1) of the Wilderness Act. Other helicopter landings including those necessary for administration of the Wildernesses and for emergencies would continue as authorized under other authorities.

Chapter 3, Affected Environment, displays the No Action alternative in detail. The No Action alternative is required by the National Environmental Policy Act and provides the basis for comparison of effects of the action alternatives.

This alternative addresses the issues of Wilderness, cultural resources, wildlife, recreation and subsistence. In this alternative the Wilderness character is protected by not encouraging growth of mechanization; cultural resources, wildlife, recreation and subsistence will not be affected by a potential increase in Wilderness visitation.

Alternative 2 Proposed Action

Alternative 2 (Maps 2-1 to 2-9) is the Proposed Action presented in the September 2, 1994, scoping document corrected for errors. The scoping document incorrectly listed four access areas as having up to 50 landings a year historically, when they had up to 25 landings. Alternative 2 would authorize 41 access areas for general public access within seven of the 19 Tongass National Forest Wildernesses. Helicopter access is proposed for access areas within Endicott River, Kootznoowoo (Admiralty Island), Misty Fiords, South Etolin, South Prince of Wales, Stikine-LeConte, and Tracy Arm-Fords Terror Wildernesses. Alternative 2 contains three access areas, MF-133, TA-06 and TA-18, that are not found in any of the other action alternatives because they were found to contain cultural resources eligible for the National Register of Historic Places after the Proposed Action was developed.

Table 2-2 displays the access areas and the maximum number of landings proposed per year. Between one and 25 helicopter access areas per Wilderness would be designated. The number of landings authorized per access area would be based upon historical use and would be limited to five per access area per year or 25 per access areas per year (see Table 2-2). Cabin permits would be required for landing at public recreation cabins.

Alternative 2 addresses the issues of Wilderness, access, wildlife and recreation. This alternative provides access to a variety of recreational opportunities in both remote and established areas of use. The low number of areas allowed for use does limit potential impacts to Wilderness character and wildlife.

2 Alternatives

Table 2-2. Alternative 2 proposed helicopter access areas and maximum number of landings per year.

<u>Wilderness Name - Access Area #/Name</u>	<u>Maximum Number of Landings/Year</u>
<u>Endicott River</u>	
EN-02 Endicott Lake	5
<u>Kootznoowoo (Admiralty Island)</u>	
KO-02 South Young Lake Cabin	25
KO-03 North Young Lake Cabin	25
KO-18 Lake Kathleen Cabin	5
KO-22 West Florence Lake Cabin	5
KO-23 East Florence Lake Cabin	5
KO-38 Jims Lake Cabin	5
<u>Misty Fiords National Monument</u>	
MF-17 Leduc Lake	5
MF-20 Orchard Creek	5
MF-33 N. Mirror Lake	5
MF-40 Steep Point	5
MF-50 Bass Point	5
MF-71 1st Unuk Canyon	5
MF-74 Lake Creek	5
MF-89 King Creek	5
MF-90 Mount Hayford	5
MF-91 East Walker Lake	5
MF-92 Walker Lake Mountain	5
MF-96 Upper Portage Creek	5
MF-98 East Lake Grace	5
MF-108 East Manzanita Lake	5
MF-117 Big Goat Lake	5

Table 2-2 continued

<u>Wilderness Name - Access Area #/Name</u>	<u>Maximum Number of Landings/Year</u>
MF-124 Wasp Cove	5
MF-128 Gokachin Lake	5
MF-133 Tombstone Bay	5
MF-134 Dome Creek	5
MF-136 Narrow Pass	5
MF-144 Weasel Creek	5
MF-145 West Quadra Creek	5
MF-148 Mid Reef Lake	5
MF-162 Bower Creek	5
MF-168 Peninsula Lake	5
<u>South Etolin</u>	
SE-02 South Etolin Lakes	5
<u>South Prince of Wales</u>	
S-20 Hessa Island	5
<u>Stikine-LeConte</u>	
SL-09 Mallard Slough Cabin	5
SL-14 Horn Cliffs	25
SL-15 Devil's Thumb	25
SL-16 Upper LeConte Ice Field	5

Alternatives **2**

Tracy Arm/Fords Terror

TA-06 Powers Creek	25
TA-18 Sumdum Island	5
TA-23 Ice Fields S. of Sawyer Glacier	25

TOTAL 345

2 Alternatives

Map 2-1. Endicott River Wilderness



Map 2-2. Kootznoowoo Wilderness (north)



2 Alternatives

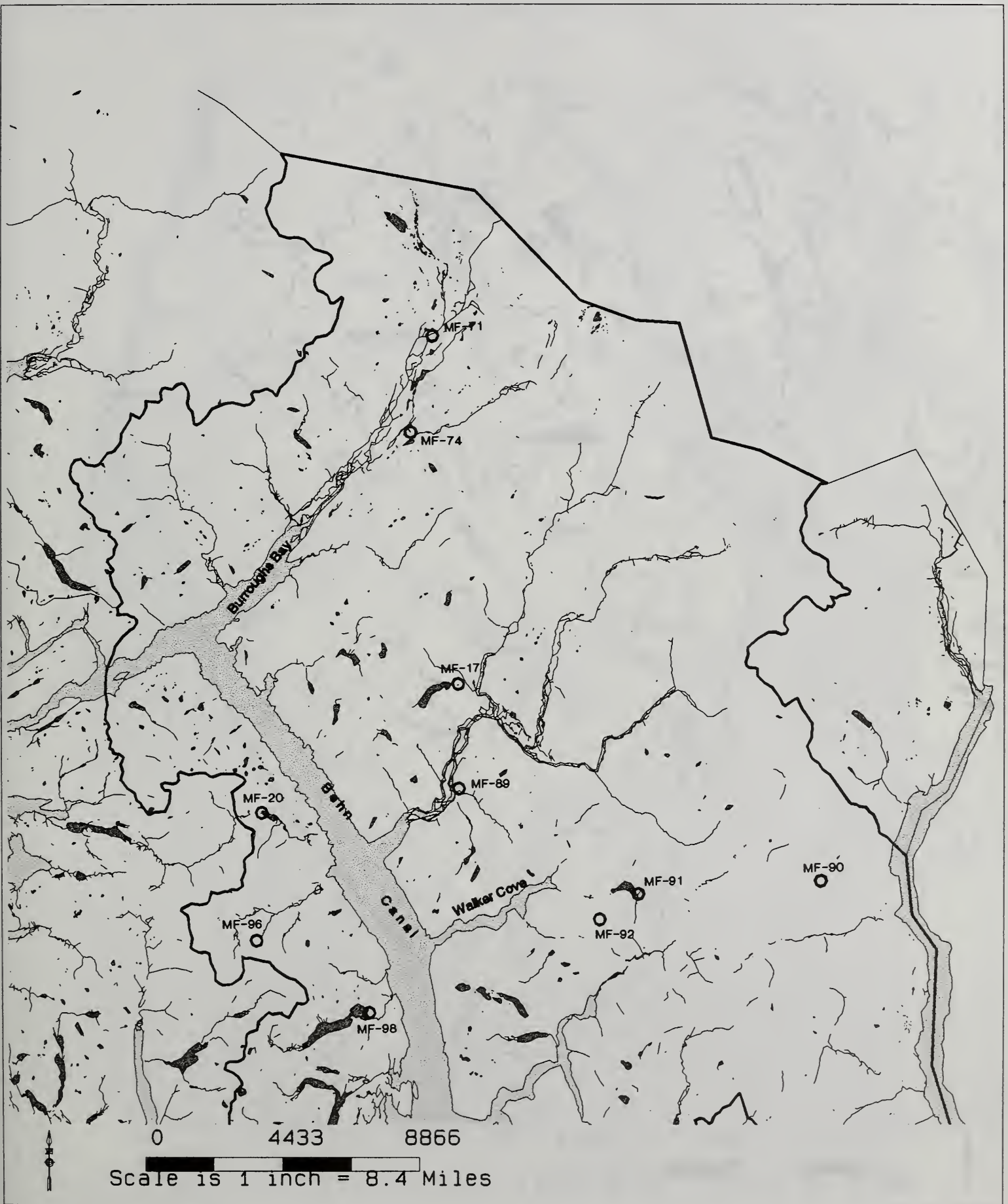
Map 2-3. Kootznoowoo Wilderness (south)



PROGRAM NO. 1073-S -- TERM APRIL 1, 1994 THROUGH MARCH 31, 1996
 TITLE: "FOREST SERVICE EIS AND BLM PLANNING DOCUMENTS"

ITEM NO. & DESCRIPTION	BASIS OF AWARD	EKR PRINTING Salt Lake City, UT		STERLING PRESS Salt Lake City, UT		YOUR TOWN PRESS Salem, OR		PREVIOUS EKR Printing	
		UNIT RATE	COST	UNIT RATE	COST	UNIT RATE	COST	UNIT RATE	COST
I. PRINTING AND BINDING:									
(a) Saddle-stitched: Printing in a single ink color, including binding. Each page.									
(1) Makeready and/or setup.....	10400	1.12	11752.00	2.50	25920.00	4.89	51272.00	0.98	10192.00
(2) Running per 100 copies.....	150800	0.05	7540.00	0.14	19604.00	0.23	42224.00	0.07	10556.00
(b) Side-stitched: Printing in a single ink color, including binding. Each page.									
(1) Makeready and/or setup.....	1300	0.96	1248.00	2.40	3120.00	4.93	6409.00	1.10	1430.00
(2) Running per 100 copies.....	18960	0.07	1319.50	0.12	2282.00	0.31	5843.50	0.06	1131.00
(c) Perfect-bound: Printing in a single ink color, including binding. Each page.									
(1) Makeready and/or setup.....	14300	2.45	35035.00	2.55	36485.00	4.93	70499.00	2.55	36465.00
(2) Running per 100 copies.....	207350	0.22	45617.00	0.12	24882.00	0.34	70499.00	0.15	39396.50
(d) Dividers: Printing in a single ink color. Each printed page.									
(1) Makeready and/or setup.....	90	23.00	2070.00	20.00	1800.00	4.93	443.70	23.00	2070.00
(2) Running per 100 copies.....	1305	2.35	3066.75	2.30	3001.50	0.28	365.40	2.35	3066.75
(e) Fold-ins (per unit):									
(1) Printing in a single ink color on one side only, including binding, gathering in sets at the end of text, tipping-in or inserting throughout text. Per fold-in unit.									
(1) Makeready and/or setup....	258	5.00	1280.00	5.00	1536.00	70.00	17920.00	5.00	1280.00
(2) Running per 100 copies....	3712	0.30	1113.60	0.45	1670.40	1.30	4825.60	0.30	1113.60
(2) Printing on second side in a single ink color. Per fold-in unit.									
(1) Makeready and/or setup....	80	3.00	240.00	5.00	400.00	70.00	5600.00	3.00	240.00
(2) Running per 100 copies....	1160	0.20	232.00	0.40	464.00	1.00	1160.00	0.20	232.00
(f) Unbound Maps (per unit):									
(1) Printing in a single ink color one side only, including folding. Per unbound-map unit.									
(1) Makeready and/or setup....	312	7.75	2418.00	8.00	2496.00	70.00	21840.00	7.75	2418.00
(2) Running per 100 copies....	4524	0.48	2171.52	0.50	2262.00	5.20	23524.80	0.48	2171.52
(2) Printing on second side in a single ink color. Per unbound-map unit.									
(1) Makeready and/or setup....	96	6.50	624.00	7.75	744.00	70.00	6720.00	6.50	624.00
(2) Running per 100 copies....	1392	0.50	696.00	0.45	626.40	4.00	5568.00	0.50	696.00
(g) Additional Color(s): Printing text, covers, fold-ins, dividers and/or unbound maps in an additional color(s). Applicable to any of the listed binding styles:									
(1) Printing text or cover in a color in addition to the color charged for under items I: (a), (b), and/or (c). Per page.									
(1) Makeready and/or setup....	30	8.00	240.00	10.00	300.00	4.95	148.50	8.00	240.00
(2) Running per 100 copies....	435	2.28	991.80	0.65	282.75	0.20	87.00	0.50	217.50
(2) Printing divider pages in a color in addition to the color charged for under item I: (d). Per page.									
(1) Makeready and/or setup....	2	20.00	40.00	15.00	30.00	4.95	9.90	20.00	40.00
(2) Running per 100 copies....	29	2.50	72.50	0.65	18.85	0.20	5.80	2.50	72.50
(3) Printing fold-ins in a color in addition to the color charged for under items I: (e), (f), and/or (2). Per fold-in unit.									
(1) Makeready and/or setup....	24	9.50	228.00	8.00	192.00	4.95	118.80	7.20	172.80
(2) Running per 100 copies....	348	2.23	793.44	0.60	174.00	0.20	69.60	0.45	156.60

Map 2-4. Misty Fiords Wilderness (north)



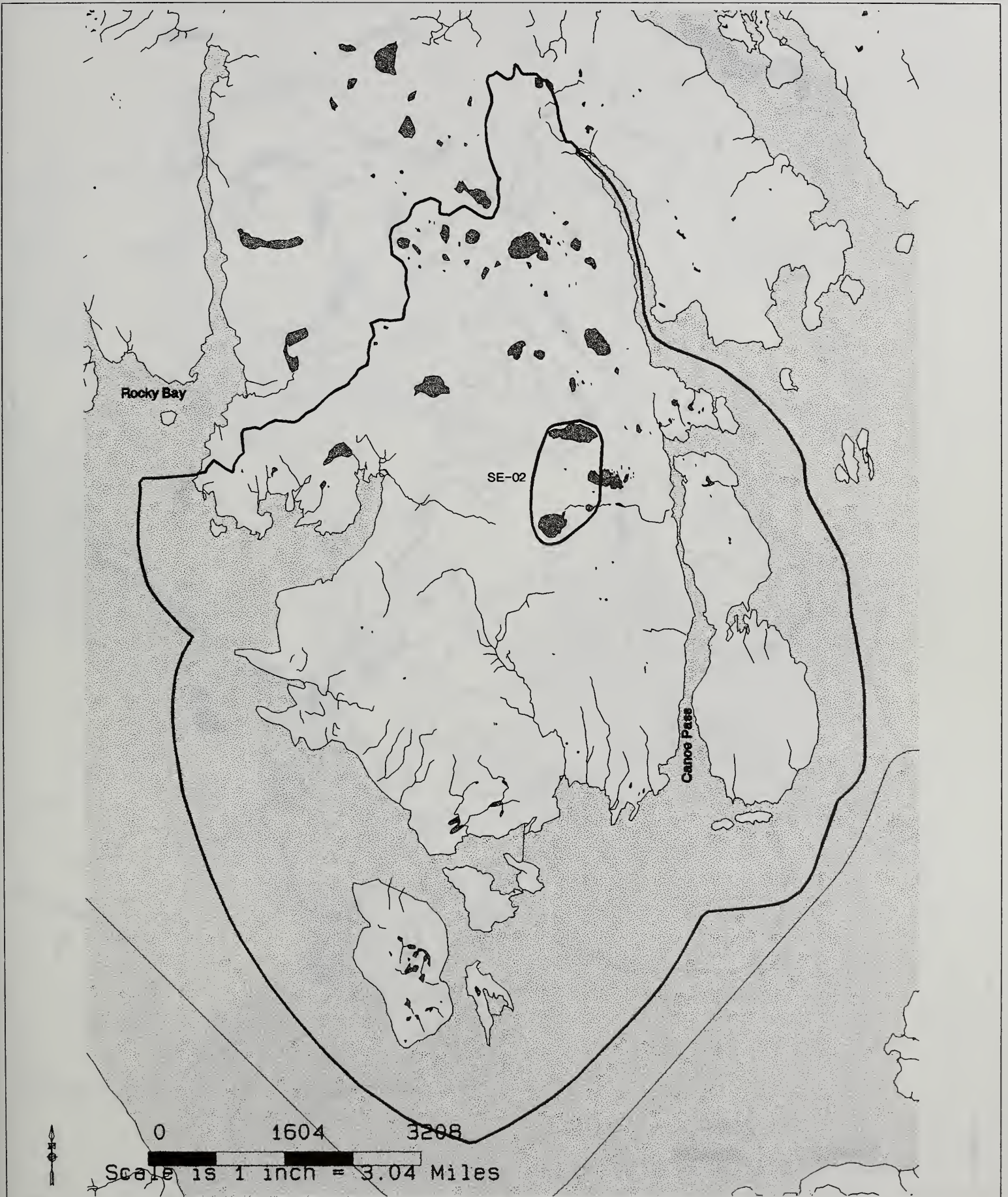
2 Alternatives

Map 2-5. Misty Fiords Wilderness (south)



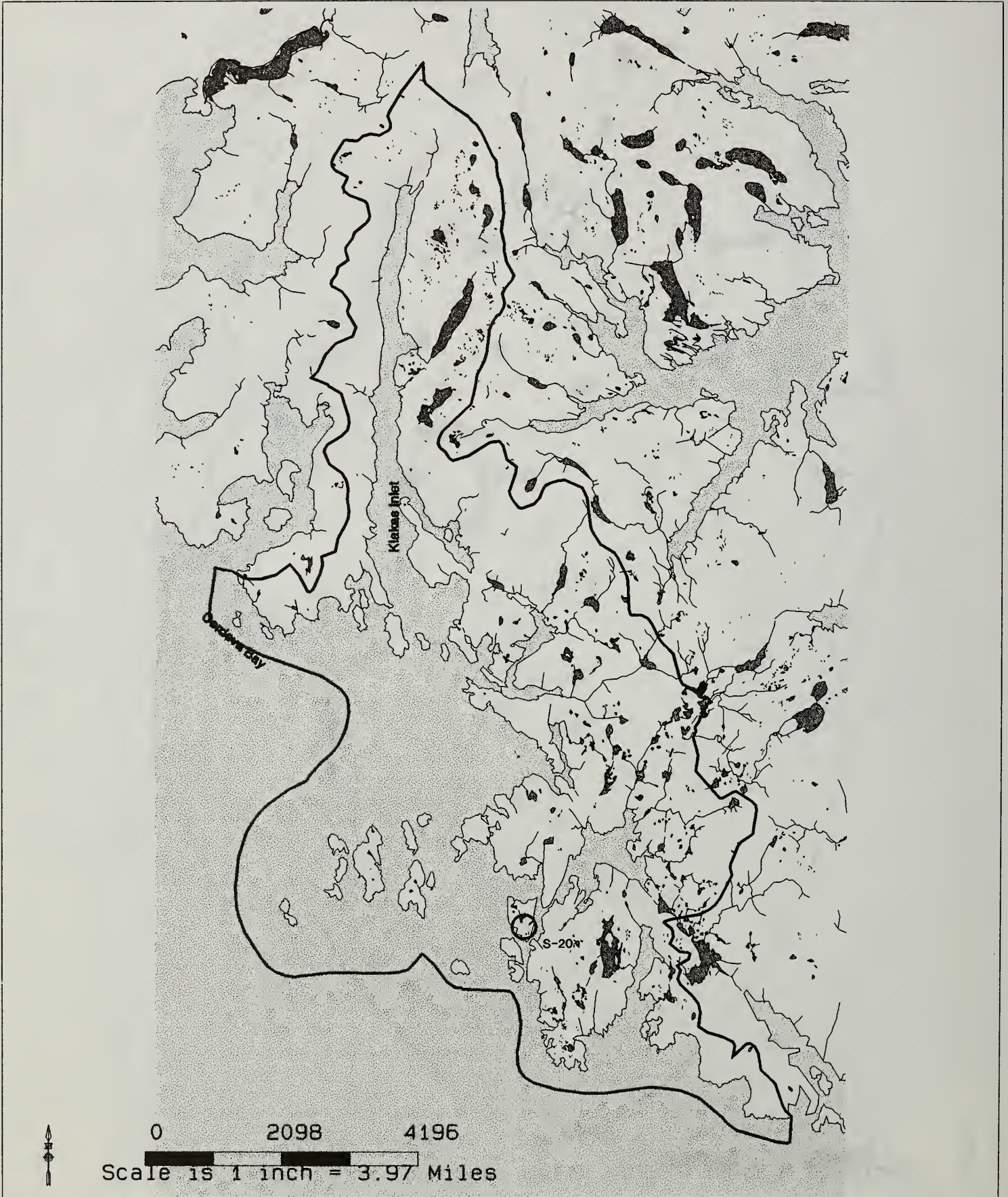
Helicopters Landings in
Wilderness Draft EIS

Map 2-6. South Etolin Wilderness

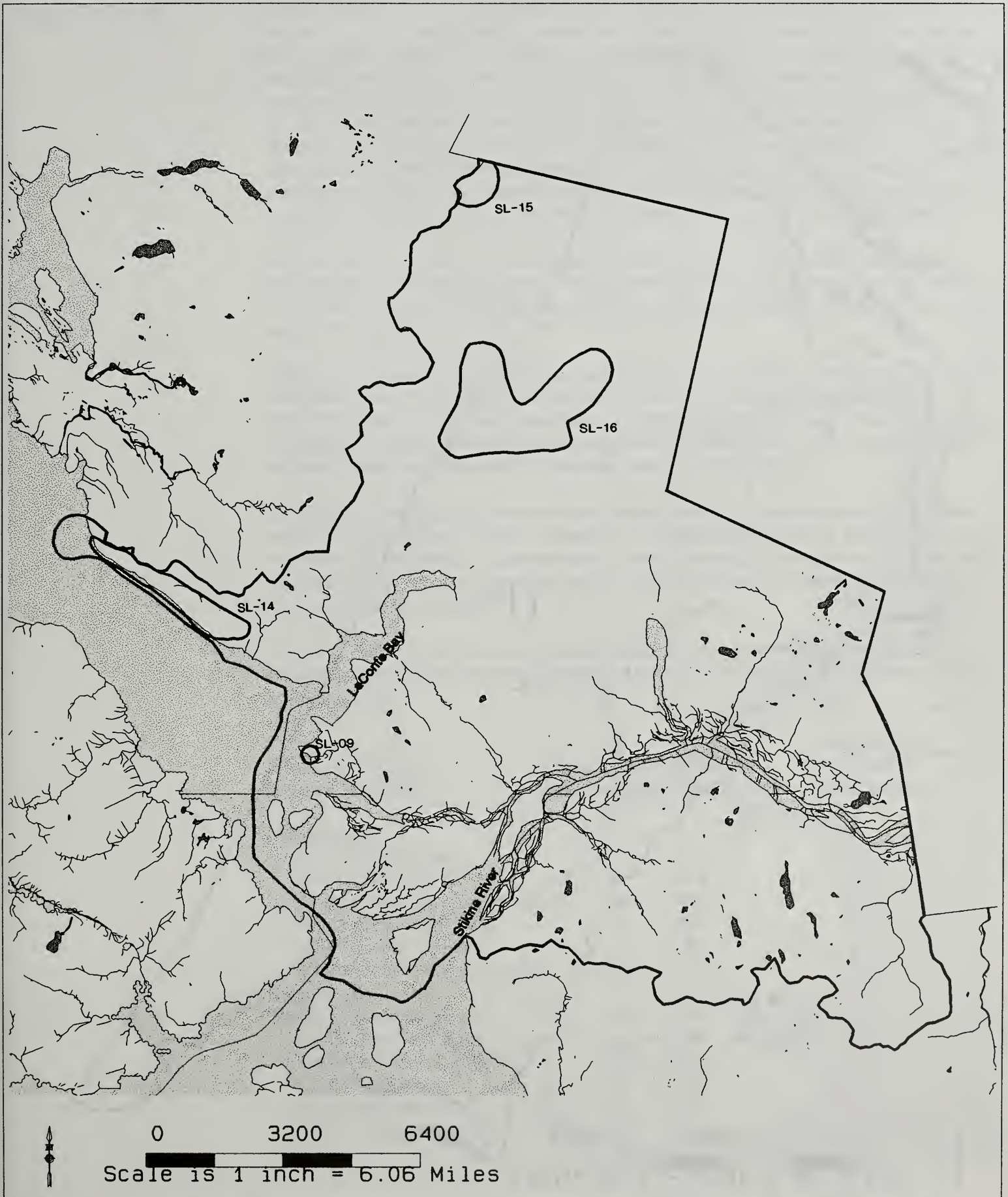


2 Alternatives

Map 2-7. South Prince of Wales Wilderness

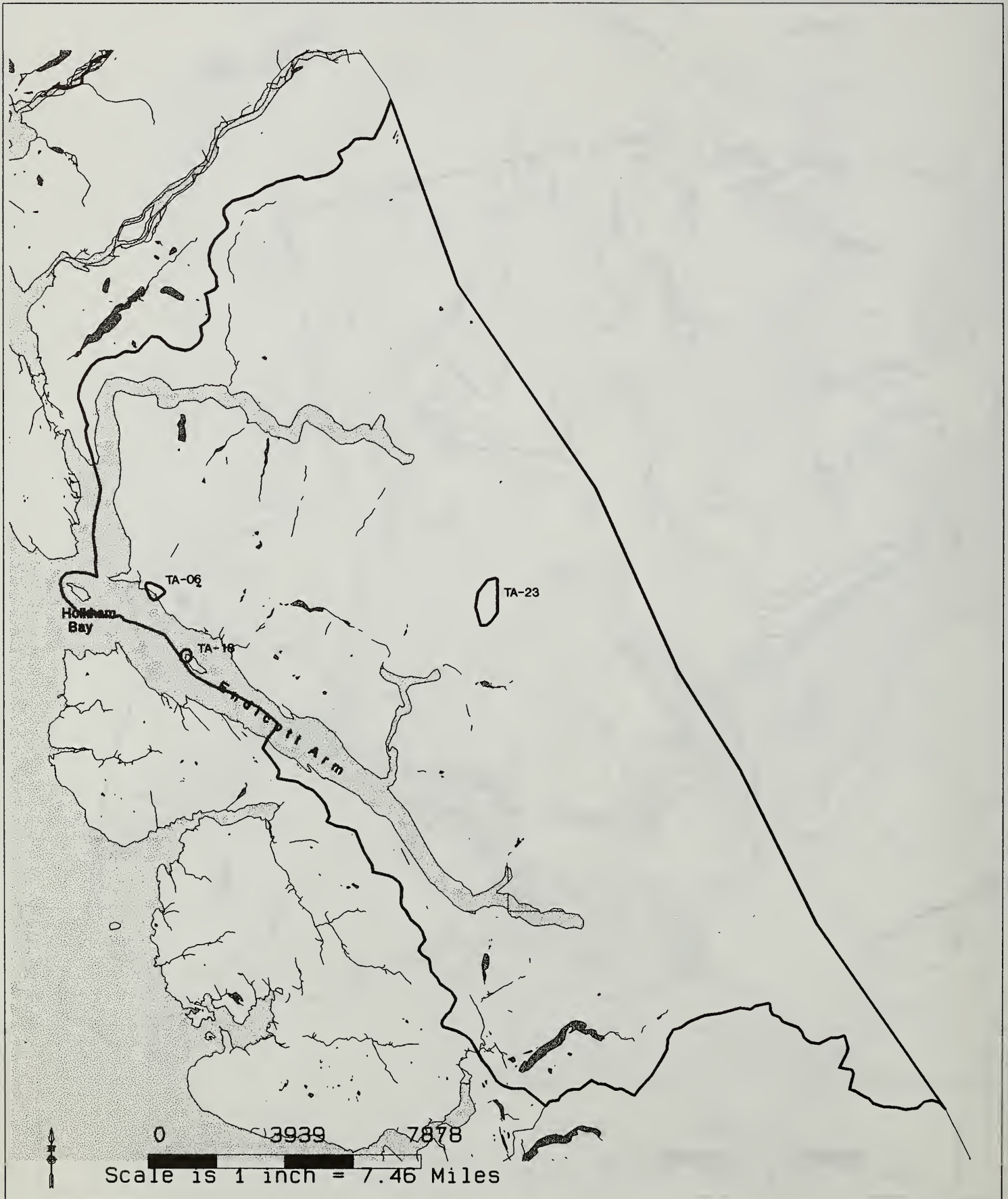


Map 2-8. Stikine-LeConte Wilderness



2 Alternatives

Map 2-9. Tracy Arm-Fords Terror Wilderness



Alternatives 2

Alternative 3A and Alternative 3B

Alternatives 3A and 3B (Maps 2-10 to 2-23) would authorize 129 helicopter access areas for general public access to Tongass Wildernesses. These access areas meet the criteria displayed on page 2-5. They would include access areas within 12 Wildernesses. Alternatives 3A and 3B are identical except for the number of landings that would be authorized. Alternative 3A would limit the number of landings to three landings per day per access area for those access areas within the Primitive ROS class (66 access areas) and six landings per day per access area for those access areas within the Semi-Primitive ROS classes (63 access areas). The access areas classified as Roaded Modified (KO-18, KO-22 and KO-23) and Roaded Natural (SL-12) are included as Semi-Primitive as that would be the desired future condition. They are currently influenced either by recent timber harvest on adjacent lands or (in the case of SL-12) by existing heavy uses. (The access areas in Alternatives 3A and 3B are listed in Table 2-3).

As noted above, Alternative 3B is identical to Alternative 3A except that the number of landings would be limited to historic use of up to either five or 25 landings a year per access area. Table 2-3 displays the ROS class, maximum number of landings per year for each access area in Alternatives 3A and 3B.

Cabin permits would be required for landings in access areas within one-half mile of public recreation cabins. This would allow helicopter landings within three large access areas, (PC-1, PC-2 and SL-5) for activities other than public recreation cabin use. Other access areas with public recreation cabins are smaller (less than one mile diameter), and it is assumed that all landings near the cabin would be associated with use of the cabin.

Alternative 3A addresses the issues of access and recreation. It provides access to the widest range of recreational opportunities. Alternative 3B addresses the issues of Wilderness, access, recreation and subsistence. It provides access to the same range of recreational opportunities as Alternative 3A but at low use levels which protect Wilderness character. It minimizes potential effects to subsistence.

Table 2-3. Alternatives 3A and 3B proposed helicopter access areas; Alternative 3A-ROS class and maximum number of landings/year; Alternative 3B-historical and maximum number of landings/year.

<u>Wilderness Name & Access Area #/Name</u>	<u>Alternative 3A - ROS Class & Maximum # Landings/year</u>	<u>Alternative 3B Maximum # Landings/year</u>
<u>Endicott River</u>		
EN-02 Endicott Lake	P 405	5
EN-05 Endicott River	SP 810	25
EN-07 Central Plateau #2	SP 810	25
EN-08 South end of Lake	SP 810	25
EN-09 Central Plateau #3	P 405	5
EN-10 Lower River - Gravel Bed	SP 810	5
<u>Karta River</u>		
KA-02 Andersen Creek	SP 810	5
KA-03 Black Bear Lake	P 405	5
KA-07 Northeast Karta	SP 810	5
KA-08 Karta Creek	SP 810	5
KA-09 Flagstaff Creek	SP 810	5
KA-13 Karta Lake North	SP 810	5

2 Alternatives

Table 2-3 continued

<u>Wilderness Name & Access Area #/Name</u>	<u>Alternative 3A - ROS Class & Maximum # Landings/year</u>	<u>Alternative 3B Maximum # Landings/year</u>
<u>Kootznoowoo (Admiralty Island)</u>		
KO-02 South Young Lake Cabin	SP 250	25
KO-03 North Young Lake Cabin	SP 250	25
KO-04 Central Ridges	SP 810	5
KO-05 Central Ridges	SP 810	5
KO-13 Central Wheeler Area	P 405	5
KO-15 King Salmon River	SP 810	25
KO-18 Lake Kathleen	RM 250	5
KO-20 Windfall Harbor	SP 810	5
KO-21 Windfall Harbor	SP 810	5
KO-22 West Florence Lake Cabin	RM 250	5
KO-23 East Florence Lake Cabin	RM 250	5
KO-25 Thayer Lake	SP 810	5
KO-28 Hasselborg Lake	SP 250	5
KO-29 Hasselborg Lake	SP 250	5
KO-32 Distin Lake	SP 250	5
KO-33 Distin Lake	SP 250	5
KO-34 Davidson Lake	SP 810	5
KO-35 Lake Alexander	SP 250	5
KO-36 Lake Alexander	SP 810	5
KO-38 Jims Lake Cabin	SP 250	5
KO-46 Gambier Bay	P 250	5
KO-69 Young Lake Ridge	P 405	25
KO-70 Eagle Peak	SP 810	25
KO-71 N. Kathleen Lake	P 405	25
KO-72 N. Pack Creek	P 405	25
KO-73 W. Pack Creek	P 405	25
KO-74 S. Pack Creek	P 405	25
KO-75 W. Hasselborg	P 405	25
KO-79 S. Hasselborg	SP 810	25
KO-80 W. Thayer	P 405	25
<u>Misty Fiords National Monument</u>		
MF-03 Unuk River	P 405	5
MF-07 S. Grant Creek	P 405	5
MF-17 Leduc Lake	P 405	5
MF-20 Orchard Creek	P 405	5
MF-22 King Creek	P 405	5
MF-31 Lake Grace	P 405	5
MF-33 N. Mirror Lake	P 405	5
MF-34 S. Manzanita	P 405	5
MF-35 S. Mirror Lake	SP 810	5
MF-36 Ella Lake	SP 810	5
MF-38 Big Goat Lake	SP 810	5
MF-39 S. Wilson Lake	P 250	5
MF-40 Steep Point	P 405	5
MF-41 Winstanley Lake	P 405	5
MF-46 Bakewell Lake	P 405	5

2 Alternatives

Table 2-3 continued

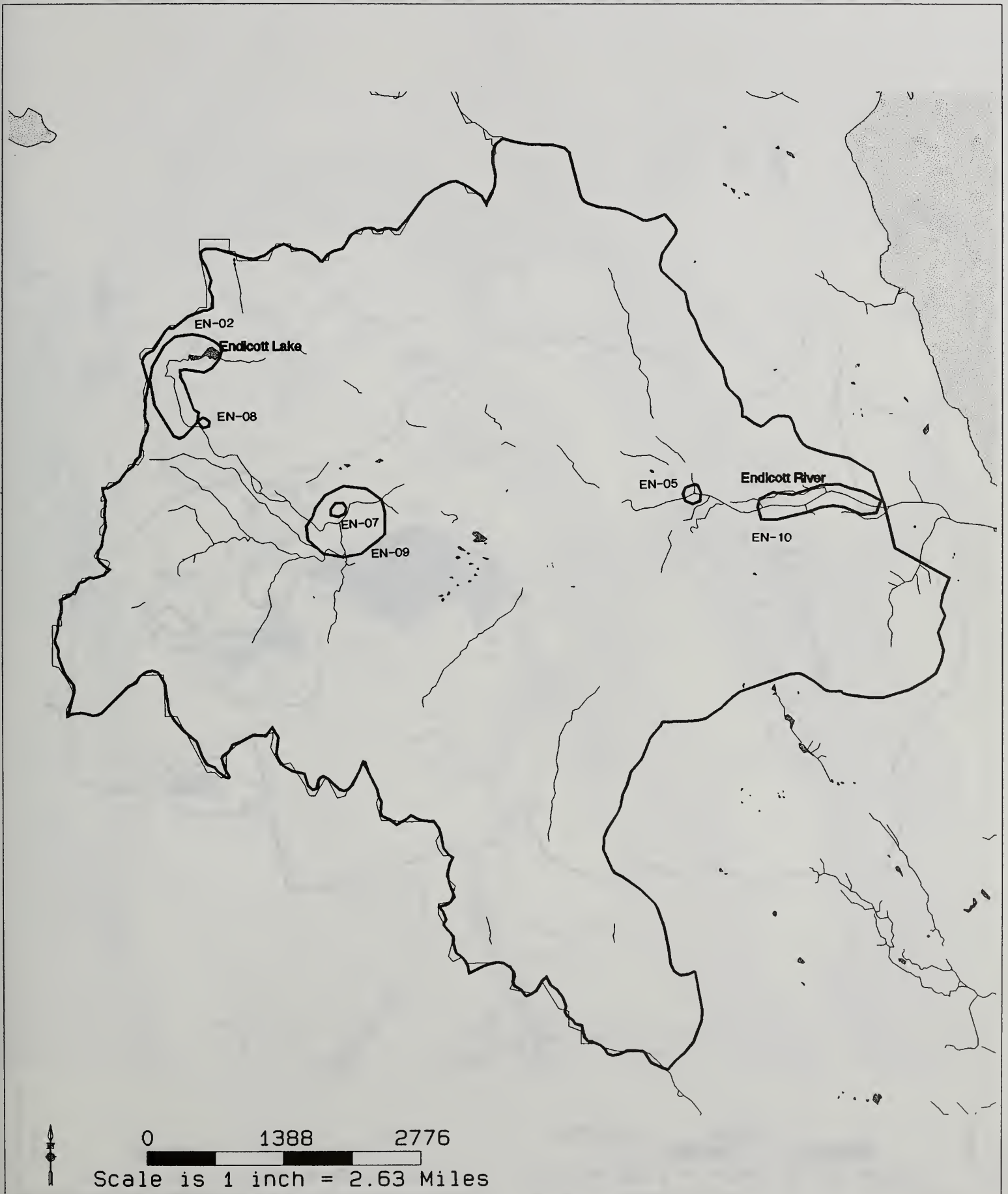
<u>Wilderness Name & Access Area #/Name</u>	<u>Alternative 3A - ROS Class & Maximum # Landings/year</u>		<u>Alternative 3B Maximum # Landings/year</u>
MF-50 Bass Point	SP	810	5
MF-56 Humpback Lake	P	405	5
MF-57 Humpback	P	250	5
MF-71 1st Unuk Canyon	P	405	5
MF-72 Unuk River	P	405	5
MF-74 Lake Creek	P	405	5
MF-89 King Creek	P	405	5
MF-90 Mount Hayford	P	405	5
MF-91 East Walker Lake	P	405	5
MF-92 Walker Lake Mountain	P	405	5
MF-96 Upper Portage Creek	P	405	5
MF-98 East Lake Grace	P	405	5
MF-104 W. Manzanita Lake	P	250	5
MF-105 Manzanita Lake	P	405	5
MF-107 S. Manzanita Lake	P	250	5
MF-108 East Manzanita Lake	P	405	5
MF-109 Mirror Lake	P	405	5
MF-110 Ella Bay	SP	810	5
MF-114 Punchbowl	SP	810	5
MF-116 Little Goat Lake	SP	810	5
MF-117 Big Goat Lake	SP	250	5
MF-118 Wilson Lake	P	250	5
MF-119 Wilson River	P	405	5
MF-124 Wasp Cove	P	405	5
MF-125 Third Lake	SP	810	5
MF-131 Mesa Lake	P	405	5
MF-134 Dome Creek	P	405	5
MF-144 Weasel Creek	P	405	5
MF-145 West Quadra Creek	P	405	5
MF-146 Boca de Quadra	P	405	5
MF-154 Hugh Smith Cabin	P	250	5
MF-160 Lower Humpback Creek	P	405	5
MF-161 Humpback Creek	P	405	5
MF-162 Bower Creek	P	405	5
MF-166 Mid Humpback Creek	P	405	5
MF-167 Billy Goat	P	405	5
MF-168 Peninsula Lake	P	405	5
MF-173 Unuk River	P	405	5
MF-179 Manzanita Bay	P	405	5
<u>Petersburg Creek-Duncan Salt Chuck</u>			
PC-01 Petersburg Creek	P	250	25
PC-02 East Salt Chuck Cabin	P	250	25
<u>Russell Fiord</u>			
RF-02 Harlequin Lake	SP	810	25
RF-03 Harlequin Lake	SP	810	25
RF-05 Beasley Creek - Upper	SP	810	25
RF-24 Cape Enchantment	P	405	25

2 Alternatives

Table 2-3 continued

<u>Wilderness Name & Access Area #/Name</u>	<u>Alternative 3A - ROS Class & Maximum # Landings/year</u>		<u>Alternative 3B Maximum # Landings/year</u>
<u>South Baranof</u>			
SB-04 Lake above Gut Bay	SP	810	5
SB-06 Lake Plotnikof Cabin	SP	250	5
SB-07 Rezanof Lake	SP	810	5
SB-08 Lake Diana	SP	810	5
SB-11 Avoss Lake Cabin	SP	250	5
SB-14 Davidof Lake Cabin	SP	250	5
SB-15 Mid-Plotnikof Lake	SP	810	5
<u>South Etolin</u>			
SE-02 South Etolin Lakes	SP	810	5
<u>South Prince of Wales</u>			
S-03 N. Klakas Lake	P	405	5
S-20 Hessa Island	P	405	5
<u>Stikine-LeConte</u>			
SL-02 N. Shore LeConte Glacier	SP	810	25
SL-04 LeConte Glacier (near bay)	SP	810	25
SL-05 Red Slough	SP	250	5
SL-09 Mallard Slough Cabin	SP	250	5
SL-10 Jap Creek	SP	810	5
SL-11 Andrews Slough	SP	810	25
SL-12 Twin Lakes Cabin	RN	250	5
SL-13 North Arm Creek	SP	810	5
SL-14 Horn Cliffs	SP	810	25
SL-15 Devil's Thumb	P	405	25
SL-16 Upper LeConte Ice Field	P	405	5
<u>Tracy Arm/Fords Terror</u>			
TA-17 Fords Terror (Penin)	SP	810	25
TA-23 Ice Fields S. of Sawyer Glacier	P	405	25
TA-24 Fords Terror North	SP	810	25
TA-31 Knob N. of Tracy Arm	P	405	25
<u>West Chichagof-Yakobi</u>			
WC-05 Goulding Lake	SP	250	5
WC-07 White Sulphur	SP	250	25
TOTALS		65,165	1,265

Map 2-10. Endicott River Wilderness

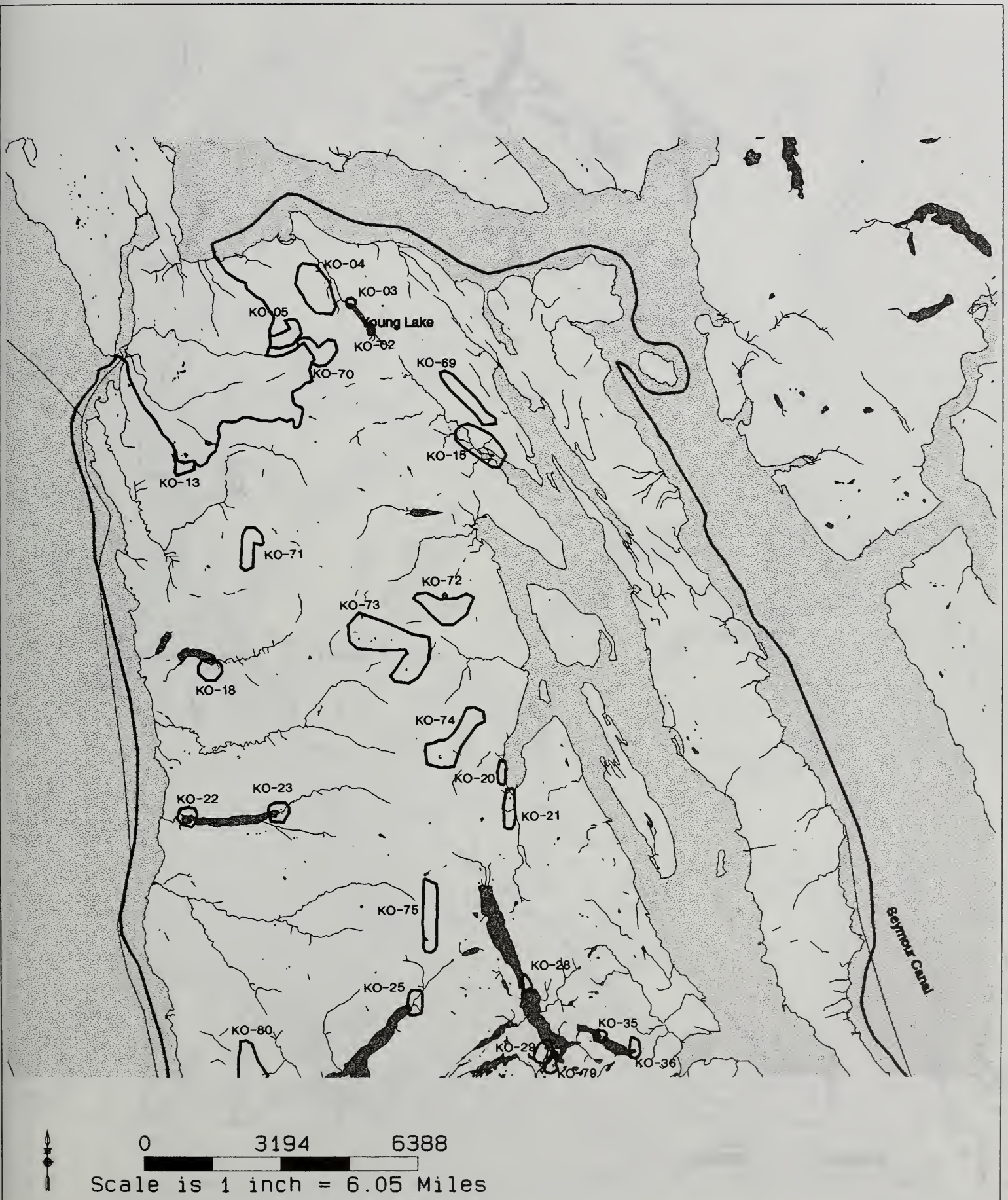


2 Alternatives

Map 2-11. Karta River Wilderness

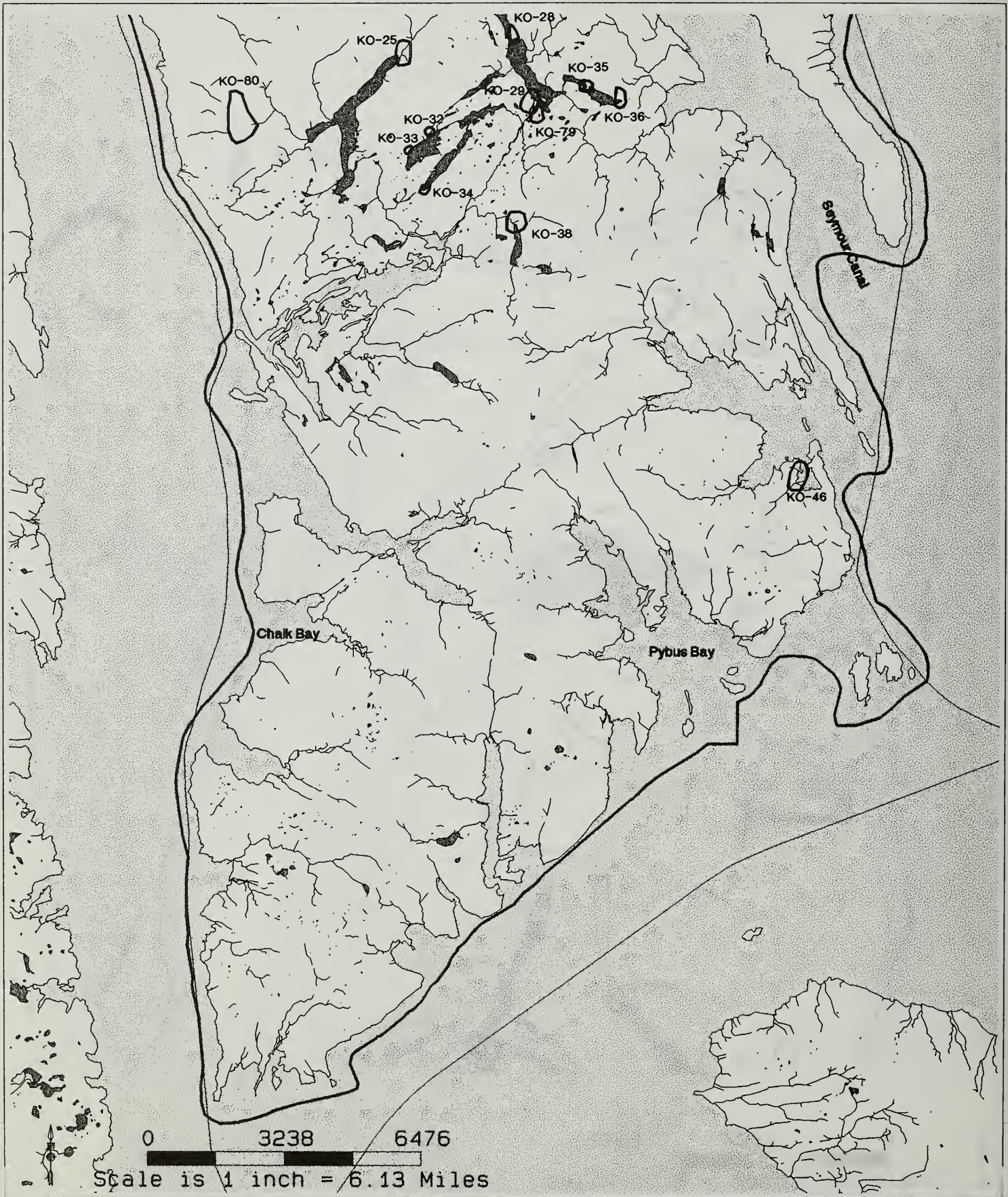


Map 2-12. Kootznoowoo Wilderness (north)



2 Alternatives

Map 2-13. Kootznoowoo Wilderness (south)



Map 2-14. Misty Fiords National Monument Wilderness (north)

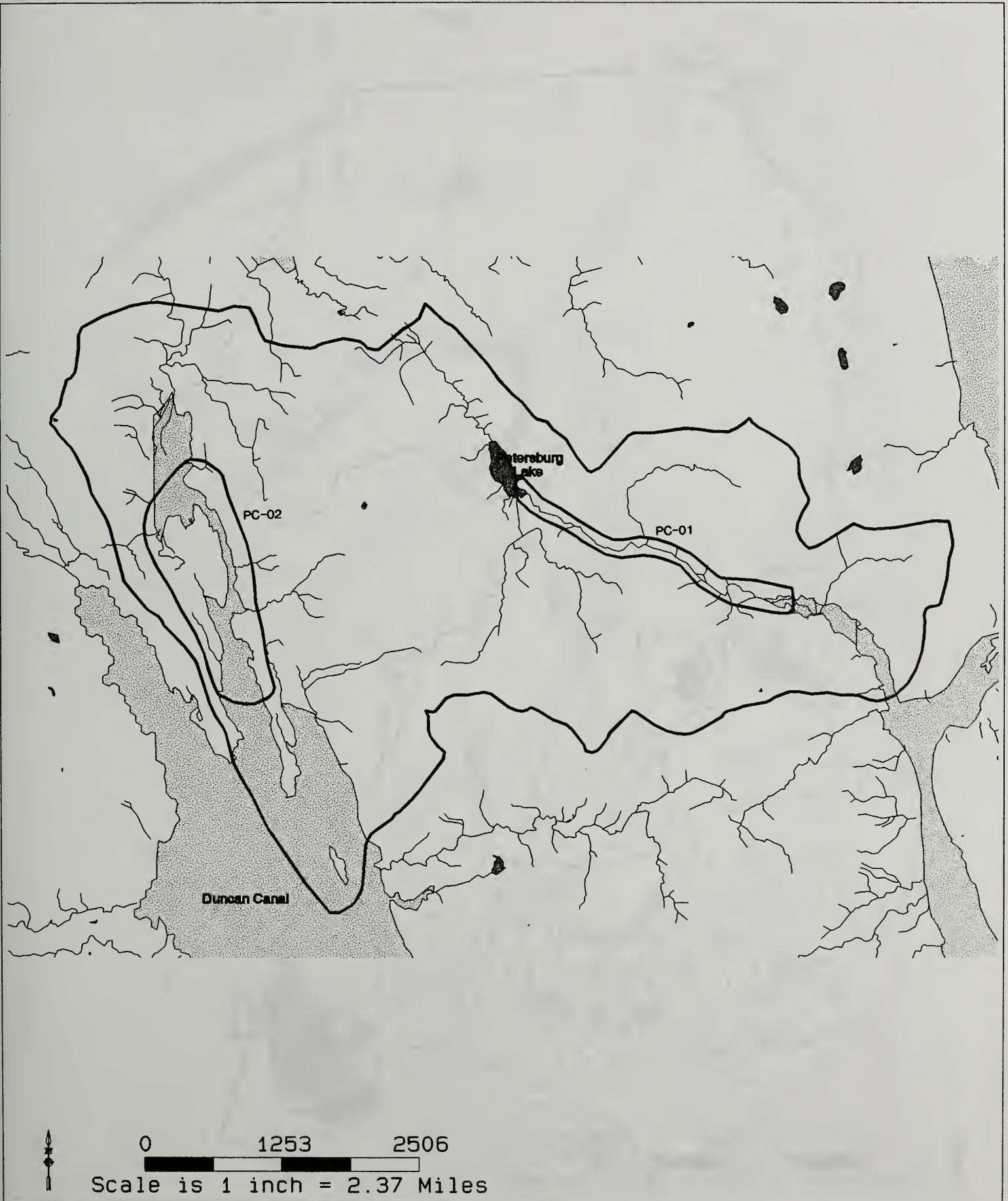


2 Alternatives

Map 2-15. Misty Fiords National Monument Wilderness (south)

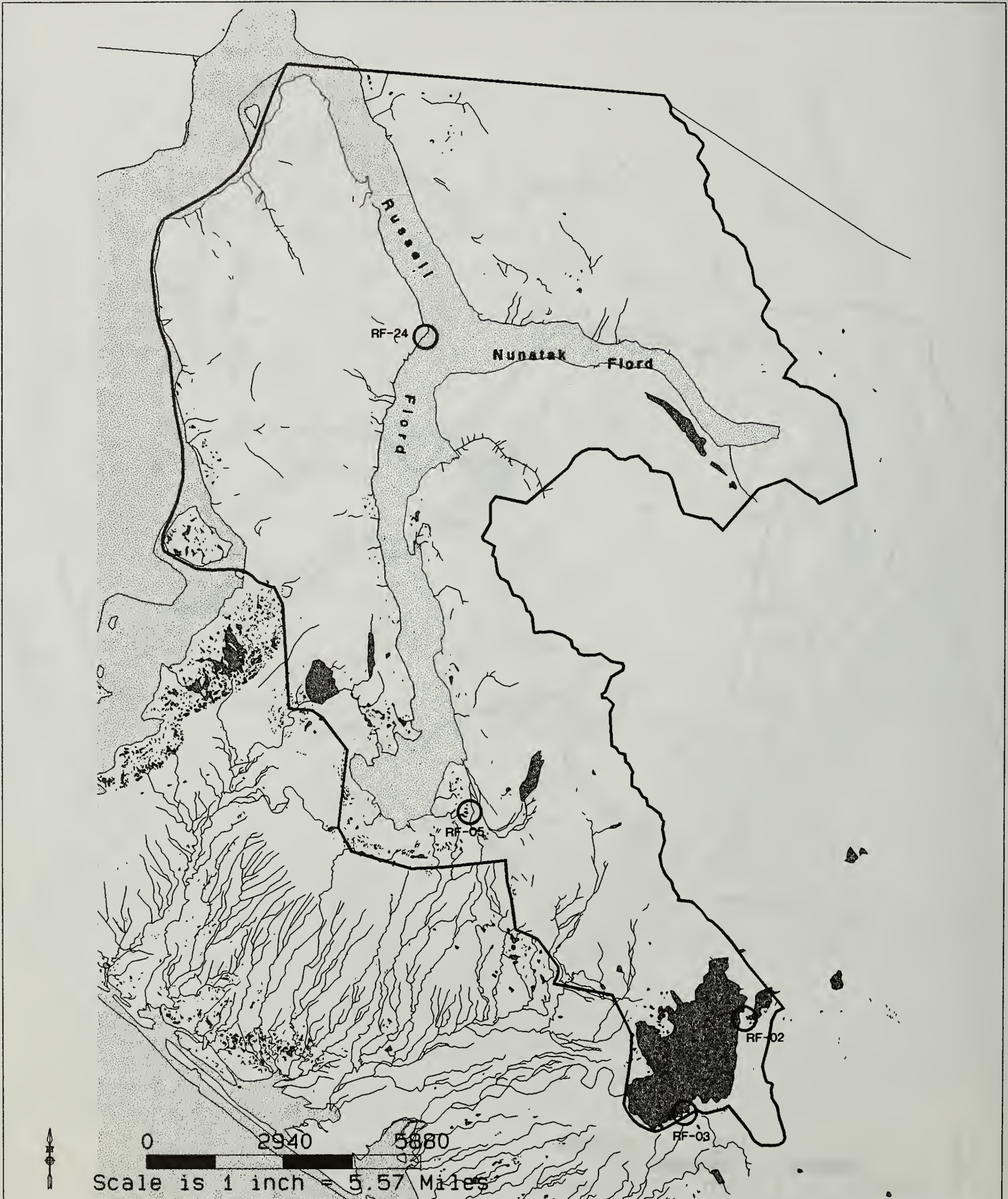


Map 2-16. Petersburg Creek-Duncan Salt Chuck Wilderness

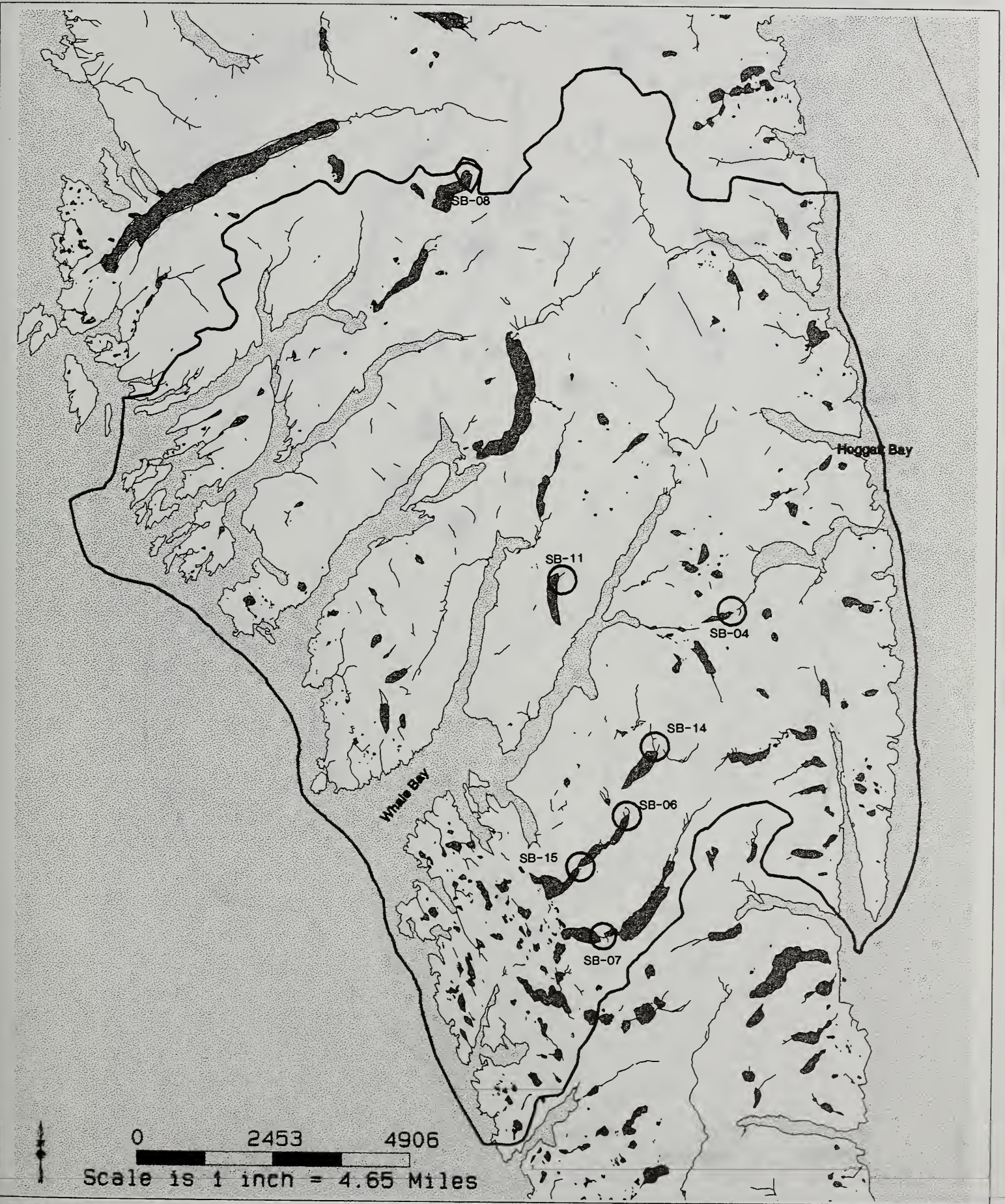


2 Alternatives

Map 2-17. Russell Fiord Wilderness

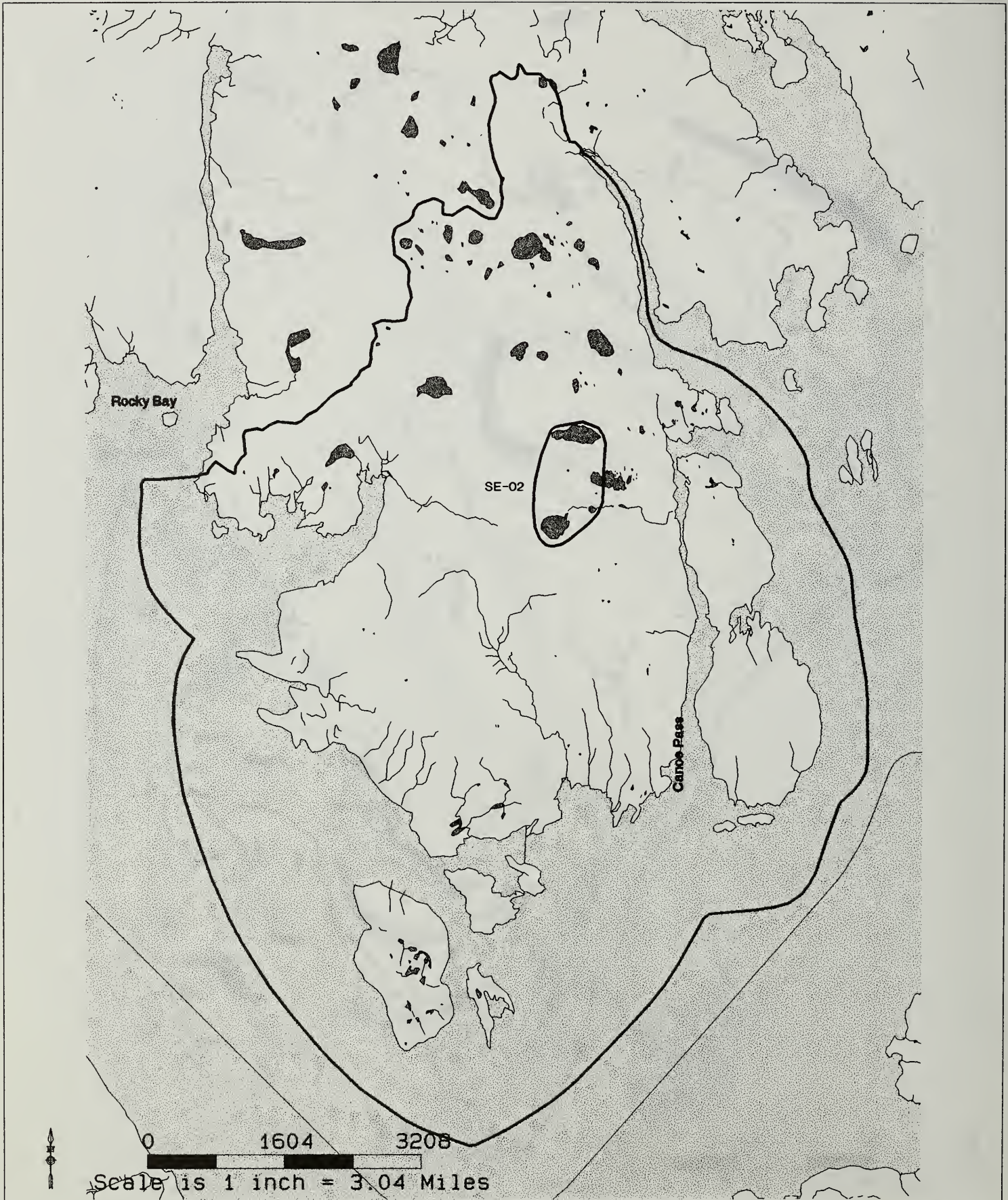


Map 2-18. South Baranof Wilderness



2 Alternatives

Map 2-19. South Etolin Wilderness

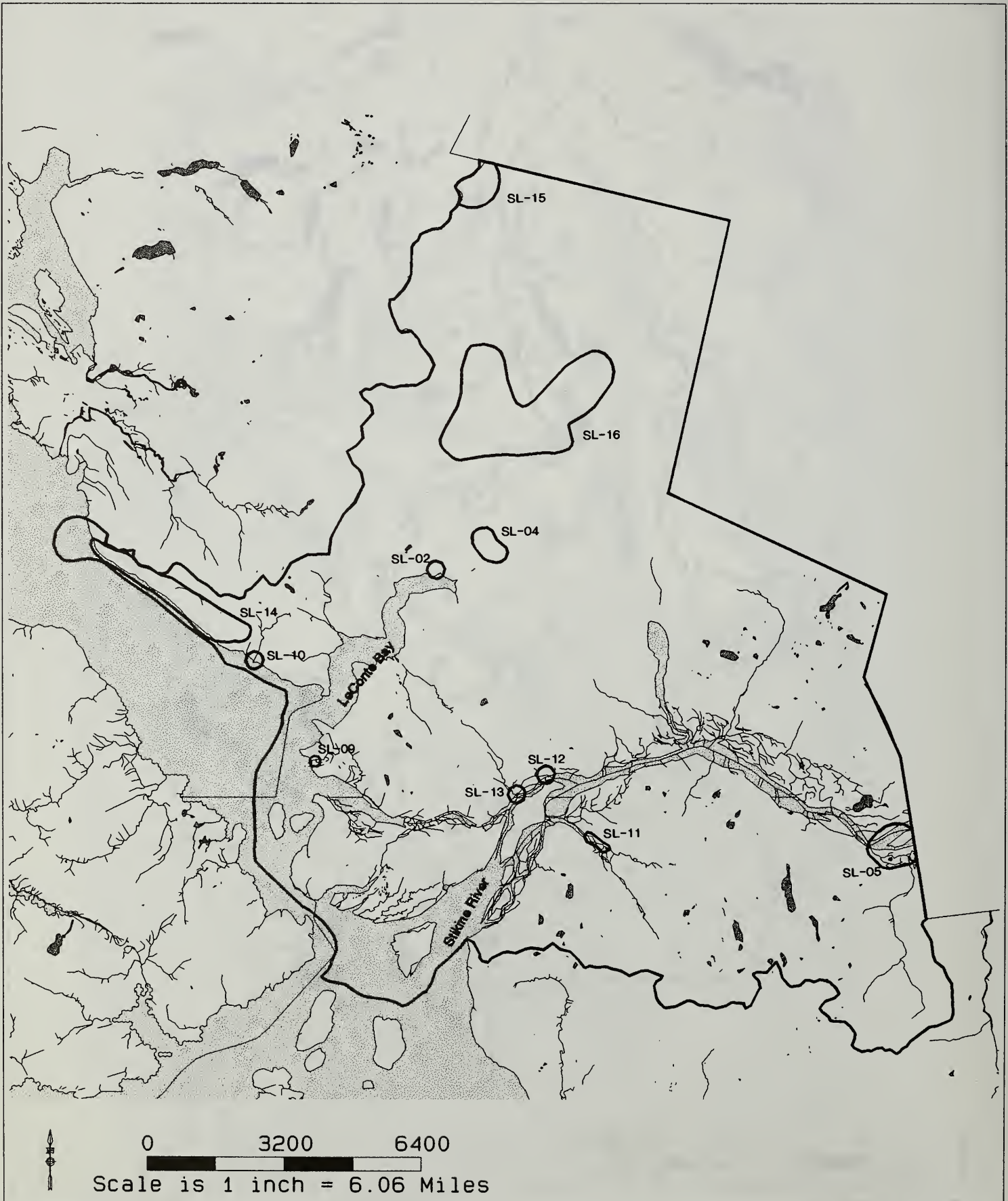


Map 2-20. South Prince of Wales Wilderness

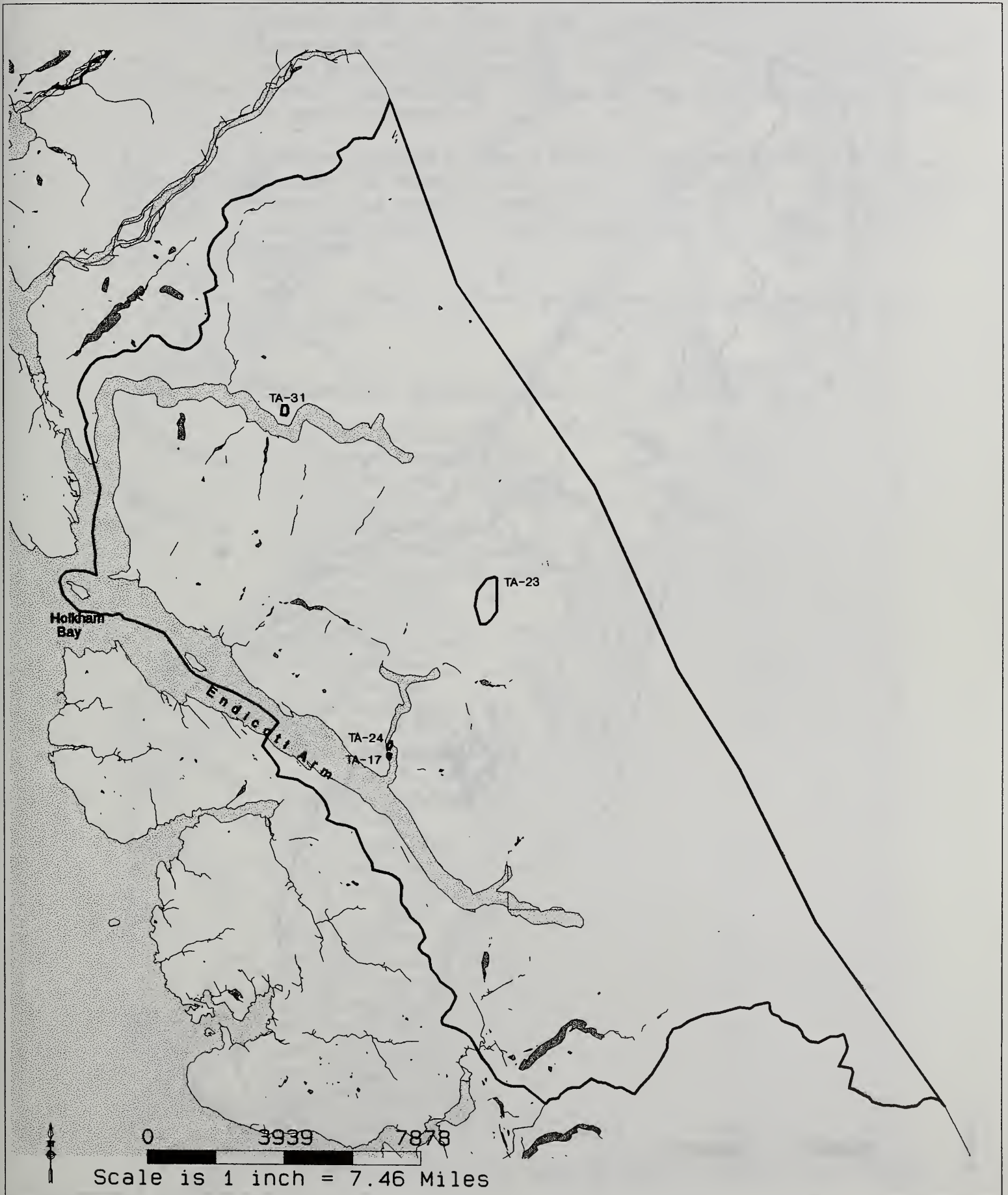


2 Alternatives

Map 2-21. Stikine-LeConte Wilderness

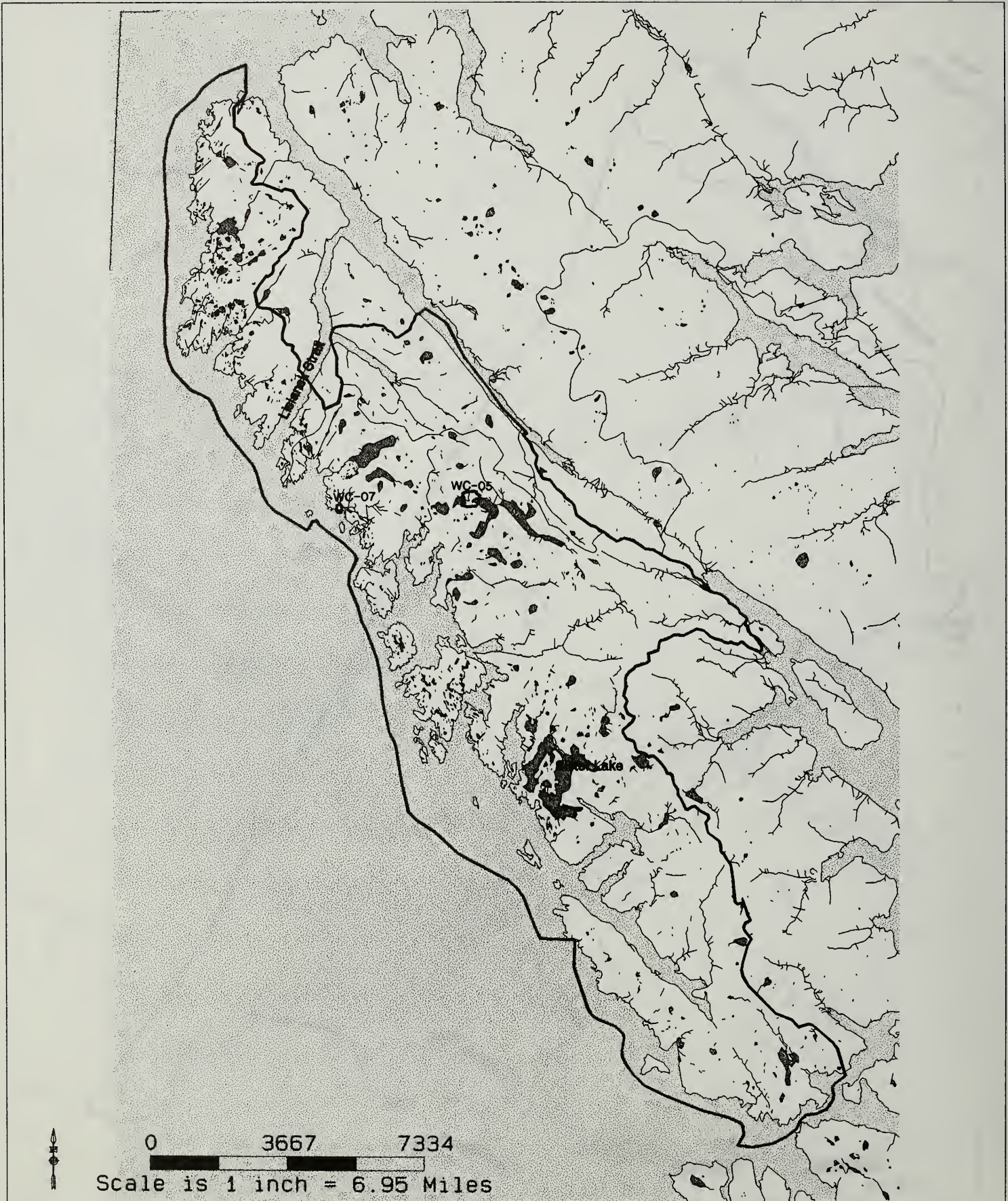


Map 2-22. Tracy Arm-Fords Terror Wilderness



2 Alternatives

Map 2-23. West Chichagof Wilderness



Alternative 4

Alternative 4 would authorize 38 helicopter access areas (Maps 2-24 to 2-31) providing general public access to developed sites within six of the Tongass Wildernesses. All cabin sites with identified past landing use (28), five shelters and five trail heads would be designated for helicopter landings (see Table 2-4). Cabin site landings would require cabin permits to minimize conflicts with other cabin users. There would be no limit on the number of cabin site landings. Landings at other access areas would be limited to historical use levels as in Alternative 2.

Alternative 4 addresses the issues of Wilderness, access, cultural resources, wildlife and recreation. This alternative provides access to recreation facilities. Wilderness character is maintained in its current condition for most of the Wildernesses since use is limited and remote sites are unaffected. Potential effects to wildlife and cultural resources are minimized.

Table 2-4. Alternative 4 proposed helicopter access areas and maximum number of landings/year.

<u>Wilderness Name - Access Area #/Name</u>	<u>Maximum Number of Landings/Year</u>
<u>Kootznoowoo (Admiralty Island)</u>	
KO-02 South Young Lake Cabin	250
KO-03 North Young Lake Cabin	250
KO-18 Lake Kathleen	250
KO-20 Windfall Harbor	5
KO-22 West Florence Lake Cabin	250
KO-23 East Florence Lake Cabin	250
KO-25 Thayer Lake	5
KO-28 Hasselborg Lake	250
KO-29 Hasselborg Lake	250
KO-32 Distin Lake	250
KO-33 Distin Lake	250
KO-34 Davidson Lake	5
KO-35 Lake Alexander	250
KO-36 Lake Alexander	5
KO-38 Jims Lake Cabin	250
KO-46 Gambier Bay	250
<u>Misty Fiords</u>	
MF-39 S. Wilson Lake	250
MF-57 Humpback	250
MF-98 East Lake Grace	5
MF-104 W. Manzanita Lake	250
MF-105 Manzanita Lake	5
MF-107 S. Manzanita Lake	250
MF-110 Ella Bay	5
MF-114 Punchbowl	5
MF-117 Big Goat Lake	250
MF-118 Wilson Lake	250
MF-154 Hugh Smith Cabin	250
MF-179 Manzanita Bay	5
<u>Petersburg Creek/Duncan Salt Chuck</u>	
PC-01 Petersburg Creek	250
PC-02 East Salt Chuck Cabin	250

2 Alternatives

Table 2-4 continued

<u>Wilderness Name - Access Area #/Name</u>	<u>Maximum Number of Landings/Year</u>
<u>South Baranof</u>	
SB-06 Lake Plotnikof Cabin	250
SB-11 Avoss Lake Cabin	250
SB-14 Davidoff Lake Cabin	250
<u>Stikine LeConte</u>	
SL-05 Red Slough	250
SL-09 Mallard Slough Cabin	250
SL-12 Twin Lakes Cabin	250
<u>West Chichagof-Yakobi</u>	
WC-05 Goulding Lake	250
WC-07 White Sulphur	250
TOTAL	7,295

Map 2-24. Kootznoowoo Wilderness (north)



2 Alternatives

Map 2-25. Kootznoowoo Wilderness (south)



Map 2-26. Misty Fiords National Monument Wilderness (north)

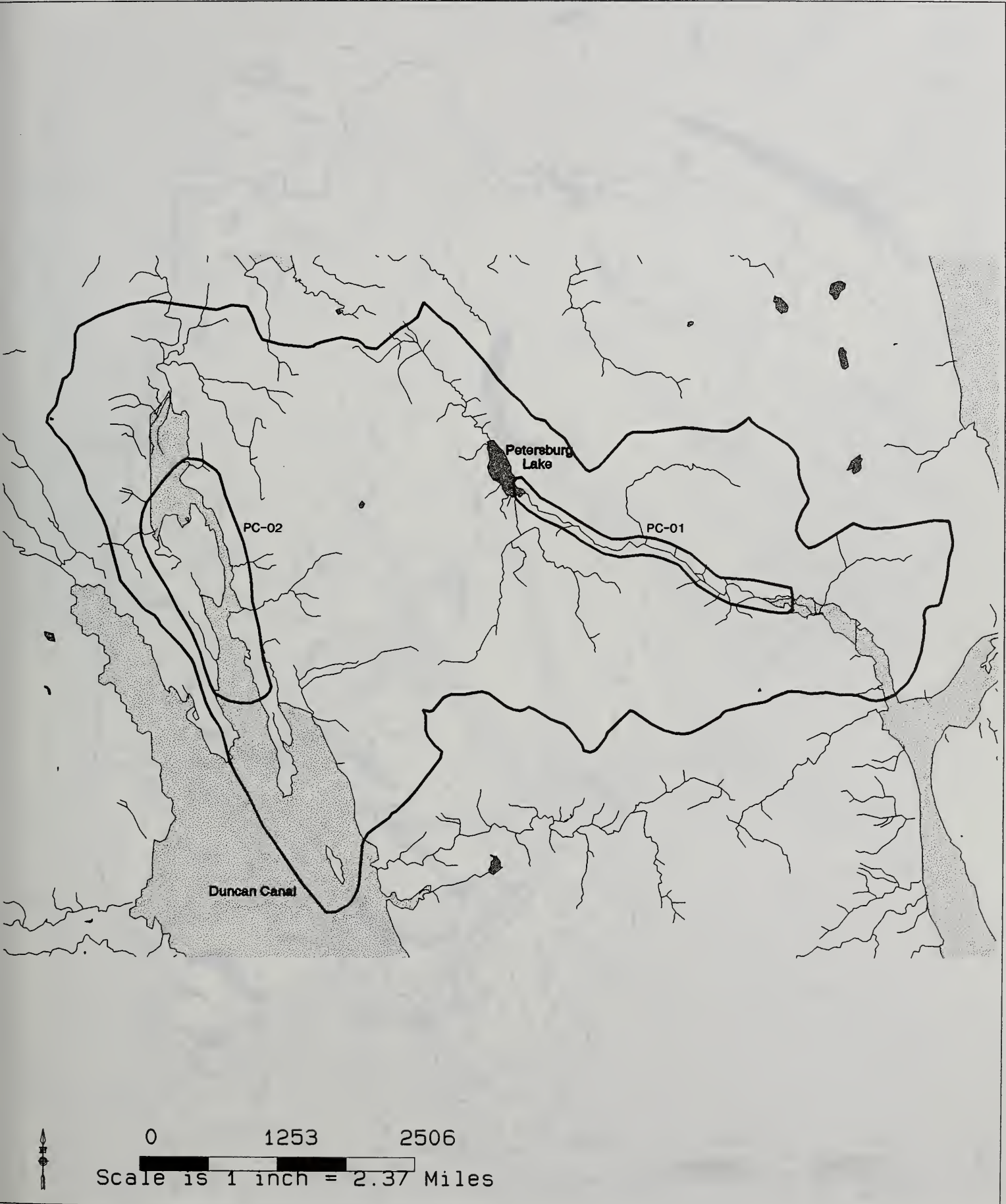


2 Alternatives

Map 2-27. Misty Fiords National Monument Wilderness (south)

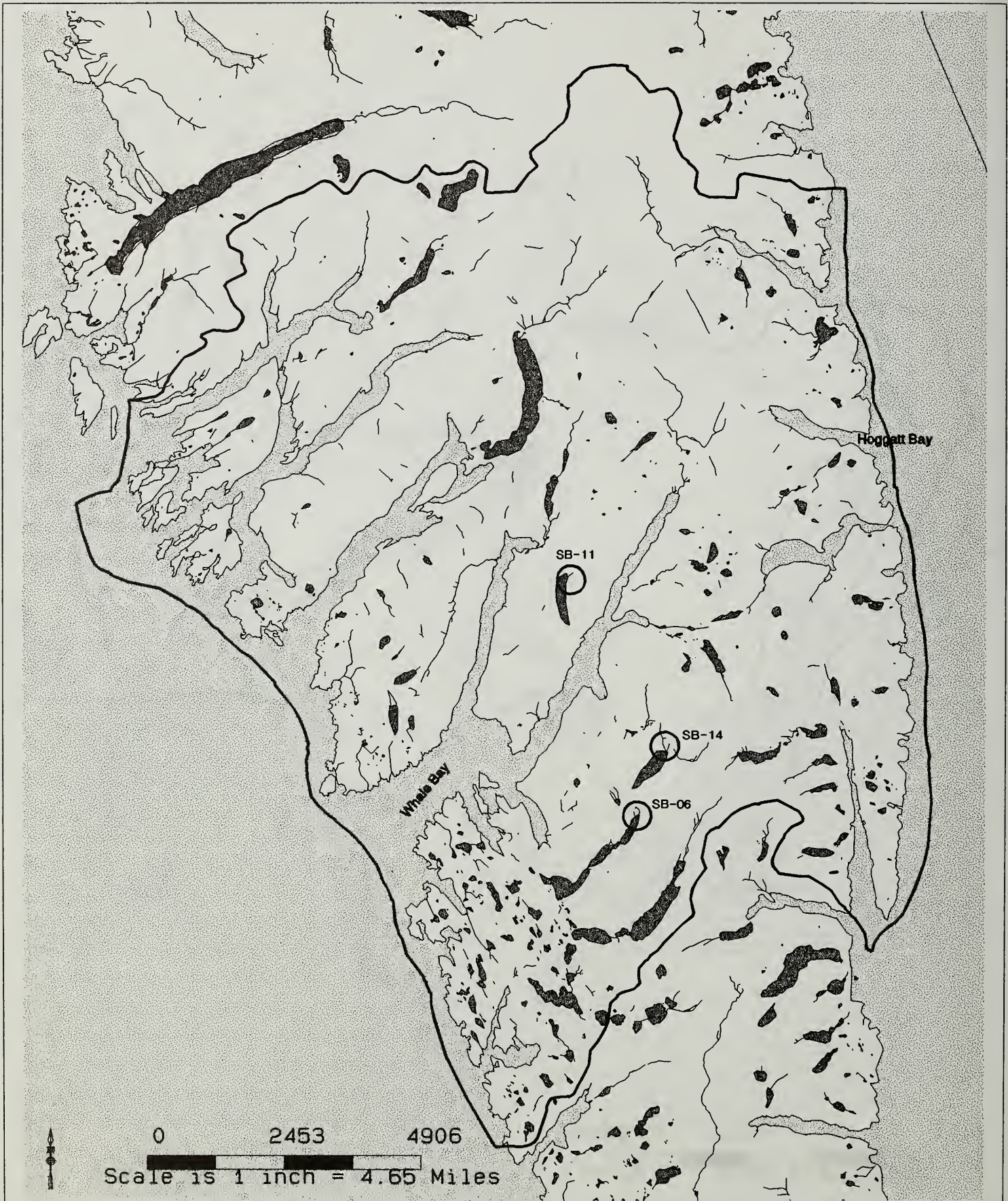


Map 2-28. Petersburg Creek-Duncan Salt Chuck Wilderness



2 Alternatives

Map 2-29. South Baranof Wilderness

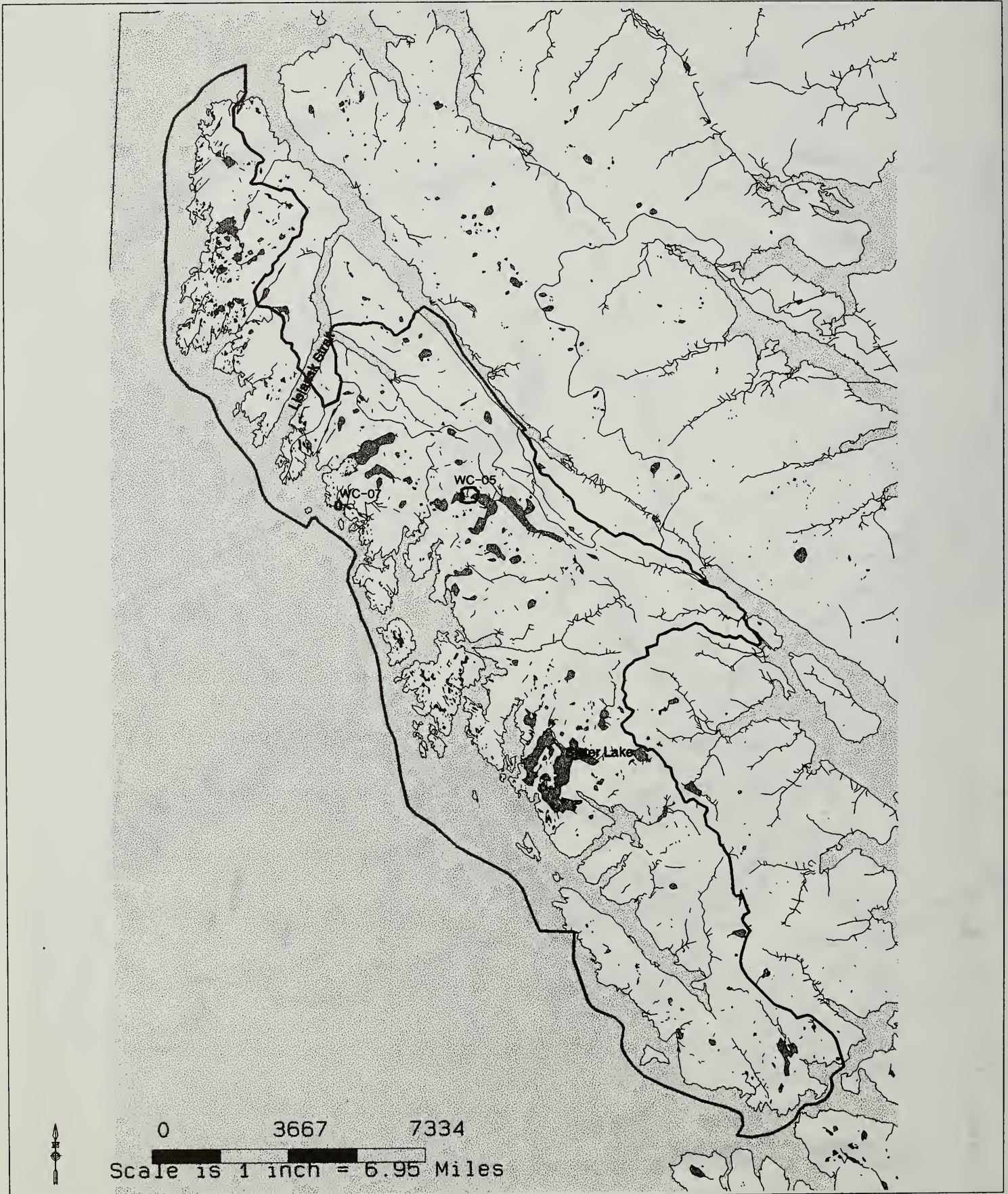


Map 2-30. Stikine-LeConte Wilderness



2 Alternatives

Map 2-31. West Chichagof Wilderness



Helicopters Landings in
Wilderness Draft EIS

Alternative 5

Alternative 5 (Maps 2-32 to 2-38) would authorize 31 helicopter access areas in very remote locations with no other motorized access. No other motorized access was defined by the planning team as being at least one-half day's walk from a location accessible by motorboat, airplane or vehicle. The one-half day walk was based upon the collective judgement of the planning team.

Most of Alternative 5's access areas are within large Wildernesses including Kootznoowoo (Admiralty Island), Misty Fiords National Monument and Stikine-LeConte. Four access areas are within the Endicott River Wilderness and two access areas are within Tracy Arm-Fords Terror Wilderness. As in Alternatives 3B and 4, the number of helicopter landings per access area would be limited to the historical use documented in helicopter operator affidavits (see Table 2-5).

Alternative 5 addresses the issues of Wilderness, access, recreation and subsistence. This alternative provides access for persons seeking remote recreation experiences. Some protection of the existing Wilderness character is provided at areas already used by not encouraging additional use. Remote locations are areas where cultural resources and subsistence use are not expected.

Table 2-5. Alternative 5 proposed helicopter access areas and maximum number of landings/year.

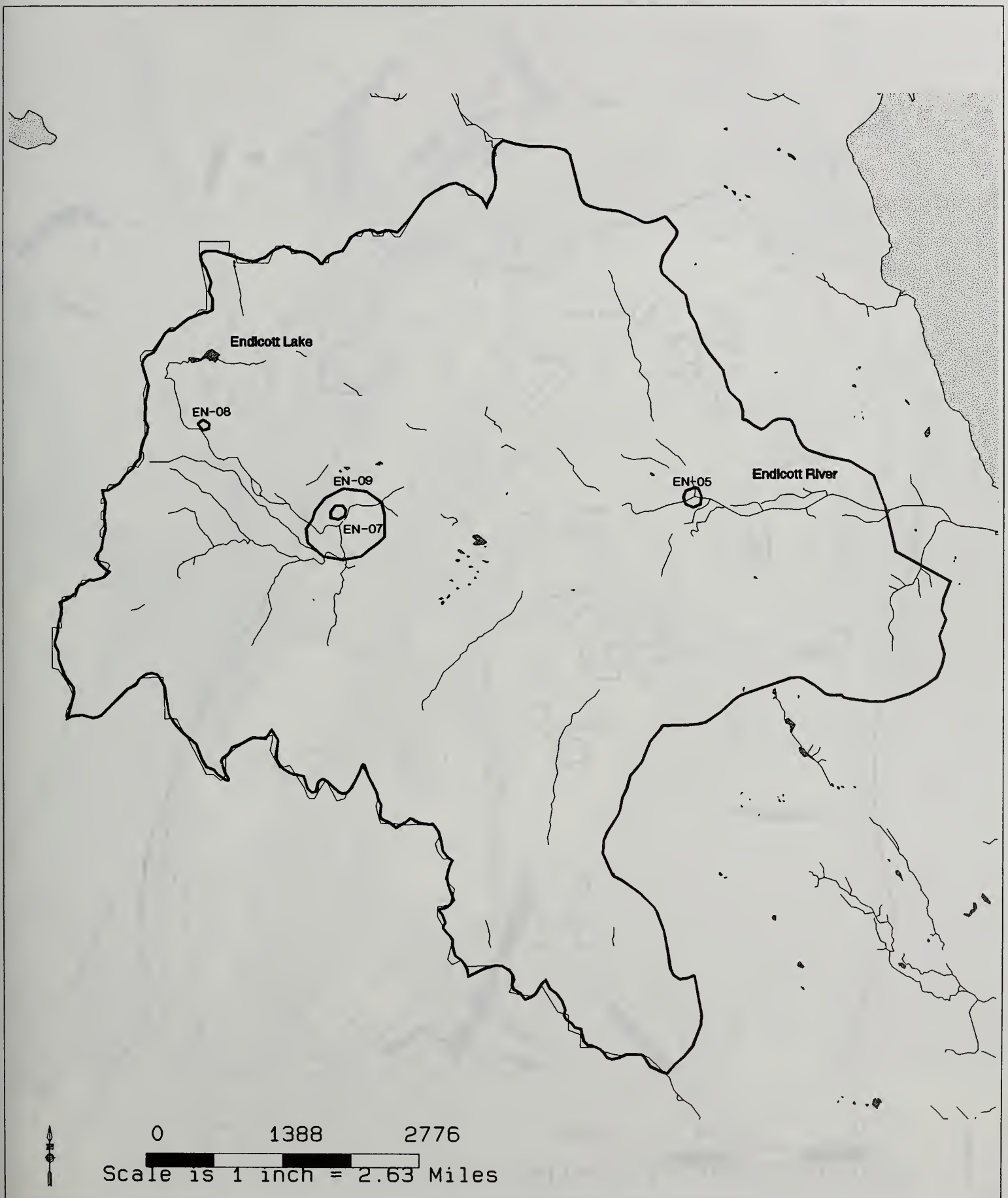
<u>Wilderness Name - Access Area #/Name</u>	<u>Maximum Number of Landings/Year</u>
<u>Endicott River</u>	
EN-05 Endicott River	25
EN-07 Central Plateau #2	25
EN-08 South end of Lake	25
EN-09 Central Plateau #3	5
<u>Kootznoowoo (Admiralty Island)</u>	
KO-05 Central Ridges	5
KO-69 Young Lake Ridge	25
KO-70 Eagle Peak	25
KO-71 N. Kathleen Lake	25
KO-72 N. Pack Creek	25
KO-73 W. Pack Creek	25
KO-74 S. Pack Creek	25
KO-75 W. Hasselborg	25
<u>Misty Fiords National Monument</u>	
MF-03 Unuk River	5
MF-07 S. Grant Creek	5
MF-22 King Creek	5
MF-71 1st Unuk Canyon	5
MF-72 Unuk River	5
MF-74 Lake Creek	5
MF-89 King Creek	5
MF-90 Mt. Hayford	5
MF-92 Walker Lake Mountain	5
MF-96 Upper Portage Creek	5
MF-119 Wilson River	5
MF-134 Dome Creek	5
MF-162 Bower Creek	5
MF-173 Unuk River	5

2 Alternatives

Table 2-5 continued

<u>Wilderness Name - Access Area #/Name</u>	<u>Maximum Number of Landings/Year</u>
<u>Stikine LeConte</u>	
SL-02 N. Shore LeConte Glacier	25
SL-04 LeConte Ice Field	25
SL-16 LeConte Ice Field	5
<u>Tracy Arm-Fords Terror</u>	
TA-23 Ice Fields S. of Sawyer Glacier	25
TA-31 Knob N. of Tracy Arm	25
TOTAL	435

Map 2-32. Endicott River Wilderness



2 Alternatives

Map 2-33. Kootznoowoo Wilderness (north)



Map 2-34. Kootznoowoo Wilderness (south)



2 Alternatives

Map 2-35. Misty Fiords Wilderness (north)



Map 2-36. Misty Fiords Wilderness (south)

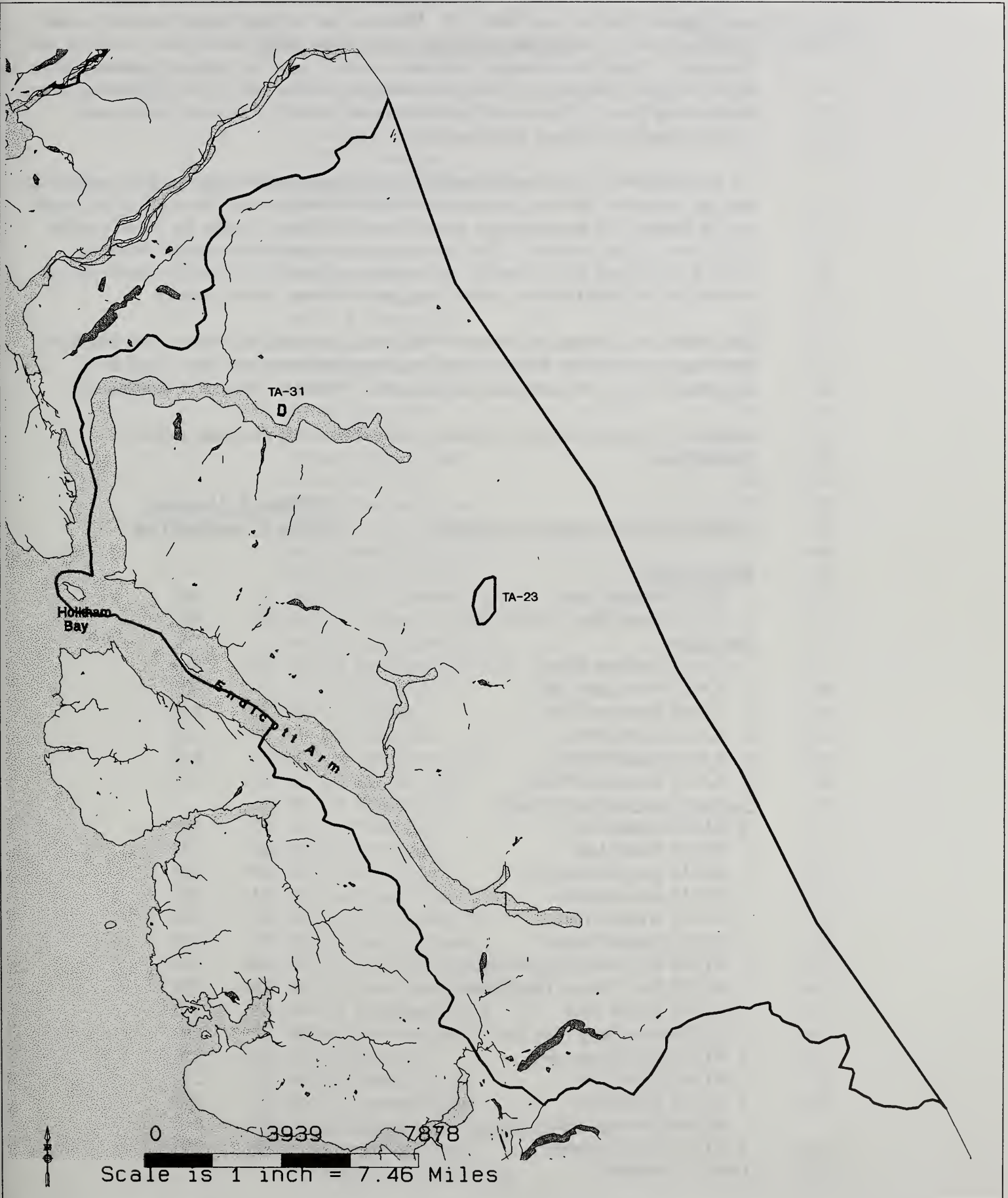


2 Alternatives

Map 2-37. Stikine-LeConte Wilderness



Map 2-38. Tracy Arm-Fords Terror Wilderness



2 Alternatives

Alternative 6

Alternative 6 (Maps 2-39 to 2-52) would authorize 97 helicopter access areas within 12 Wildernesses. This alternative would concentrate helicopter access in areas already receiving motorized use (see Table 2-6). Motorized use includes having motorized access (within one-half day walk from motorized access) and/or being located under a heavily used flight path. Under this alternative, helicopters would be used for continued general public access to cabins, shoreline areas and areas under flight paths such as the flight-seeing routes within Misty Fiords. There would be no helicopter landings in the more remote areas which currently do not have motorized access or use.

As in Alternative 3A, Alternative 6 would limit the number of landings to three landings per day per access area for those access areas within the Primitive ROS class (40 access areas) and six landings per day per access area for those access areas within the Semi-Primitive ROS classes (57 access areas). The three access areas classified as Roded Modified (KO-18, KO-22 and KO-23) and the one access area classified as Roded Natural (SL-12) are included as Semi-Primitive as that would be the desired future condition.

This alternative addresses the issues of Wilderness, access and recreation. This alternative provides access to places already reached or affected by motorized uses. There is no expansion of areas with motorized use; therefore, Wilderness character is maintained.

Table 2-6. Proposed helicopter access areas, ROS class and maximum number of landings/year.

<u>Wilderness Name - Access Area #/Name</u>	<u>ROS Class & Maximum Number of Landings/Year</u>	
<u>Endicott River</u>		
EN-02 Endicott Lake	P	405
EN-10 Lower River - Gravel Bed	SP	810
<u>Karta River</u>		
KA-02 Andersen Creek	SP	810
KA-03 Black Bear Lake	P	405
KA-07 Northeast Karta	SP	810
KA-08 Karta Creek	SP	810
KA-09 Flagstaff Creek	SP	810
KA-13 Karta Lake North	SP	810
<u>Kootznoowoo (Admiralty Island)</u>		
KO-02 Young Lake	SP	250
KO-03 Young Lake	SP	250
KO-15 King Salmon River	SP	810
KO-18 Lake Kathleen	RM	250
KO-20 Windfall Harbor	SP	810
KO-21 Windfall Harbor	SP	810
KO-22 West Florence Lake Cabin	RM	250
KO-23 East Florence Lake Cabin	RM	250
KO-25 Thayer Lake	SP	810
KO-28 Hasselborg Lake	SP	250
KO-29 Hasselborg Lake	SP	250
KO-32 Distin Lake	SP	250
KO-33 Distin Lake	SP	250
KO-34 Davidson Lake	SP	810
KO-35 Lake Alexander	SP	250

Table 2-6 continued

Table 2-6 continued

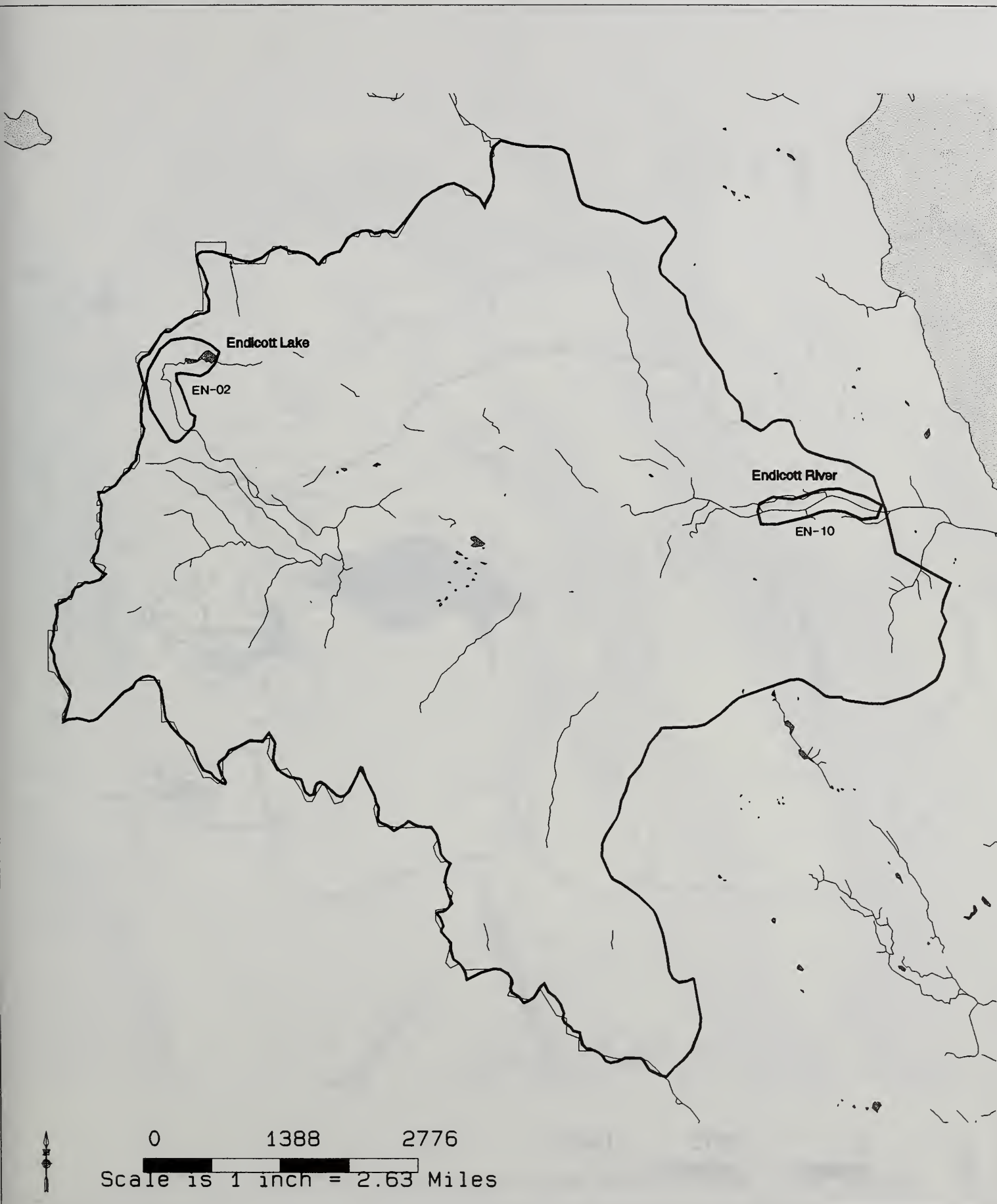
<u>Wilderness Name - Access Area #/Name</u>	<u>ROS Class & Maximum Number of Landings/Year</u>	
KO-36 Lake Alexander	SP	810
KO-38 Jims Lake Cabin	SP	250
KO-46 Gambier Bay	P	250
KO-79 S. Hasselborg	SP	810
<u>Misty Fiords National Monument</u>		
MF-17 Leduc Lake	P	405
MF-20 Orchard Creek	P	405
MF-31 Lake Grace	P	405
MF-33 N. Mirror Lake	P	405
MF-34 S. Manzanita	P	405
MF-35 S. Mirror Lake	SP	810
MF-36 Ella Lake	SP	810
MF-38 Big Goat Lake	SP	810
MF-39 S. Wilson Lake	P	250
MF-40 Steep Point	P	405
MF-41 Winstanley Lake	P	405
MF-46 Bakewell Lake	P	405
MF-50 Bass Point	SP	810
MF-56 Humpback Lake	P	405
MF-57 Humpback	P	250
MF-91 East Walker Lake	P	405
MF-98 East Lake Grace	P	405
MF-104 W. Manzanita Lake	P	250
MF-105 Manzanita Lake	P	405
MF-107 S. Manzanita Lake	P	250
MF-108 East Manzanita Lake	P	405
MF-109 Mirror Lake	P	405
MF-110 Ella Bay	SP	810
MF-114 Punchbowl	SP	810
MF-116 Little Goat Lake	SP	810
MF-117 Big Goat Lake	SP	250
MF-118 Wilson Lake	P	250
MF-124 Wasp Cove	P	405
MF-125 Third Lake	SP	810
MF-131 Mesa Lake	P	405
MF-144 Weasel Creek	P	405
MF-145 West Quadra Creek	P	405
MF-146 Boca de Quadra	P	405
MF-154 Hugh Smith Cabin	P	250
MF-160 Lower Humpback Creek	P	405
MF-161 Humpback Creek	P	405
MF-166 Mid Humpback Creek	P	405
FM-167 Billy Goat	P	405
MF-168 Peninsula Lake	P	405
MF-179 Manzanita Bay	P	405
<u>Petersburg Creek-Duncan Salt Chuck</u>		
PC-01 Petersburg Creek	P	250
PC-02 East Salt Chuck Cabin	P	250

2 Alternatives

Table 2-6 continued

<u>Wilderness Name - Access Area #/Name</u>	<u>ROS Class & Maximum Number of Landings/Year</u>	
<u>Russell Fiord</u>		
RF-02 Harlequin Lake	SP	810
RF-03 Harlequin Lake	SP	810
RF-05 Beasley Creek - Upper	SP	810
RF-24 Cape Enchantment	P	405
<u>South Baranof</u>		
SB-04 Lake above Gut Bay	SP	810
SB-06 Lake Plotnikof Cabin	SP	250
SB-07 Rezanof Lake	SP	810
SB-08 Lake Diana	SP	810
SB-11 Avoss Lake Cabin	SP	250
SB-14 Davidoff Lake Cabin	SP	250
SB-15 Mid-Plotnikof Lake	SP	810
<u>South Etolin</u>		
SE-02 South Etolin Lakes	SP	810
<u>South Prince of Wales</u>		
S-03 N. Klakas Lake	P	405
S-20 Hessa Island	P	405
<u>Stikine LeConte</u>		
SL-02 North Shore LeConte Glacier	SP	810
SL-04 LeConte Glacier (near bay)	SP	810
SL-05 Red Slough	SP	250
SL-09 Mallard Slough Cabin	SP	250
SL-10 Jap Creek	SP	810
SL-11 Andrews Slough	SP	810
SL-12 Twin Lakes Cabin	RN	250
SL-13 North Arm Creek	SP	810
SL-14 Horn Cliffs	SP	810
SL-16 Upper LeConte Ice Field	P	405
<u>Tracy Arm/Fords Terror</u>		
TA-17 Fords Terror (Penin)	SP	810
TA-24 Fords Terror, North	SP	810
<u>West Chichagof-Yakobi</u>		
WC-05 Goulding Lake	SP	250
WC-07 White Sulphur	SP	250
TOTAL		49,775

Map 2-39. Endicott River Wilderness



2 Alternatives

Map 2-40. Karta River Wilderness



Map 2-41. Kootznoowoo Wilderness (north)

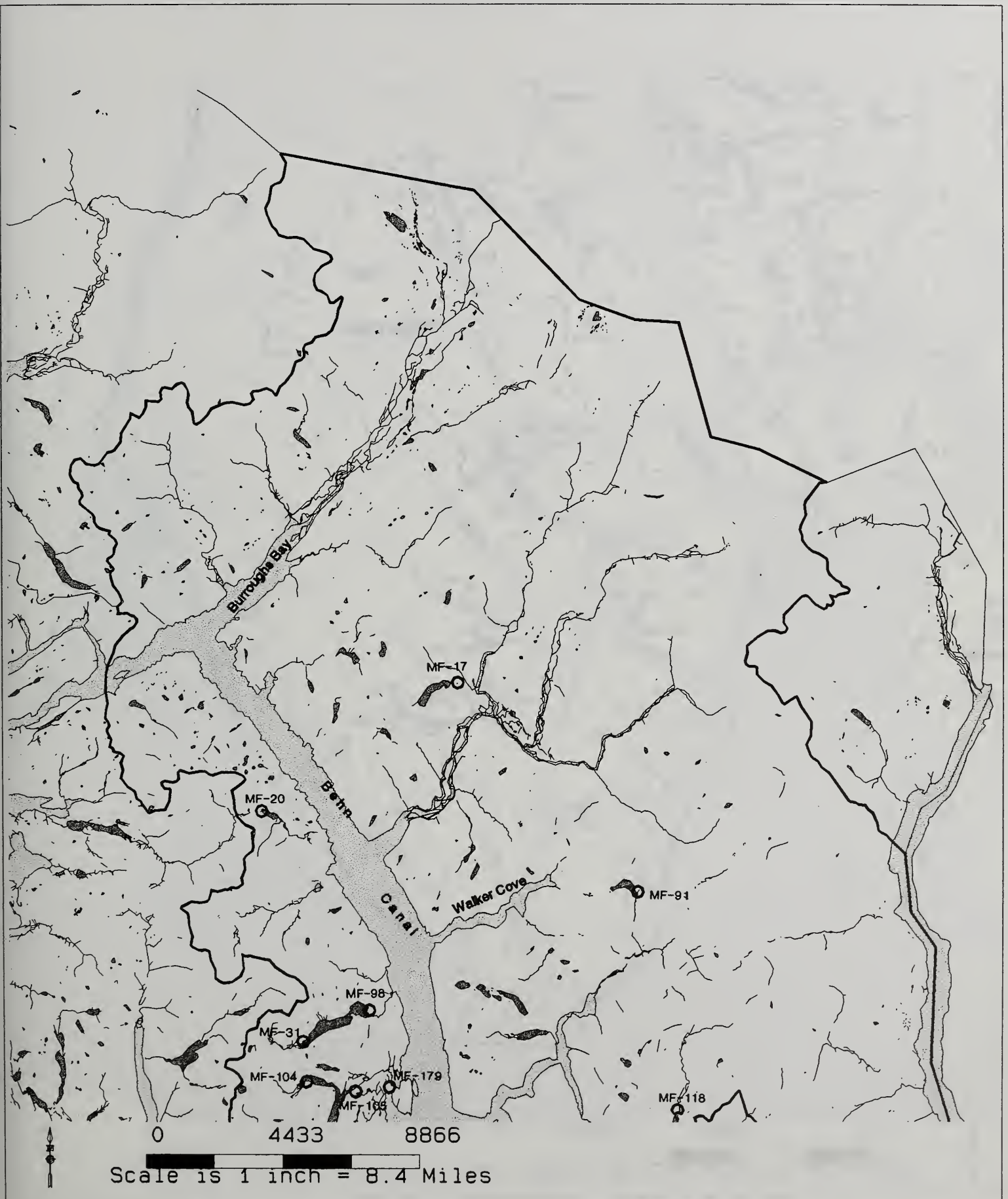


2 Alternatives

Map 2-42. Kootznoowoo Wilderness (south)



Map 2-43. Misty Fiords Wilderness (north)

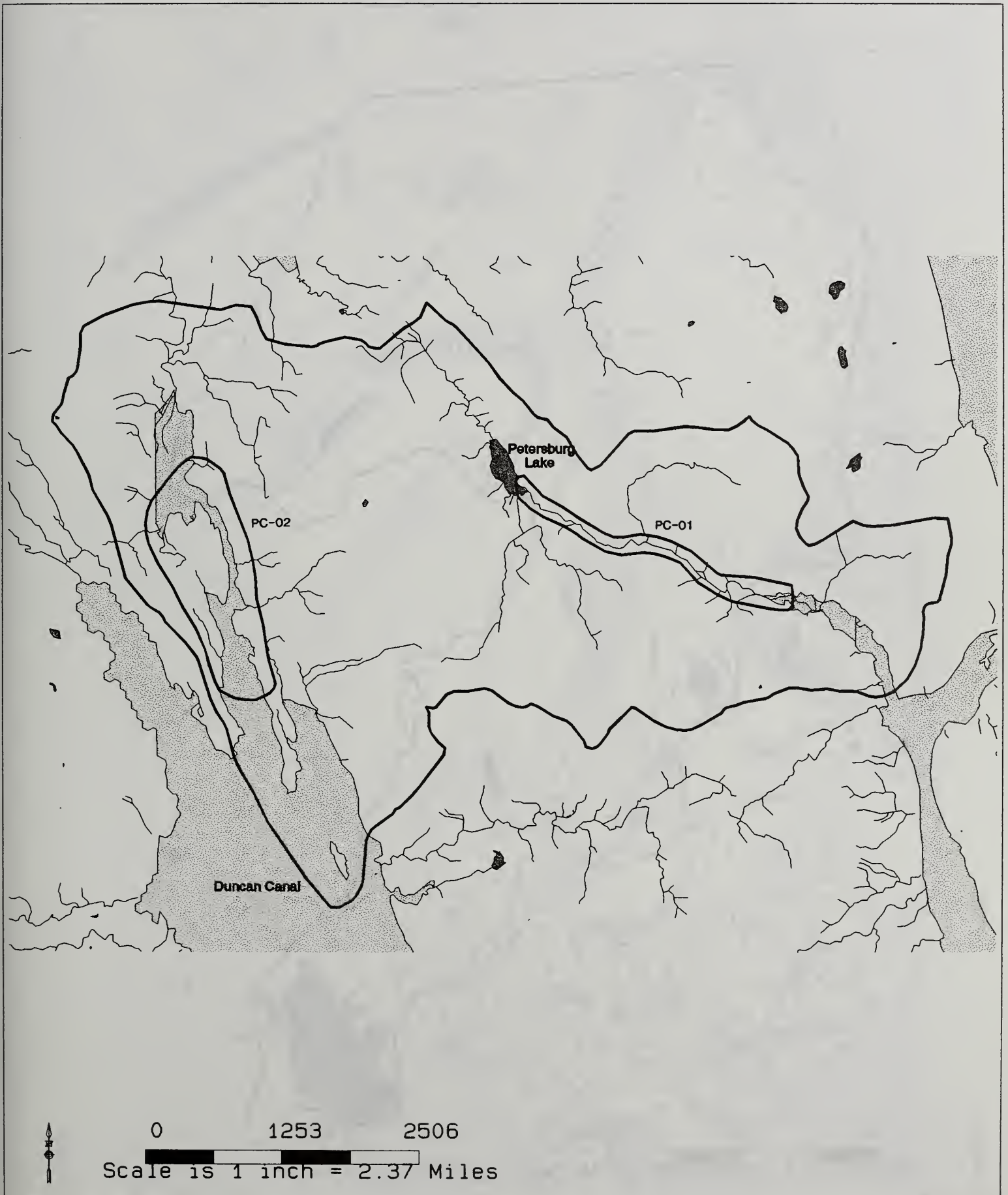


2 Alternatives

Map 2-44. Misty Fiords Wilderness (south)

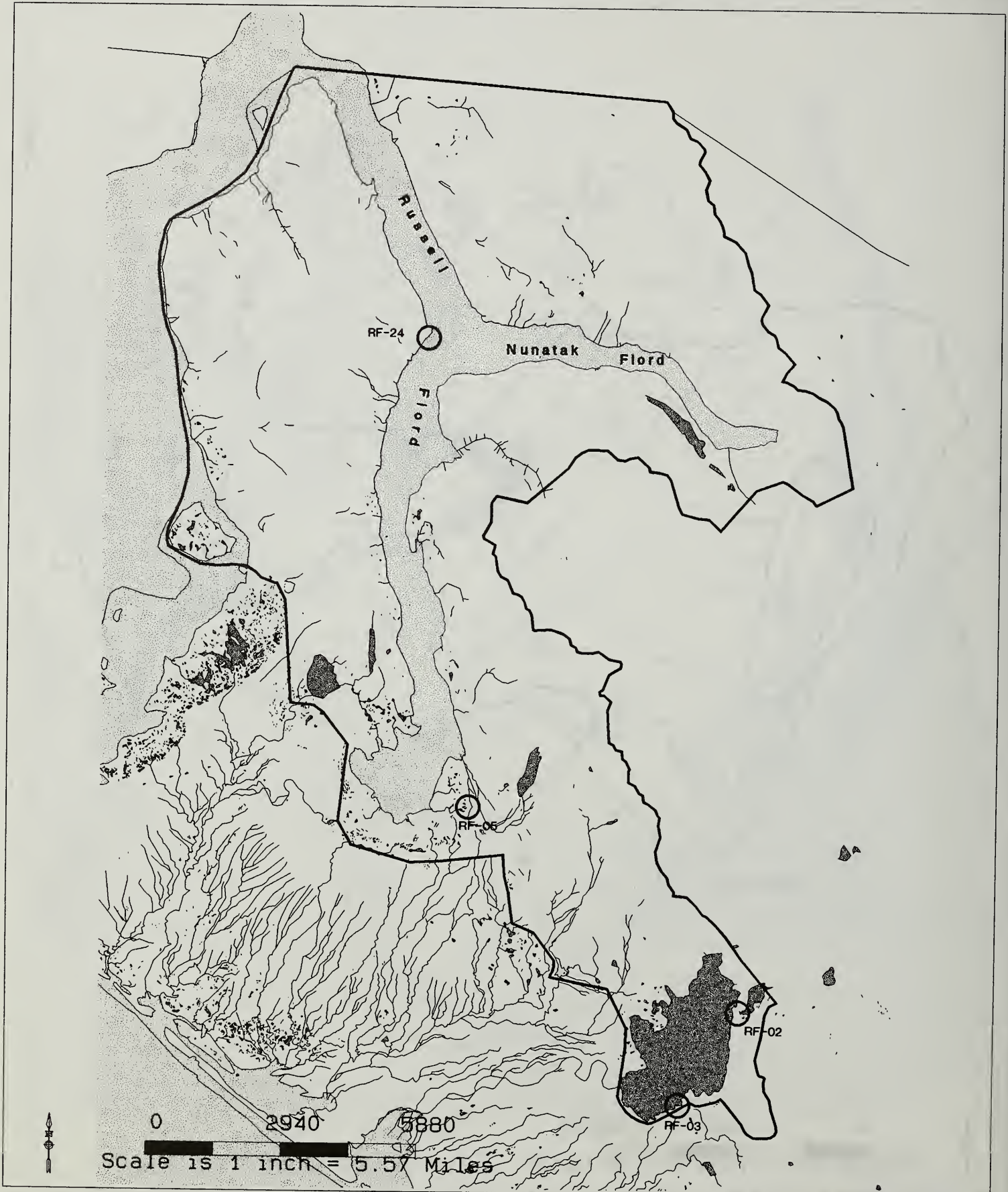


Map 2-45. Petersburg Creek-Duncan Salt Chuck Wilderness



2 Alternatives

Map 2-46. Russell Fiord Wilderness



Map 2-47. South Baranof Wilderness



2 Alternatives

Map 2-48. South Etolin Wilderness



Map 2-49. South Prince of Wales Wilderness

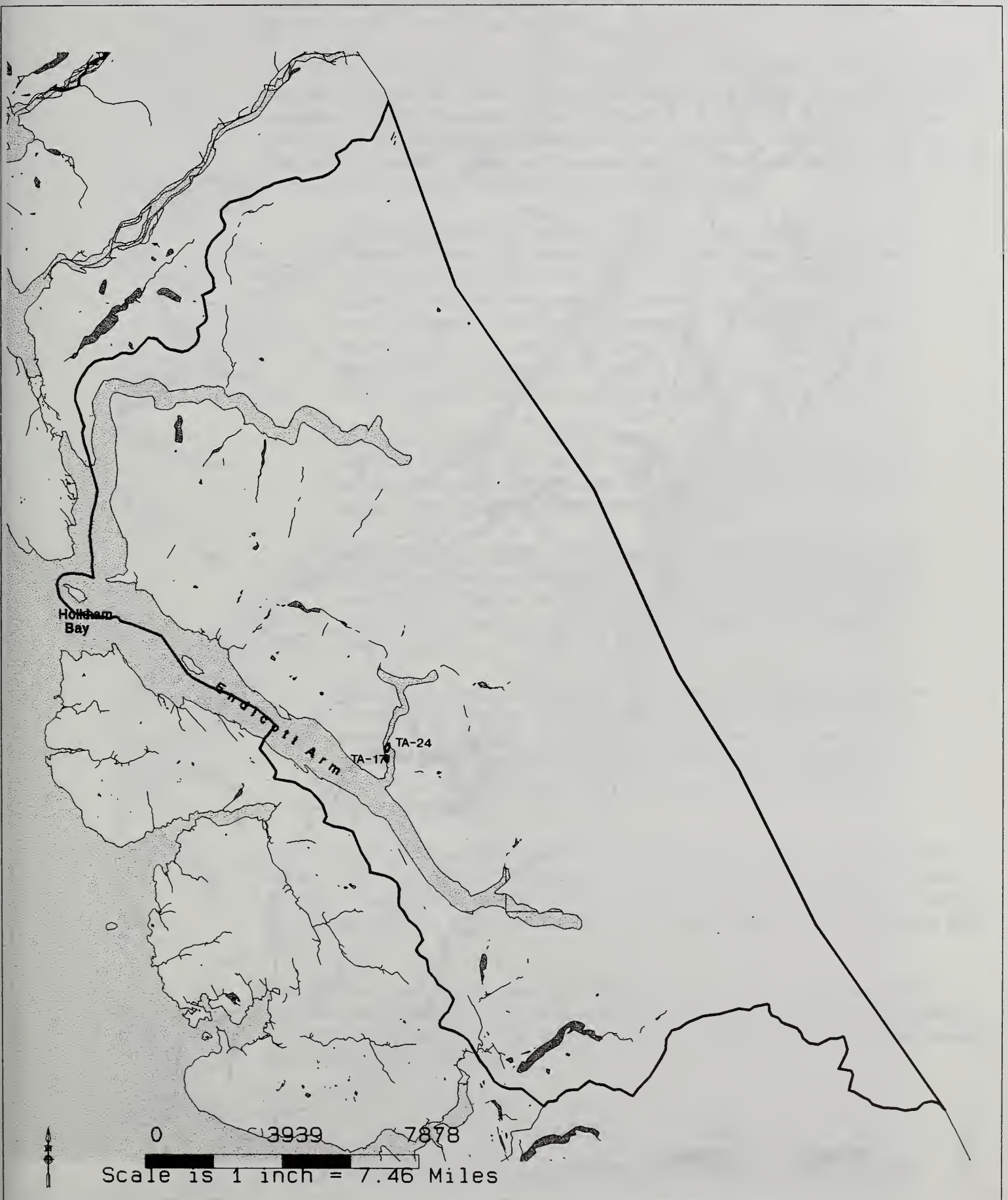


2 Alternatives

Map 2-50. Stikine-LeConte Wilderness



Map 2-51. Tracy Arm-Fords Terror Wilderness



2 Alternatives

Map 2-52. West Chichagof Wilderness



Alternative 7

Alternative 7 (Maps 2-53 and 2-54) is a subset of the access areas in Alternative 5. It only includes those "special" places with no other alternative access. It would have four access areas in two Wildernesses (see Table 2-7).

"Special" places are defined as those helicopter access areas deemed locally (and possibly regionally) unique with a drawing power demonstrated by high past use and/or currently considered of high importance. These are often "one of a kind" locations with special geological or physical (more permanent) attributes (rather than vegetation or wildlife). Proximity to population centers may be a consideration. The "special places" that meet the above definition and are considered in this alternative include:

SL-02 North Shore LeConte Bay - This access area provides a commanding vista 1000' feet above the waters near the head of LeConte Bay. (Other access areas closer to the water were eliminated for use because of their proximity to marine mammal concentrations.) At this location visitors may observe calving of North America's southernmost tide water glacier, numerous harbor seals, mountain goats, and other glacial features. Only 15 air miles east of Petersburg, this area is well visited by flight seeing tours, small cruise ships and outfitter-guides.

SL-04 LeConte Glacier - Only a few miles east of SL-02 this access area is located on the LeConte Glacier near the head of the bay where visitors walk on the ice and view crevasses and carved mountains. Travel to this area provides spectacular views of the glacier.

SL-16 LeConte Ice Field - This expansive ice field offers opportunities for remoteness, solitude and isolation. In addition to sightseeing, this access area offers opportunities for exploration and back country travel. Only 20 miles from Petersburg, this access area is a desirable destination with many attractions.

TA-31 Knob North of Tracy Arm - This access area lies approximately 14 miles into the Tracy Arm of Tracy Arm-Fords Terror Wilderness at an elevation reaching 2,845 feet approximately one linear mile from saltwater. This area provides spectacular panoramic views of Tracy Arm fiord and associated mountains, and the tidewater Sawyer Glacier in a beautiful alpine setting.

No other access areas met the definition of a "special place" without other alternative access. As in Alternative 3A, Alternative 6 would limit the number of landings to three landings a day per access area for the two access areas within the Primitive ROS class and six landings a day per access area for the two access areas within the Semi-Primitive ROS class.

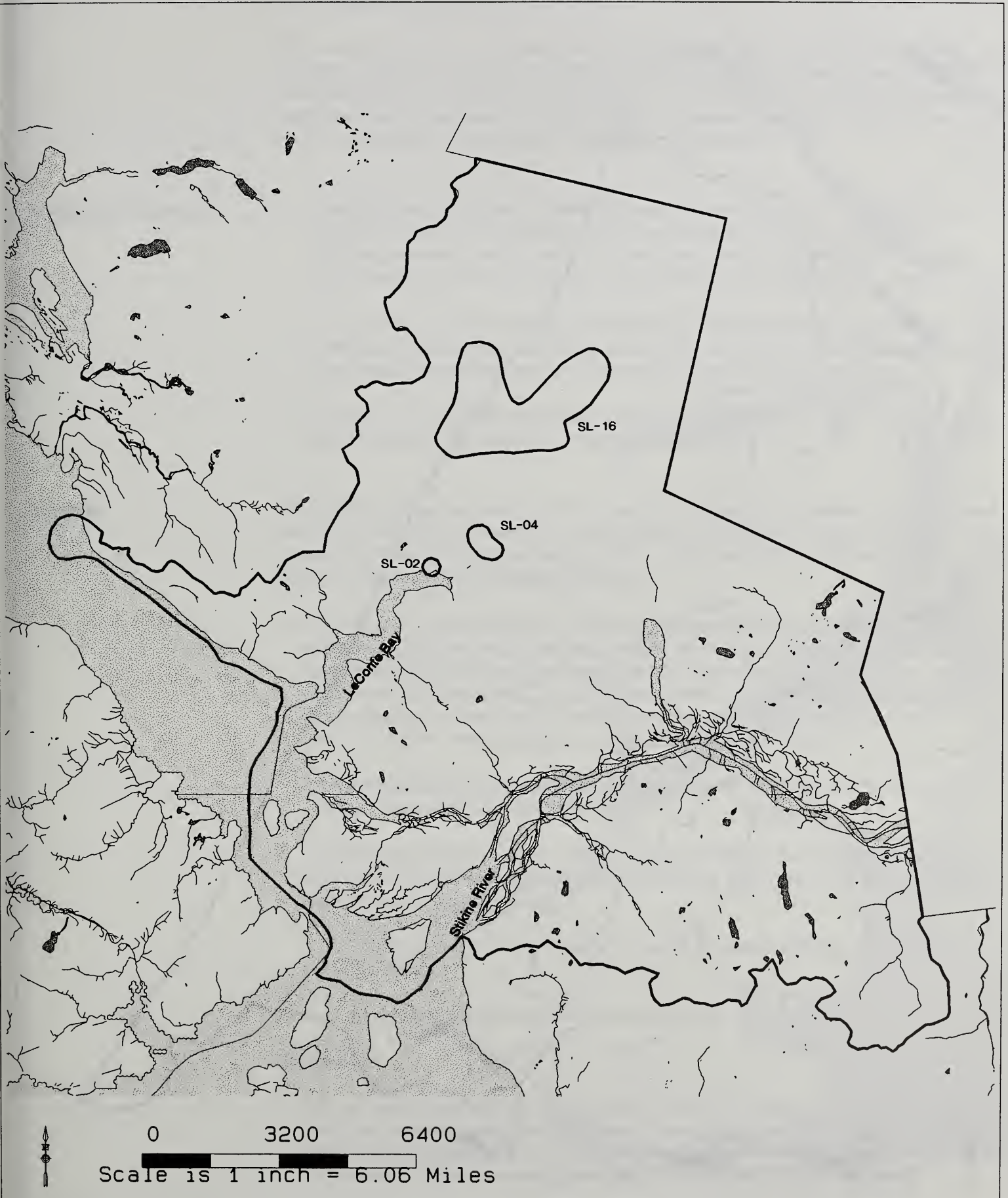
This alternative addresses the issues of Wilderness access, cultural resources, wildlife, recreation and subsistence. The effect to Wilderness character is minimal while access is provided to four locations of high interest. Potential effects upon wildlife, cultural resources and subsistence are minimized.

2 Alternatives

Table 2-7. Proposed helicopter access areas, ROS class and maximum number of landings/year.

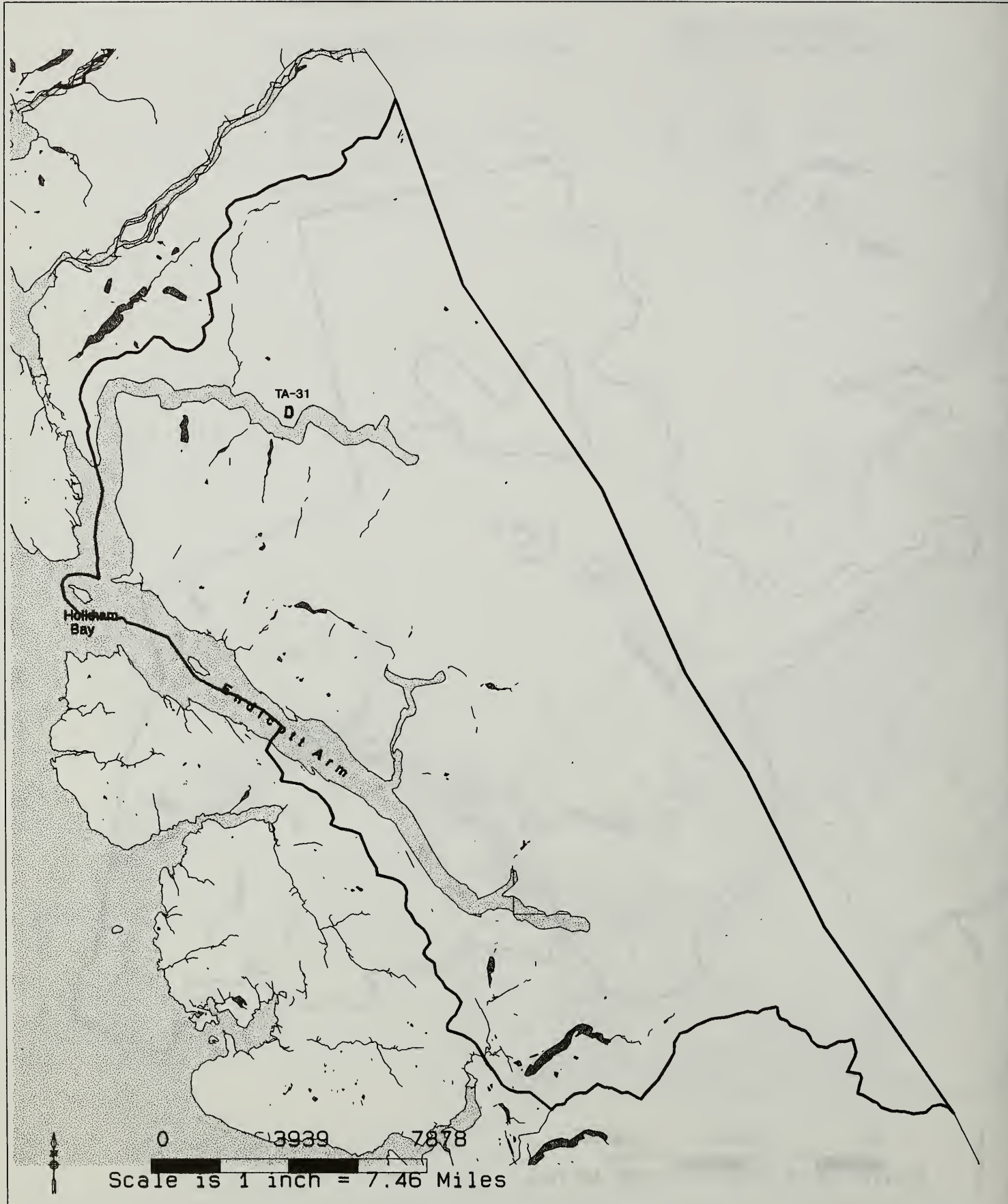
<u>Wilderness Name - Access Area #/Name</u>	<u>ROS Class & Maximum Number of Landings/Year</u>	
<u>Stikine LeConte</u>		
SL-02 N. Shore LeConte Glacier	SP	810
SL-04 LeConte Glacier (near bay)	SP	810
SL-16 LeConte Ice Field	P	405
<u>Tracy Arm</u>		
TA-31 Knob N. of Tracy Arm	P	405
TOTAL		2,430

Map 2-53. Stikine-LeConte Wilderness



2 Alternatives

Map 2-54. Tracy Arm-Fords Terror Wilderness



Mitigation Measures

This section lists specific mitigation measures for sensitive plants, wildlife and cultural resources. There are no specific mitigation measures presented for other resources as they were addressed in constructing the alternatives. The criteria used to construct the alternatives eliminated many access areas from the alternatives considered in detail because of other resource concerns, such as Wilderness character and subsistence.

Sensitive Plants

1. To mitigate negative effects to sensitive plants, a botanical survey will be conducted in high risk situations. These include those access areas with sensitive plant habitat (including lake shore, beach, meadow, muskeg and alpine) in alternatives 3A, 4 and 6 when a special use permit is requested as this is likely to result in higher use levels.
2. If any previously undiscovered sensitive plants are encountered at any point in time prior to or during the implementation of the project, landings will be halted temporarily until the forest botanist is consulted and protective measures are adopted, if necessary.
3. Collecting sensitive plants and plant parts shall not be allowed except as authorized by the Forest Supervisor for scientific or educational purposes.

Wildlife

The following mitigation measures will be applied to the alternative selected. They are based on the standards and guidelines in the supplemental draft EIS for the Proposed Tongass Land Management Plan (USDA Forest Service 1991a). Species-specific mitigation measures follow the general wildlife mitigation measures.

1. All helicopter flights authorized for this project by the Forest Service will be required to maintain a 1,500 foot vertical and horizontal clearance from: key mountain goat habitat (as determined jointly by Forest Service and Alaska Department of Fish and Game), waterfowl or other sensitive bird nesting, migration concentration areas or sea bird colonies as determined by the Forest Service; visible mountain goats, brown bears, black bears, wolves, trumpeter swans, sea lions, seals and other marine mammals.

Steepness (degree of slope) and roughness (outcrops and spur ridges) affect the ratio of elevation to horizontal distance significantly.

2. All helicopter flights authorized for this project by the Forest Service will adhere to U.S. Fish and Wildlife Service recommendations regarding eagle nests. The following specific requirements would apply:
 - a. Maintain established travel routes, but avoid any eagle nest by at least 1/4 mile (1,320 feet).
 - b. Avoid hovering near and circling any eagle nest.

Brown Bear

1. The number of brown bears killed in defense of life and property due to people arriving by helicopter to Wilderness will be monitored. If necessary, site-specific plans which would include seasonal restrictions on activities or other measures would be developed on a case by case basis. Such site specific seasonal restrictions could include minimizing

2 Alternatives

disturbance by not allowing helicopter landings during denning period, particularly during den entry (October to mid-November) and emergence (April and May).

Mountain Goat

1. To protect the long-term productivity of mountain goats, authorize no helicopter landings at EN-02, MF-20, MF-31, MF-89, MF-91, MF-92, MF-96, MF-98, MF-117, MF-162, SB-11, SB-14, SL-02, SL-04, SL-05, SL-09, SL-10, SL-11, SL-12, SL-13, SL-14, SL-15, SL-16, TA-23, TA-24 and TA-31 between May 15 and June 15 (kidding). This is recommended to mitigate possible adverse impacts of human use within one mile of kidding habitats.

Vancouver Canada Geese

1. To mitigate potential effects to migrating waterfowl or shorebirds, authorize no helicopter landings between March 1 and May 31 and between September 1 and October 31 at KO-15, KO-20, KO-21, MF-31, MF-128, PC-01, PC-02, RF-03, SB-06, SB-14, SL-09 and SL-14.

Bald Eagle

1. Authorize no helicopter landing April 1 - September 15 at RF-24 and TA-24 unless the areas are surveyed by Forest Service or U.S. Fish and Wildlife Service personnel and are found to have no eagle nesting within 1/4 mile of the access areas.
2. Avoid repeated helicopter flights within 1/4 mile of active bald eagle nests. Helicopter landings and flight corridors will maintain at least a 1/4 mile distance from active nests.

Goshawk

1. Survey MF-7, MF-89, MF-125 and MF-131 to determine if goshawk nesting is on-going. Do not allow helicopter landing at the above areas during the nesting season (March 1 through July 31) until nest sites are surveyed.

Osprey

1. Survey MF-34 and PC-02 to determine if osprey nesting is occurring.
2. Authorize no helicopter landings in MF-34 or within 1/2 mile of a nest in PC-02 from April 15 to September 1 if there are any active nests.

Peregrine falcon

1. Coordinate with U.S. Fish and Wildlife Service to survey MF-173 for possible peregrine nests. If a nest is located, consider the possible effects of helicopter landings within two miles of the nest.

2 Alternatives

2. If necessary, consider seasonal restrictions for landing helicopters during the nesting period (April 15 to August 31).

Trumpeter swan

1. Authorize no helicopter landings from September 15 to April 1 in MF-31, MF-36, MF-41, MF-104, MF-107, PC-01 and PC-02.
2. Authorize no helicopter landings within 1/2 mile when trumpeter swans are observed at the above areas in summer.

Cultural Resources

The primary mitigation used was the elimination of access areas that correspond with the presence of sites eligible for the National Register of Historic Places. There are three access areas (MF-133, TA-06 and TA-18) with National Register eligible sites in Alternative 2. These sites were discovered after the alternative was proposed. If Alternative 2 were selected, then authorizing helicopter access at these areas might create an adverse effect to those cultural sites. Eliminating the three access areas would result in a determination of no effect. If elimination or avoidance is not feasible the Forest Service will develop a detailed mitigation strategy. The mitigation strategy would probably include some form of data collection, such as excavation. The Forest Service would consult with the Alaska State Historic Preservation Officer, the Advisory Council on Historic Preservation and any interested parties to develop a mitigation strategy.

Implementing an education campaign with visitors and potential outfitters and guides may increase the public reporting of discovered cultural resources and reduce potential impacts, especially to cultural resources outside the immediate access areas. Some form of awareness training offered to outfitters and guides would probably enhance their ability to recognize cultural resources while at the same time providing a protection message. Standard cultural resource clauses in outfitter and guide special-use permits emphasize the legal protection afforded to cultural resources. The cultural resource clauses also require an outfitter or guide to report discoveries of cultural resources potentially affected by the permitted activity.

Implementation and Monitoring

Implementation

Implementation of a selected alternative may require adjustments to management strategies and priorities, but would include methods currently used in the administration of Wilderness. These methods include education and awareness, field operations, monitoring and enforcement.

Education and awareness of the purpose and values of Wilderness is an ongoing tool used by the Forest Service in Wilderness management. Specific techniques used for education and awareness include presentations, publishing informational brochures, personal contacts and incorporating wilderness management strategies in planning documents. The need for education and awareness is ongoing and evolves as audiences change. The Forest Service will continue to work with other agencies, helicopter operators and the public to develop information and materials for helicopter pilots and the general public regarding appropriate behavior in regards to Wilderness resources.

2 Alternatives

If general public helicopter access is authorized, helicopter use will fall into three categories. The first category will be privately operated helicopters. This use is expected to be minimal due to the limited number of privately owned helicopters. The second category is chartered helicopters that provide "point-to-point" transportation to a specific destination, similar to existing fixed wing air taxi operators. This use is expected to be infrequent due to the cost of using helicopters compared to other modes of transportation. Helicopter use for point-to-point travel is more likely where there are special attractions near communities with helicopters available for hire. Currently, permits are not required for private or charter aircraft access to non-Wilderness National Forest System lands or for other motorized methods of transportation besides helicopters within Wildernesses.

The third category of helicopter use is outfitting and guiding, an organized service which has been packaged for a fee. Helicopter use may simply be the transportation mode to gain access to an area for other activities, or may be the feature of the service. Generally this is a recurring use and requires a permit from the Forest Service. Thus the Forest Service can regulate where, when, what and how much use can occur, and requires yearly reporting of the actual use which occurred.

Implementation of any alternative may require law enforcement actions. The success of implementation is a function of adequate staffing for enforcement, education and awareness and the cooperation of helicopter users. The amount of field administration needed will depend on the decision made in this analysis. Some administrative procedures, such as checking that users of a Forest Service cabin have a valid permit, will still regularly occur. Where observed uses do not conform with the management of the wilderness, additional administrative or legal actions could and may be taken as appropriate to correct the problem.

Monitoring

Monitoring and evaluation provide the public and the Forest Service with information on the progress and results of implementing decisions regarding National Forest management. As such, monitoring and evaluation comprise an essential feedback mechanism to help the Forest Service respond to changing conditions. There are two distinct types of monitoring for this project: implementation and effectiveness. Implementation monitoring determines if projects and activities comply with adopted standards and guidelines. Did we do what we said we'd do? Effectiveness monitoring determines whether the standards and guidelines achieve desired results. Were the results what we expected?

A detailed monitoring plan will be included in the Record of Decision for the final EIS for this project. Implementation and effectiveness monitoring will be accomplished by the Ranger Districts. Monitoring will include visits, overflights of access areas and reports provided by Wilderness visitors. Access areas with existing Forest Service facilities are likely to receive more frequent administrative visits than access areas where no facilities are provided. Since the Forest Service is required to maintain these facilities for public health and safety, visits are a priority. Access areas which also have better opportunities for field inspections are those which can be reached by floatplanes, motorboats or kayaks. Remote access areas would likely be inspected by overflights or when possible during the course of other project work. Monitoring data will also include personal contacts with the public and information gathered or offered by others. The number of monitoring visits is a function of priorities and budget constraints.

Monitoring results will be summarized in the annual Wilderness report to Congress and the annual Tongass National Forest monitoring and evaluation report. These reports capture a wide array of information collected each year to update the status of Wilderness conditions. Table 2-8 displays monitoring proposed by issue.

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Table 2-8. Proposed monitoring by issue.

Issue	Indicators	Tools	Frequency	Who will conduct
Wilderness and Recreation	# of encounters/day # motorized encounters/day Visitor satisfaction	Monitor public comments by letters/phone calls/personal contacts/comment cards; Field observations; Develop limits of acceptable change process; Monitor air carrier flight records; Special use permits	Ongoing; Annually	Ranger Districts
Access	Visitor satisfaction Changes in use patterns	Same as above	Ongoing; Annually	Ranger Districts
Vegetation	Change in species Composition or canopy cover	Site visits	To be determined in consultation with Forest Biologist	Ranger Districts in consultation with Forest Biologist
Sensitive Plants	Presence or absence of sensitive plants; Changes in density and abundance	Site specific surveys of highest risk areas, number and locations to be determined	Periodically in consultation with Forest Botanist	Ranger Districts in consultation with Forest Botanist
Wildlife	Brown bears killed in defense of life and property	Reports to State and Forest Service	Ongoing; Annually	Ranger Districts
Cultural Resources	Damage to or exposure of previously undiscovered sites by helicopter landings; Evaluation of increased pedestrian traffic to determine if it affects cultural sites outside immediate helicopter access areas	On-site inspections by Forest Service personnel in the high probability zone; Reports by others, especially outfitter-guides; Reports from other monitoring	Periodically	Ranger Districts and Forest Archaeologists

Implementation and Monitoring by Alternatives

Alternative 1 - No Action Alternative

The no action alternative would not allow the use of helicopters in Wilderness by the general public. Implementation would include informing the public and agency personnel of the restriction.

Action Alternatives

As with the No Action alternative, the public and agency personnel would need to be informed of the conditions for general public helicopter use identified in the following action alternatives.

2 Alternatives

Alternative 2 - Proposed Action

This alternative proposes to allow the landing of helicopters in 41 access areas in seven Wildernesses. No general public use of helicopters will occur in 12 of the Tongass Wildernesses. This alternative authorizes historic use levels. Table 2-9 displays the number of access areas and how many of these have facilities, other access and/or are in remote areas.

Table 2-9. Alternative 2 access areas, areas with facilities, other access and/or in remote areas by Wilderness.

Wilderness	# Access Areas	Areas w/ facilities	Other access	Remote areas
Endicott River	1	2	1	0
Kootznoowoo	4	0	6	0
Misty Fiords National Monument	25	2	17	0
South Etolin	1	0	1	0
South Prince of Wales	1	0	1	0
Stikine-LeConte	4	1	3	0
Tracy Arm-Fords Terror	4	0	2	0
Totals	41	9	31	10

Cabin permits are required before landing at Forest Service cabins. Monitoring would be based primarily on physical evidence related to use or comments received by Wilderness visitors. This alternative could be moderately difficult to implement, primarily due to the wide distribution of access areas throughout the Wildernesses.

Alternative 3A

This alternative would authorize 129 access areas for use in 12 Wildernesses. It limits use to three landings a day in Primitive ROS areas and six landings a day in Semi-Primitive areas. Where outfitter-guide use may be authorized, outfitter-guide reports could provide information regarding use of the areas.

This alternative will be the most difficult to monitor because of the large number of access areas widely distributed throughout the Wildernesses and the large number of landings authorized. Table 2-10 displays the number of access areas and how many of these have facilities, other access and/or are in remote areas. Cabin permits are required before landing at Forest Service cabins.

Alternative 3B

This alternative provides access to the same places as Alternative 3A. This alternative would restrict landings to historic levels rather than the higher ROS levels in Alternative 3A. Implementation of this alternative would be difficult, but less difficult than Alternative 3A due to the lower frequency of use. It would also be difficult to determine if the authorized number

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of landings were exceeded. As the risk of impacts is much less than in Alternative 3A, monitoring trips would be less frequent. Cabin permits are required before landing at Forest Service cabins.

Table 2-10. Alternative 3A and 3B access areas, areas with facilities, other access and/or in remote areas by Wilderness.

Wilderness	# Access Areas	Areas w/ facilities	Other access	Remote areas
Endicott River	6	0	2	4
Karta River	6	0	6	4
Kootznoowoo	30	16	20	10
Misty Fiords National Monument	7	12	40	14
Petersburg Creek-Duncan Salt Chuck	2	2	2	0
Russell Fiord	4	0	1	0
South Baranof	7	3	7	0
South Etolin	1	0	1	0
South Prince of Wales	2	0	2	0
Stikine-LeConte	7	3	1	0
Tracy Arm-Fords Terror	4	0	2	2
West Chichagof-Yakobi	2	2	2	0
Totals	129	38	96	33

Alternative 4

This alternative would allow helicopter landings where Forest Service facilities exist. Cabin site landings would require cabin permits to minimize conflicts with other cabin users. There would be no limit on the number of cabin site landings. Landings at other access areas would be limited to historical use levels as in Alternative 2. There are 38 access areas within six Wildernesses in this alternative. Table 2-11 displays the number of access areas and how many of these have facilities, other access and/or are in remote areas.

Most of the access areas include Forest Service cabins that can be reached by airplanes or boats. Cabin permits would be required. In Misty Fiords, there are two shelters and four trail heads where permits would not be required. In the Petersburg Creek-Duncan Salt Chuck Wilderness, access areas also include corridors along a stream and salt chuck to reach fishing sites. This alternative would be one of the easiest to monitor due to the need for cabin permits and because landings would occur at locations already known to receive motorized use. This alternative has a potential to increase the use season for some cabins. Extending the seasons could increase maintenance needs for some facilities but also contributes funding towards facility maintenance through permit fees.

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Table 2-11. Alternative 4 access areas, areas with facilities, other access and/or in remote areas by Wilderness.

Wilderness	# Access Areas	Areas w/ facilities	Other access	Remote areas
Kootznoowoo	16	16	16	0
Misty Fiords National Monument	12	12	12	0
Petersburg Creek-Duncan Salt Chuck	2	2	2	0
South Baranof	3	3	3	0
Stikine-LeConte	3	3	3	0
West Chichagof-Yakobi	2	2	2	0
Totals	38	38	38	0

Alternative 5

This alternative allows historic use levels only at areas where no other access is available. There are 31 access areas in five Wildernesses.

This alternative would be difficult to monitor because these areas are not now regularly visited. Uses at these areas would be primarily monitored by overflights. Only five Wildernesses are affected by helicopter landings, which is the second fewest of the action alternatives. (Alternative 7 has the fewest with two Wildernesses.) The ease of implementing and monitoring this alternative is between moderate and difficult. Table 2-12 displays the number of access areas and how many of these have facilities, other access and/or are in remote areas.

Table 2-12. Alternative 5 access areas, areas with facilities, other access and/or in remote areas by Wilderness.

Wilderness	# Access Areas	Areas w/ facilities	Other access	Remote areas
Endicott River	4	0	0	3
Kootznoowoo	8	0	0	8
Misty Fiords National Monument	14	0	0	14
Stikine-LeConte	3	0	0	3
Tracy Arm-Fords Terror	2	0	0	2
Totals	31	0	0	31

Alternative 6

This alternative authorizes landings where there are other forms of motorized access or influence. The alternative allows up to three landings a day in Primitive ROS areas and up to

2 Alternatives

six landings a day in Semi-Primitive areas. There are 97 access areas in 12 Wildernesses. While the access areas would be easier to reach for monitoring than those in Alternatives 3A, 3B and 5, the number of access areas would make monitoring difficult. Table 2-13 displays the number of access areas and how many of these have facilities, other access and/or are in remote areas.

Table 2-13. Alternative 6 access areas, areas with facilities, other access and/or in remote areas by Wilderness.

Wilderness	# Access Areas	Areas w/ facilities	Other access	Remote areas
Endicott River	2	0	2	0
Karta River	4	0	0	0
Kootznoowoo	19	16	19	0
Misty Fiords National Monument	40	12	40	0
Petersburg Creek-Duncan Salt Chuck	2	2	2	0
Russell Fiord	4	0	0	0
South Baranof	4	0	7	0
South Etolin	1	0	1	0
South Prince of Wales	2	0	2	0
Stikine-LeConte	10	0	7	3
Tracy Arm-Fords Terror	2	0	2	0
West Chichagof-Yakobi	2	2	2	0
Totals	97	38	94	3

Alternative 7

This alternative would allow helicopter landings at four access areas in two Wildernesses, which is the fewest of the action alternatives. The alternative also authorized up to three landings a day in Primitive ROS areas and up to six landings a day in Semi-Primitive areas. Table 2-14 displays the number of access areas and how many of these have facilities, other access and/or are in remote areas.

It is likely these areas would be used by outfitter-guides because of their locations and attractions. Since only four sites are authorized, the monitoring is considered easy compared to the other action alternatives. If outfitter-guide use was authorized, it would be regulated and annual reports by permit holders would be required.

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Table 2-14. Alternative 7 access areas, areas with facilities, other access and/or in remote areas by Wilderness.

Wilderness	# Access Areas	Areas w/ facilities	Other access	Remote areas
Stikine-LeConte	3	0	0	3
Tracy Arm-Fords Terror	1	0	0	1
Totals	4	0	0	4

Summary

Implementation and monitoring of helicopter landings in Wilderness would become a part of existing Wilderness management programs. The programs and strategies used to manage Wilderness include education and awareness, field operations and visitor feedback. Depending on the alternative chosen, adjustments to existing programs and priorities may need to be made for individual Wildernesses. The difficulty of implementation and monitoring varies by alternative. In general, alternatives 1, 4 and 7 would be the easiest to implement and monitor; alternatives 2 and 6 would be moderately difficult. Alternative 5 would be more difficult to implement and monitor; alternatives 3A and 3B are expected to be the most difficult.

Comparison of Alternatives

Items Common to All Alternatives

As described in this chapter, of the 135 access areas being considered in this analysis for helicopter use, 94 are accessible by other methods of motorized transportation and 38 of these areas have existing public facilities.

In Chapter 4 the Subsistence analysis (page 4-122) states that the potential foreseeable direct, indirect and cumulative effects from the action alternatives in this draft EIS do not present a significant possibility of a significant restriction of subsistence uses of wildlife, fish or other foods.

Comparison of Potential Effects

Alternative 1, No Action

The No Action alternative would maintain the current level for remoteness from sights and sounds within Wilderness. No helicopter use for access by the general public is authorized. Of all the alternatives, this alternative would best preserve the Wilderness character. There is no change in access to or the recreation use of these areas for the present. There would be no additional effects to the vegetation, soils, or wildlife. This alternative has the least potential to affect cultural resources.

Alternative 2, Proposed Action

This alternative was presented as the Proposed Action in the September 2, 1994, scoping document. The scoping document incorrectly listed four access areas as having 26 to 50 landings historically when actually only up to 25 landings occurred.

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This alternative would authorize 41 access areas within seven wildernesses (See Figure 2-9). Twenty-nine of these areas are accessible by other methods of motorized transportation and nine of these areas have public facilities. The remaining 12 access areas are in remote locations. The impact to the Wilderness character is low to moderate. The anticipated use for access and the impacts upon recreation within the seven Wildernesses is considered to be low. There are 22 areas which have a moderate probability to affect the vegetation and soils. Brown bear may be affected in four areas and mountain goats may be affected in 13 areas. There are three areas with cultural resources present but overall there is a low potential to affect undiscovered cultural resources. There are five access areas within four eligible Wild and Scenic River corridors.

Alternative 3A

The alternative would authorize 129 access areas for general public use within 12 Wildernesses. There are 38 access areas with public recreation facilities and 32 remote access areas. Of the 129 access areas, 94 can be reached by other motorized means of transportation. It could have the greatest effect upon the Wilderness character as it allows the most use of helicopters which diminishes opportunities for challenge and risk, remoteness, solitude, sense of isolation. It allows the most potential increase in access and recreation use of the action alternatives. Thirty-six areas are considered to have a moderate potential to affect soils or vegetation and 82 access areas are considered to have a high potential to affect soils or vegetation. The potential to affect wildlife could occur at 21 access areas for brown bear, at 26 access areas for mountain goats, at 12 access areas for Vancouver Canada geese and two for bald eagles. This alternative has the highest potential to affect wildlife of all of the action alternatives. This alternative poses the greatest potential to affect cultural resources as 11 areas are located in what may be sacred landscapes. There are 56 access areas within 21 eligible Wild and Scenic River corridors.

Alternative 3B

This alternative is similar to Alternative 3A in that it would authorize 129 access areas for general public use within 12 Wildernesses. However, the level of use for this alternative is held to historic levels, which are substantially less than is proposed in Alternative 3A. There are 38 access areas with public recreation facilities and 32 remote access areas. Of the 131 access areas, 94 can be reached by other motorized means of transportation. It would have an effect upon the Wilderness character as it allows use at the same number of access areas as in Alternative 3, thereby diminishing opportunities for challenge and risk, remoteness, solitude, sense of isolation. It allows for a high increase in access and a moderate increase in recreation use. Eighty-three access areas are considered to have a moderate potential to affect soils or vegetation. The potential to affect wildlife could occur at 21 access areas for brown bear, at 26 access areas for mountain goats, at 12 access areas for Vancouver Canada geese and two for bald eagles. This alternative has the second highest potential to affect wildlife of the action alternatives. There are 11 areas that may be sacred landscapes in this alternative but the potential to affect cultural resources is less than in alternative 3A. There are 56 access areas within 21 eligible Wild and Scenic River corridors.

Alternative 4

This alternative would authorize 38 access areas where there are existing public facilities in six Wildernesses. As these areas already have access by other methods of motorized transportation available, the impacts to the Wilderness character will be moderate except where winter use may increase. Recreation use would likely occur at current levels but could increase in the winter or shoulder season as noted. Six access areas are considered to have

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moderate and 24 areas are considered to have a high potential to affect soils or vegetation. The potential to affect wildlife could occur at five access areas for brown bear, seven access areas for mountain goats and three access areas for Vancouver Canada geese. There is a low potential risk to cultural resources in this alternative. There are 15 access areas within seven eligible Wild and Scenic River corridors.

Alternative 5

This alternative would authorize 31 access areas that are considered remote in five Wildernesses. There are no public facilities reached by this alternative. The impacts to Wilderness character will be less than in alternative 3A but are similar to alternative 3B since the landing areas in remote locations are the same and affect previously isolated areas where challenge and risk, remoteness and isolation are high. There is a moderate to high effect on access to these areas. Opportunities for recreation would be expanded in these remote locations, which may conflict with some wanting more challenge and risk. Eighteen access areas are considered to have moderate potential to affect soils or vegetation. The potential to affect wildlife could occur at 11 access areas for brown bear and nine access areas for mountain goats. There is a very low potential to affect cultural resources although there are eight locations that may be sacred landscapes. There are 12 access areas within five eligible Wild and Scenic River corridors.

Alternative 6

This alternative would authorize 97 access areas. Motorized access is already available to 94 of these areas and the other three areas are currently affected by the sights and sounds of other motorized transportation methods. There are 38 public facilities reached by this alternative. A high impact to access and a moderate impact to recreation is expected. There are 29 access areas considered to have moderate potential and 57 areas considered to have a high potential to affect soils or vegetation. The potential to affect wildlife could occur at eight access areas for brown bear, 19 access areas for mountain goats, 12 access areas for Vancouver Canada geese, and two access areas for bald eagles. There is a moderate potential for risk to cultural resources and no areas that may be sacred landscapes. There are 44 access areas within 19 eligible Wild and Scenic River corridors.

Alternative 7

This alternative would authorize 4 access areas within two Wildernesses that are considered special in terms of potential or historical use. There are no public facilities at these locations. There are low to moderate impacts to the Wilderness character. It does little to provide access into Wildernesses and has a low potential to impact recreation use. Four access areas are considered to have a moderate potential to affect soils or vegetation. Mountain goats may be affected in four areas. There is a very low potential to affect cultural resources and no sacred landscapes. There is one access area located within one eligible Wild and Scenic River corridor.

Table 2-15 compares how each issue is affected by each alternative. Table 2-16 shows which access areas would be authorized under each alternative.

Table 2-15 Comparison of Alternatives

Comparison of Alternatives Issues	Alt. 1	Alt. 2	Alt. 3A	Alt. 3B	Alt 4	Alt. 5	Alt. 6	Alt. 7
Access Areas in Alternative	0	41	129	129	38	31	97	4
# of Wildernesses Affected	0	7	12	12	6	5	12	2
Areas with Public Facilities	n/a	0	38	38	38	0	38	0
Areas with Other Access	n/a	29	94	94	38	0	94	0
Number of Remote Access Areas	n/a	12	32	32	0	31	3	4
# of Areas in Eligible W&S Rivers	n/a	5	56	56	15	12	44	1
# eligible W&S Rivers in Alt	n/a	4	21	21	7	5	19	1
Basis for Level of Use	n/a	historic	ROS	historic	ROS	historic	ROS	ROS
Potential Number of Landings	0	325	65,165	1,265	7,295	435	49,775	2,430
Wilderness Character Impacts	n/a	low/mod	highest	high	moderate	mod/high	high	low/mod
Increase to Access in Wilderness	n/a	low	highest	high	moderate	mod/high	high	low
Potential for Rec Use Increase	n/a	low	highest	moderate	moderate	low/mod	high	low
Veg/Soils-Areas with Mod Impact	n/a	21	36	83	6	18	29	4
Veg/Soils-Areas with High Impact	n/a	0	82	0	24	0	57	0
Areas where Brown Bear Affected	n/a	4	21	21	5	11	8	0
Areas where Mountain Goat Aff.	n/a	13	26	26	7	0	19	4
Areas where Vancouver Goose Aff.	n/a	0	82	12	3	0	12	0
Areas where Bald Eagles Affected	n/a	0	2	2	0	0	2	0
Areas with Cultural Resources	n/a	3	0	0	0	0	0	0
Potential to Affect Cultural Res.	n/a	low	highest	high	low	very low	moderate	very low

Abbreviations: # - number of; W&S River - Wild and Scenic River; ; ROS - Recreation Opportunity Spectrum; Veg - vegetation; mod - moderate

2 Alternatives

Table 2-16. Comparison of Access Areas in Alternatives.

Access Area	Alt. 2	Alt. 3A/B	Alt. 4	Alt. 5	Alt. 6	Alt. 7
EN-02 Endicott Lake	X	X			X	
EN-05 Endicott River		X		X		
EN-07 Central Plateau #2		X		X		
EN-08 South end of Lake		X		X		
EN-09 Central Plateau #3		X		X		
EN-10 Lower River - Gravel Bed		X			X	
KA-02 Andersen Creek		X			X	
KA-03 Black Bear Lake		X			X	
KA-07 North East Karta		X			X	
KA-08 Karta Creek		X			X	
KA-09 Flagstaff Creek		X			X	
KA-13 Karta Lake North		X			X	
KO-02 S. Young Lake Cabin	X	X	X		X	
KO-03 N. Young Lake Cabin	X	X	X		X	
KO-04 Central Ridges		X				
KO-05 Central Ridges		X		X		
KO-13 Central Wheeler		X				
KO-15 King Salmon River		X			X	
KO-18 Lake Kathleen	X	X	X		X	
KO-20 Windfall Harbor		X	X		X	
KO-21 Windfall Harbor		X			X	
KO-22 W. Florence Cabin	X	X	X		X	
KO-23 E. Florence Cabin	X	X	X		X	
KO-25 Thayer Lake		X	X		X	
KO-28 Hasselborg Lake		X	X		X	
KO-29 Hasselborg Lake		X	X		X	
KO-32 Distin Lake		X	X		X	
KO-33 Distin Lake		X	X		X	
KO-34 Davidson Lake		X	X		X	

2 Alternatives

Access Area	Alt. 2	Alt. 3A/B	Alt. 4	Alt. 5	Alt. 6	Alt. 7
KO-35 Lake Alexander		X	X		X	
KO-36 Lake Alexander		X	X		X	
KO-38 Jims Lake Cabin	X	X	X		X	
KO-46 Gambier Bay		X	X		X	
KO-69 Young Lake Ridge		X		X		
KO-70 Eagle Peak		X		X		
KO-71 N. Kathleen Lake		X		X		
KO-72 N. Pack Creek		X		X		
KO-73 W. Pack Creek		X		X		
KO-74 S. Pack Creek		X		X		
KO-75 W. Hasselborg		X		X		
KO-79 S. Hasselborg		X			X	
KO-80 W. Thayer		X				
MF-03 Unuk River		X		X		
MF-07 S. Grant Creek		X		X		
MF-17 Leduc Lake	X	X			X	
MF-20 Orchard Creek	X	X			X	
MF-22 King Creek		X		X		
MF-31 Lake Grace		X			X	
MF-33 N. Mirror Lake	X	X			X	
MF-34 S. Manzanita		X			X	
MF-35 S. Mirror Lake		X			X	
MF-36 Ella Lake		X			X	
MF-38 Big Goat Lake		X			X	
MF-39 S. Wilson Lake		X	X		X	
MF-40 Steep Point	X	X			X	
MF-41 Winstanley Lake		X			X	
MF-46 Bakewell Lake		X			X	
MF-50 Bass Point	X	X			X	

2 Alternatives

Access Area	Alt. 2	Alt. 3A/B	Alt. 4	Alt. 5	Alt. 6	Alt. 7
MF-56 Humpback Lake		X			X	
MF-57 Humpback		X	X		X	
MF-71 1st Unuk Canyon	X	X		X		
MF-72 Unuk River		X		X		
MF-74 Lake Creek	X	X		X		
MF-89 King Creek	X	X		X		
MF-90 Mount Hayford	X	X		X		
MF-91 East Walker Lake	X	X			X	
MF-92 Walker Lake Mountain	X	X		X		
MF-96 Upper Portage Creek	X	X		X		
MF-98 East Lake Grace	X	X	X		X	
MF-104 W. Manzanita Lake		X	X		X	
MF-105 Manzanita Lake		X	X		X	
MF-107 S. Manzanita Lake		X	X		X	
MF-108 East Manzanita Lake	X	X			X	
MF-109 Mirror Lake		X			X	
MF-110 Ella Bay		X	X		X	
MF-114 Punchbowl		X	X		X	
MF-116 Little Goat Lake		X			X	
MF-117 Big Goat Lake	X	X	X		X	
MF-118 Wilson Lake		X	X		X	
MF-119 Wilson River		X		X		
MF-124 Wasp Cove	X	X			X	
MF-125 Third Lake		X			X	
MF-128 Gokachin Lake	X					
MF-131 Mesa Lake		X			X	
MF-133 Tombstone Bay	X					
MF-134 Dome Creek	X	X		X		
MF-136 Narrow Pass	X					

2 Alternatives

Access Area	Alt. 2	Alt. 3A/B	Alt. 4	Alt. 5	Alt. 6	Alt. 7
MF-144 Weasel Creek	X	X			X	
MF-145 W. Quadra Creek	X	X			X	
MF-146 Boca de Quadra		X			X	
MF-148 Mid Reef Lake	X					
MF-154 Hugh Smith Cabin		X	X		X	
MF-160 Lower Hump Creek		X			X	
MF-161 Humpback Creek		X			X	
MF-162 Bower Creek	X	X		X		
MF-166 Mid Humpback Creek		X			X	
MF-167 Billy Goat		X			X	
MF-168 Peninsula Lake	X	X			X	
MF-173 Unuk River		X		X		
MF-179 Manzanita Bay		X	X		X	
PC-01 Petersburg Creek		X	X		X	
PC-02 East Salt Chuck Cabin		X	X		X	
RF-02 Harlequin Lake		X			X	
RF-03 Harlequin Lake		X			X	
RF-05 Upper Beasley Creek		X			X	
RF-24 Cape Enchantment		X			X	
SB-04 Lake above Gut Bay		X			X	
SB-06 Lake Plotnikof Cabin		X	X		X	
SB-07 Rezanof Lake		X			X	
SB-08 Lake Diana		X			X	
SB-11 Avoss Lake Cabin		X	X		X	
SB-14 Davidof L. Cabin		X	X		X	
SB-15 Mid-Plotnikof Lake		X			X	
SE-02 South Etolin Lakes	X	X			X	
S-03 N. Klakas Lake		X			X	
S-20 Hessa Island	X	X			X	

2 Alternatives

Access Area	Alt. 2	Alt. 3A/B	Alt. 4	Alt. 5	Alt. 6	Alt. 7
SL-02 N. Shore LeConte Glacier		X		X	X	X
SL-04 LeConte Glacier (near bay)		X		X	X	X
SL-05 Red Slough		X	X		X	
SL-09 Mallard Slough Cabin	X	X	X		X	
SL-10 Jap Creek		X			X	
SL-11 Andrews Slough		X			X	
SL-12 Twin Lakes Cabin		X	X		X	
SL-13 North Arm Creek		X			X	
SL-14 Horn Cliffs	X	X			X	
SL-15 Devil's Thumb	X	X				
SL-16 Upper LeConte Ice Field	X	X		X	X	X
TA-06 Powers Creek	X					
TA-17 Fords Terror (Penin)		X			X	
TA-18 Sumdum Island	X					
TA-23 Ice Fields S. of Sawyer Glacier	X	X		X		
TA-24 Fords Terror North		X			X	
TA-31 Knob N. of Tracy Arm		X		X		X
WC-05 Goulding Lake		X	X		X	
WC-07 White Sulphur		X	X		X	

Chapter Three

Affected Environment

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temperatures are warmer than would be expected for the latitudes. Normal temperatures range from the mid 40s to the mid 60s (Fahrenheit) 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. While winter temperatures seldom go below zero degrees Fahrenheit, wind and high levels of precipitation persist throughout the year. The prevailing winds of the region are east through south and average eight to 10 knots in coastal locations.

The major rivers of the region originate in Canada and are the Alsek, Chilkat, Taku, Whiting, Chickamin, Unuk, Bradfield, Speel, Stikine and Taiya. The largest drainages are the Stikine Alsek, Taku and Chilkat rivers. Many of the mainland drainages have glaciers at their headwaters. Fresh water lakes vary in size from a few acres to several thousand acres and in type from coastal marsh to high alpine.

Wilderness Values and Uses

Introduction

The value of Wilderness was recognized by Congress with passage of the 1964 Wilderness Act. In 1980, Alaskan Wildernesses were established by ANILCA and include some of the nation's most extraordinary federally-designated Wildernesses (Smith 1994). Additional acres were added to the National Wilderness Preservation System in Alaska in 1990 by the Tongass Timber Reform Act.

Currently, the Forest Service manages 19 Wilderness units in Alaska which total approximately 5.8 million acres. These Wildernesses encompass just over 10 percent of all designated Wilderness in Alaska (with the National Park Service and U.S. Fish and Wildlife Service managing 57.4 percent and 32.5 percent respectively). Forest Service-managed Wilderness is solely in southeast Alaska on the Tongass National Forest and comprises over one-third of the Forest.

In southeast Alaska where an "increasing population accompanied by expanding settlement and growing mechanization" places greater and greater demands on wildlands, Congressionally-designated Wildernesses continue to experience the pressures of more and more human uses. As demands continue to increase, the importance and value of Wilderness will continue to increase. For example, of the total acreage of the Tongass National Forest, approximately 500,000 acres have been harvested and are in various stages of regeneration (AMS, TLMP Revision). About 1.8 million acres will be ultimately conveyed to the State and various Native corporations (Situation Paper, Alaska Region, May, 1995). Congress, with the Wilderness Act of 1964, recognized the need to "secure for the American people of present and future generations" the benefits of an enduring resource of Wilderness. They established the National Wilderness Preservation System to preserve selected areas at the undeveloped end of the "environmental modification spectrum," that is, areas distinguished by their relatively undisturbed conditions, naturalness and solitude as opposed to totally modified landscapes of modern cities.

ANILCA, in 1980, designated fourteen Wildernesses on the Tongass National Forest, and when amended in 1990, added five additional Wildernesses. ANILCA acknowledged that

it is the intent of Congress to . . . preserve in their natural state extensive unaltered Arctic tundra, boreal forest and coastal rainforest ecosystems . . . to preserve wilderness resource values and related recreation opportunities including but not limited to hiking, canoeing, fishing, and

sport hunting, within large Arctic and subarctic wildlands . . . and to maintain opportunities for scientific research and undisturbed ecosystems.

Congress also recognized important exceptions to the Wilderness Act for Alaska Wilderness including ANILCA Section 1110 which specifically allows the use of airplanes, motorboats, snowmachines and non-motorized surface transportation for traditional activities. ANILCA allows public use cabins in Tongass Wildernesses. Section 1315(c) states, "Previously existing public use cabins within wilderness designated by this Act, may be permitted to continue and may be maintained or replaced . . ." Section 1315(d) allows the construction and maintenance of a limited number of new cabins and shelters if they are "necessary for the protection of public health and safety."

Wilderness Values

Wilderness embodies an ecosystem approach for land management. Wildlife, recreation, soils and vegetation, scenery, cultural resources, and other human uses must all be considered when managing these areas. These resources are all **a part** of Wilderness. As such, Wilderness can be seen as a composite resource with interrelated parts, and its management must be focused on the whole, not on those component parts (Hendee et al. 1990:182).

Yet Wilderness must also be considered as a distinct resource - **apart** - and any proposed action must consider and analyze the effects on the Wilderness resource. The Wilderness Act was passed to secure for the American people **an enduring resource of Wilderness**. In order to define the Wilderness resource and associated values, the following list describes the most relevant elements of definition found within the Wilderness Act and ANILCA:

- * Where the earth and its community of life are untrammelled by man . . .
- * An area of undeveloped Federal land retaining its primeval character and influence . .
- * Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable. . .
- * Has outstanding opportunities for solitude or a primitive and unconfined type of recreation
- * To preserve in their natural state extensive unaltered Arctic tundra, boreal forest and coastal rainforest ecosystems
- * To maintain opportunities for scientific research and undisturbed ecosystems

Hendee et al. (1990) note that although Wilderness may mean something different to everyone, three central themes related to Wilderness values have consistently emerged: **experiential**, the direct value of the Wilderness experience; the value of Wilderness as a **scientific** resource and environmental baseline and the **symbolic** and **spiritual** values of Wilderness to the nation and the world. Because compatibility with Wilderness values is a primary management concern of the Forest Service and "wilderness values shall dominate over all other considerations except where limited by the Wilderness Act, subsequent legislation, or regulations" (Forest Service Manual 2320.3.1), these three themes, or

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values, are discussed in the context of the writings of Hendee et al., and in relationship to Wilderness in Alaska today.

Experiential: The Wilderness experience is seen as valuable in its own right, and that the character-building values of Wilderness are vital to our society. American writers have historically extolled closeness to nature, education, freedom, solitude and simplicity, as well as spiritual, aesthetic and mystical dimensions of the Wilderness experience. John Muir spoke of the essence of Wilderness as the freedom, solitude and beauty of the mountains. Robert Marshall (1930) believed the restorative powers of Wilderness could prevent moral deterioration. Many others, both today and in years past, tried to capture and describe the experiential value of Wilderness. Opportunities for solitude and primitive, unconfined types of recreation are important elements.

Today on the Tongass National Forest, Wildernesses are used for experiential purposes, but to what extent and importance is difficult to determine. Public scoping indicates that the experiences available in Tongass Wildernesses are important to some people who value remote, primitive types of recreation and visits in a natural setting. Others experience Wilderness through viewing scenery or wildlife without actually entering Wilderness. Many people make no distinction between Congressionally designated Wilderness and wild, undeveloped areas which can be found through Alaska including the Tongass National Forest. Identification of an area as "Wilderness" increases its value as demonstrated by marketing/advertising efforts by outfitter-guides who use Wildernesses. "Wilderness" increases allure, mystique and appeal. "Alaskan Wilderness" is seen by some as the epitome of Wilderness.

Scientific: Wildernesses provide environmental baselines against which the extent of impacts elsewhere can be measured. This value of Wilderness as a genetic pool and refuge for the survival of species especially sensitive to human influence cannot be overstated in this time of rapidly changing landscapes. This concept of Wilderness is founded in the Wilderness Act. Because of their generally undisturbed setting, Wildernesses can function as important sources of information.

Alaskan Wildernesses are often seen as some of the most pristine areas of land in this country. They are generally large enough to offer ecological insights unattainable elsewhere. They provide an outstanding yardstick for measuring changes in the rest of the developed world.

Symbolic and Spiritual: The symbolic theme of Wilderness is captured by a statement by Hendee et al. (1990:10),

In a world characterized by rapid change and complexity . . . wilderness symbolizes comforting stability and simplicity. The essence of wilderness reflects self-imposed limits on the technological imperative that we must subdue all the earth just because we can.

Not all people who value Wilderness visit or enter Wildernesses. This may be true for Alaska Wildernesses more than any other Wildernesses in the United States. Hendee, et. al. (1990:184), point out that:

Wilderness visitors may directly benefit from the enjoyment, education, therapy, or spiritual renewal coincident to their wilderness recreation. Other may vicariously appreciate or indirectly benefit from wilderness, simply by seeing it on television or by reading about it.

Some people value Wilderness because it piques their imagination and curiosity. The concept of Wilderness serves as a symbol of the natural forces of nature and the natural environment. Others seek and find a sense of spirituality. While there are many different kinds as well as levels of psychological responses to Wilderness, it has long had a recognized value as a location for renewal of mind and spirit, what some may call spirituality. This rejuvenation requires solitude, remoteness and a natural setting for some.

The three themes, or primary values, of Wilderness discussed above each contain elements of definition from the laws that created the Wildernesses. Table 3-1 (below) summarizes key elements of each theme and provides a check list that will be used to evaluate actions proposed in each alternative.

Table 3-1. Wilderness Values.

Theme or Primary Value	Element or Definition from Law
Experiential	Solitude Remoteness Primitive, unconfined recreation Natural state Human works substantially unnoticeable
Scientific	Untrammeled Undeveloped Primeval character Affected primarily by the forces of nature Human works substantially unnoticeable Natural state Unaltered, undisturbed ecosystems
Spiritual/Symbolic	Primeval character Solitude Remoteness Natural state Affected primarily by the forces of nature

**Individual
Wilderness
Descriptions**

The following section presents individual wilderness descriptions.

Chuck River Wilderness

This 74,990 acre Wilderness stretches from the Chuck River drainage and upper Windham Bay north to Point Astley on Holkam Bay (also known as Sumdum Bay) and includes the south side of Tracy Arm. The area is about 10 miles northeast of the community of Hobart Bay and about 70 miles south of Juneau. It is adjacent to the Tracy Arm-Fords Terror Wilderness on the east, and abuts current and planned logging activity on the south and southeast. There are known mineral deposits, including previously producing mines, and numerous unpatented mining claims.

This Wilderness may offer a sense of solitude and remoteness once away from the shorelines of Windham Bay. The bay receives boat traffic from pleasure vessels, commercial fishing vessels, and local cabin owners with inholdings. Recreation

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opportunities are primitive as there are no Forest Service public recreation facilities except for 0.8 miles of primitive trail. Because of the rich history of this area related to mining, fox farms and homesteading, the area is not in a completely natural state.

Coronation Island Wilderness

This 19,232 acre Wilderness consists of an island that lies 18 miles from the northwest coast of Prince of Wales Island, and eight miles south of Kuiu Island. It is a storm-swept, rocky outpost of desolate beauty. It is noted for its karst topography and associated caves, as well as for its many seabird nesting cliffs. It has the appearance of a stone fortress rising out of Iphigenia Bay. Coronation Island is unique due to its remote, island location surrounded by the extremely rough and unpredictable seas of the Gulf of Alaska.

Endicott River Wilderness

This 98,729 acre Wilderness is on the west side of Lynn Canal, 45 miles northwest of Juneau and 30 miles south of Haines. This Wilderness is extremely remote and difficult to access. The Endicott River is the central feature of the Wilderness and flows easterly through a deep glacially carved canyon. This vast Wilderness is characterized by an essentially unmodified natural condition. Users of this Wilderness can expect a high probability of experiencing isolation from the sights and sounds of humans, solitude, and opportunities for primitive recreation (including challenge and risk).

Karta River Wilderness

This 39,894 acre Wilderness is about five miles by water from Kasaan and Hollis. Hollis is linked by road to other Prince of Wales Island communities including Craig, Klawock, and Thorne Bay. Hollis is the only community on Price of Wales Island that is served by the Alaska Marine Highway System. This allows easy and quick access to Karta River Wilderness. This Wilderness of rugged, alpine beauty also features the Karta River drainage which is considered to be a high quality fishery. It is a popular destination for subsistence fishing and recreation. Remnants of late 19th century and early 20th century mining operations add to the allure of this Wilderness.

Kootznoowoo (Admiralty Island) Wilderness

This 988,050 acre Wilderness is a large and primarily remote island Wilderness. It is renowned for its old growth spruce and hemlock forest. It is internationally known for its population of brown bears and is often referred to as "fortress of the bears". A great deal of use takes place in saltwater adjacent to the Wilderness. This is especially true along the northeastern part of the Wilderness on Stephens Passage since it is within relatively short boat distance of Juneau.

Residents of Angoon rely upon Kootznoowoo Wilderness for recreational and subsistence activities, with particularly intensive use of Mitchell, Favorite and Hood bays. Solitude and a sense of remoteness are easily attained if away from shorelines, Seymour Canal, and the Cross-Admiralty Canoe Route. The canoe route is a system of 10 lakes and interconnecting trails across the 20 mile wide island. There are six cabins and six shelters on this route which tend to concentrate use.

Because of the number of cabins within the Wilderness, (both public recreation and isolated, hunter cabins under special use permit), some areas of the island do not offer as high probability for a sense of remoteness or isolation as other areas of the island. As a

national monument and Wilderness, Kootznoowoo Wilderness offers an untrammelled, unmodified natural environment over a vast amount of the total acreage. It serves as a good yardstick for whole, intact ecosystems and with Glacier Bay is currently designated a Man in Biosphere Reserve.

A Man in Biosphere Reserve is an international designation made by the United Nations Education, Scientific and Cultural Organization. Reserves serve as regional centers for monitoring, research, education and training on natural and managed ecosystems. They are places where government decision makers, scientists, managers and local residents cooperate in developing model programs for managing land and water to meet human needs while conserving natural processes and biological resources. Reserves usually are zoned with transition, buffer and core areas. Core areas are those areas containing examples of minimally disturbed ecosystems characteristic of the reserve's biome and biogeographic province. Admiralty Island has not yet been zoned.

Kuiu Wilderness

This 60,581 acre Wilderness is south of the Tebenkof Bay Wilderness on Kuiu Island, about 35 miles south of Kake and 20 miles from Rowan Bay. Fishery values are high, and several bays and anchorages provide fishing and subsistence opportunities for residents of Kake, Port Protection, Point Baker, Port Alexander and other communities. No helicopter access areas have been identified in the Wilderness.

Maurelle Islands Wilderness

This 4,937 acre Wilderness is about 20 miles northwest of Craig across the Gulf of Esquibel. This collection of small, alluring islands provides an excellent setting for kayaking, and the opportunities for sighting sea mammals, particularly sea otters, are boundless. These islands can be easily accessed by skiff from Craig and Klawock. They provide a unique opportunity for exploration and adventure.

Misty Fjords National Monument Wilderness

This 2,142,907 acre Wilderness is about 20 miles east of Ketchikan. It features dramatic saltwater fjords with waterfalls cascading over towering granite cliffs, large glaciated valleys, and active glaciers. 'Misty's' estuaries, rocky alpine areas and dense rain forest are lush havens for wildlife and fish populations.

Misty Fjords is part of the coastal range of mountains that stretches along the western edge of North America. This area is characterized primarily by a variety of deep, narrow and steep-walled fjords that cut into these massive landforms. Prominent on the steep slopes rising from these water ways are sheer rock cliffs that take many different forms.

Also prominent in Misty Fjords are three major rivers, the Unuk, Chickamin and Leduc, which drain out of large ice fields and glaciers in the northeast corner of the Wilderness and British Columbia, Canada. These rivers cut through wide U-shaped valleys often bounded by massive rock cliffs. The southern end of Misty Fjords is characterized by a more gentle, rolling terrain and a flat but irregular coastline with several sand beaches. Misty is flanked on the east by a long fiord, Portland Canal.

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Petersburg Creek-Duncan Salt Chuck Wilderness

This 46,849 acre Wilderness is about five miles west of Petersburg up Petersburg Creek. It abuts the small community of Kupreanof on the east. The western end of the Wilderness can also be accessed by boating through Duncan Salt Chuck at the northernmost point of Duncan Canal. The Wilderness is composed of two major sections: the section surrounding the Petersburg Creek Drainage, and the section surrounding the head of Duncan Canal. The proximity of this Wilderness to Petersburg makes this a very popular and heavily used Wilderness.

Pleasant-Lemesurier-Inian Islands Wilderness

This 23,151 acre Wilderness consists of three small islands. It is in Icy Strait between Chichagof Island and Glacier Bay National Park. Nearby communities include Gustavus, Hoonah, Elfin Cove and Pelican. Residents from these communities use these islands and the waters surrounding them for hunting and fishing. Heavy cruise ship traffic also passes these islands as they head for Glacier Bay. No helicopter access areas have been identified in the Wilderness.

Russell Fiord Wilderness

This 348,701 acre Wilderness is 25 miles northeast of Yakutat, between the Fairweather Range to the northeast and the Brabazon Range to the southwest. The central feature of the Wilderness is the heavily glaciated Russell and Nunatak Fiords. This Wilderness has great scenic variety, with many hanging glaciers, valley glaciers, and rugged peaks. This is a very remote Wilderness with high probability for obtaining a sense of remoteness, isolation, challenge and risk. It is primarily pristine with few modifications other than those caused by glaciers, water and wind.

South Baranof Wilderness

This 319,568 acre Wilderness is on the south end of Baranof Island. It is composed of high mountains rising from sea level to approximately 4,000 feet elevation within two or three miles of the beach. Much of the higher elevations is covered with permanent snow fields and some active hanging glaciers. Valleys are typically glaciated U-shaped and contain many cirques and lakes with waterfalls near the coast. This is a remote Wilderness that offers many opportunities for a sense of remoteness, solitude and isolation. Visitors may have more frequent encounters with the sights and sounds of human activities along the shorelines of this Wilderness as commercial fishermen often seek refuge from storms in the many sheltered bays. Both east and west shorelines are distant enough from population centers to hinder frequent local recreation use.

South Etolin Wilderness

This 83,371 acre Wilderness is on Etolin Island midway between Ketchikan and Wrangell and about 15 miles north of Thorne Bay. It is also on the Alaska Marine Highway route. The area's main attractions are fish and wildlife values for the residents of Wrangell. There is moderate use along the shoreline and very low use in the interior of the Wilderness.

South Prince of Wales Wilderness

This 91,018 acre Wilderness is one of the most remote Wildernesses on the Tongass. A dense rain forest carpets the rugged mountains. Turbulent seas gradually lull into quiet bays. Its location on the southern tip of Prince of Wales Island, exposed to the open ocean swell of Dixon Entrance, makes access difficult. The protected bays and inlets of South Prince of Wales Wilderness are 30 miles from Hydaburg and 65 miles from Craig.

Stikine-LeConte Wilderness

This 449,951 acre Wilderness is east of Petersburg and north of Wrangell, on the mainland. It includes the Stikine River watershed and the LeConte Bay watershed and ice fields, from the Canadian boundary to the sea. The Stikine River valley and LeConte Bay receive moderate to high use in summer. The adjacent ice fields remains wild and remote.

Tebenkof Bay Wilderness

This 66,839 acre Wilderness is on the west side of Kuiu Island, 50 miles southwest of Petersburg. Chatham Strait lies off its western border. This is a very remote Wilderness which results in low dispersed use of the area.

Tracy Arm-Fords Terror Wilderness

This 653,179 acre Wilderness is about 50 miles southeast of Juneau, at the mouth of Holkam Bay adjacent to Stephens Passage. It lies adjacent to Chuck River Wilderness on the west. The Wilderness is characterized by long narrow fiords starting at salt water and reaching to 5,000 to 7,000 foot glacial covered peaks. Dramatic water features in the area include cascades, waterfalls and icebergs floating in the salt water. Much of the activity affecting the Wilderness takes place on the salt water of Tracy Arm where people in cruise ships, pleasure boats and kayak all enjoy the scenic beauty of this fiord. Small planes offer flight seeing tours and sometimes land on the salt water. Within this section of the Wilderness, expect little sense of isolation or solitude. Away from the shoreline, though, a challenging and remote experience may be had with little chance for other encounters.

Warren Island Wilderness

This 11,181 acre Wilderness consists of one oval shaped island with steep rugged slopes rising to over 2,200 feet. This island jewel features beautiful, sandy beaches in its many coves and harbors abundant with wildlife. This is a small Wilderness, but provides a haven of solitude in settings that include fresh water lakes and alpine zones. Small boats are occasionally used to access Warren Island by people from Cape Pole (five miles), Edna Bay (12 miles) and Port Alice (13 miles).

West Chichagof-Yakobi Wilderness

This 265,529 acre Wilderness encompasses the western sides of Chichagof and Yakobi Islands from Kakul Narrows to Soapstone Point. This is a remote Wilderness that can be challenging to access by water. Boats, airplanes and to a minor extent kayaks are the means of transportation to this Wilderness. Sitka, Pelican and Elfin Cove are the three closest communities. Once within West Chichagof-Yakobi Wilderness, protected water makes it relatively safe for small boats. The inland lakes provide good floatplane access. Vast areas of the Wilderness are characterized by an essentially unmodified natural condition, although the area along some of the shorelines has a long history of human

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habitation especially related to mining. Along the shorelines one has a moderate chance for encounters with others. In the interior of this Wilderness, isolation and low probability of encounters with others are to be expected.

Table 3-2 displays the size and Recreation Opportunity Spectrum (ROS) class for each Tongass Wilderness.

Table 3-2. Wilderness acres and ROS class distribution.

Wilderness Name	Acres	P	SPNM	SPM	RN
Chuck River	74,990	50%	43%	7%	
Coronation Island*	19,232	99%		4%	
Endicott River	98,729	98%	2%		
Karta River	39,984	76%	23%	1%	<1%
Kootznoowoo (Admiralty Island)	988,050	82%	4%	14%	<1%
Kuiu	60,581	54%		47%	
Maurelle Islands*	4,937	99%		4%	
Misty Fiords National Monument	2,142,907	98%	<1%	2%	
Petersburg Creek-Duncan Salt Chuck	46,849	54%	26%	24%	
Pleasant-Lemesurier-Inian Islands	23,151		23%	77%	
Russell Fiord	348,701	93%	4%	4%	<1%
South Baranof	319,568	93%	2%	4%	
South Etolin	83,371	30%	30%	36%	
South Prince of Wales	91,018	100%			
Stikine-LeConte	449,951	62%	16%	22%	
Tebenkof Bay	66,839	93%		9%	1%
Tracy Arm-Fords Terror	653,179	93%	4%	2%	
Warren Island*	11,181	99%		1%	
West Chichagof-Yakobi	265,529	88%	6%	6%	

* This ROS was figured using a total for Coronation, Warren and Maurelle Islands.
Table source USDA 1995.

Wilderness Access and Recreation Uses

The following section describes access, facilities, use and recreation opportunities for each of the Tongass Wildernesses. Some of the information presented is similar to that presented above in the Wilderness descriptions but is repeated here to provide complete

descriptions of access, use and recreation opportunities. Visitor use statistics were taken from the 1994 Tongass Wilderness reports.

Chuck River Wilderness

Recreation use has increased with development of nearby Hobart Bay and private lands within the Chuck River area. Fish, bear and furbearers are important recreational resources. The fiords and tidewater glaciers that draw cruise ships to neighboring Tracy Arm-Fords Terror are not present in Chuck River. Because of this, Chuck River still offers visitors an outstanding opportunity for risk, challenge, remoteness and solitude. Use in this Wilderness and Tracy Arm-Fords Terror Wilderness together was reported to be 35,000 Recreation Visitors Days (RVDs) in 1994.

Coronation Island Wilderness

This Wilderness is extremely remote. Waters surrounding the island are exposed to the open ocean swells of the Gulf of Alaska. Coronation Island is a spectacular Wilderness setting but also has many dangers, particularly for boaters. Anchorages are very poor and often exposed to the rough seas of the Gulf of Alaska. Floatplane landings can also be difficult in the frequently rough seas. Because of its remote location and difficult access, recreational use is very limited. Only 600 RVDs use was reported for 1994. One special use permit was issued during 1994 for boating and beach combing. The island provides outstanding opportunities for risk, challenge, remoteness and solitude; nature study in an unmodified environment and other primitive outdoor recreation experiences when weather permits access.

Endicott River Wilderness

There are no facilities or trails. No outfitter-guide permits have been issued. Dispersed recreational opportunities are generally limited to moose and bear hunting in the lower watershed using boat and plane access and moose and mountain goat hunting the upper watershed using plane access. Some hiking, camping and sport fishing may occur in the lower watershed. Only 200 RVDs use was reported during 1994. The Wilderness provides outstanding opportunities for risk, challenge, remoteness and solitude; nature study in an unmodified environment and other primitive outdoor recreation experiences.

Karta River Wilderness

Proximity to Thorne Bay, Kasaan and Hollis allows easy and quick access to Karta River Wilderness. Due to this proximity and the excellent salmon fishing of the Karta River system, recreation use is very high (reported to be more than 4500 RVDs per year, a high number of visitor days for such a small Wilderness). The four Forest Service recreation cabins are in such demand that reservations are managed using a lottery system. The small size, heavy use, and the trail system accessing the cabins in the middle of the Wilderness result in limited opportunities for risk, challenge, remoteness and solitude. There is virtually nowhere to go in this Wilderness to get away from the sight and sound of humans.

Kootznoowoo (Admiralty Island) Wilderness

Recreation facilities include 15 public recreation cabins, nine shelters, and 26 miles of trails. The Cross Admiralty Canoe Route and Pack Creek Bear Viewing Area are prime recreation attractions that receive concentrated visitor use. Kootznoowoo Wilderness

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receives a high number of visitors (307,000 RVDs reported in 1994). Except for the Canoe Route, Pack Creek and Mitchell Bay, visitors experience a moderately low frequency of encounters with other parties in most locations within the Wilderness. A great deal of use takes place on the shoreline and in adjacent saltwater where fishing, sightseeing, wildlife viewing and hunting, photography and exploring occur. Despite the presence of boats and airplanes, Kootznoowoo remains a high quality Wilderness experience. Opportunities for risk, challenge, remoteness and solitude are generally good. Access is easier than some more remote Wildernesses. The northeastern portion is easily accessible from Juneau by small boat or floatplane and affords consistently good opportunities for fall hunting. The Alaska Marine Highway provide access to Angoon on the west side of Admiralty Island which serves as a departure point for points south and east. Many of the interior lakes are accessible by short floatplane trip.

Kuiu Wilderness

This is a fairly remote Wilderness. A portage trail from Affleck Bay crosses the area and provides access to Petrof Bay in Tebenkof Bay Wilderness. Fishery values are high, and several bays and anchorages provide fishing opportunities for residents of Kake, Port Protection, Point Baker, Port Alexander and other communities. A large majority of the use is by people on commercial fishing boats; often as they await a fisheries opening. Use, however, is low; reported to be 1,900 RVDs in 1994. Opportunities for risk, challenge, remoteness and solitude are abundant.

Maurelle Islands Wilderness

This Wilderness has a moderate opportunity for risk, challenge, remoteness and solitude. Use of the surrounding waters is very common., especially by large fishing fleets. The islands also can be easily accessed by skiff from Craig and Klawock. Floatplane flight seeing from Craig is also becoming popular. There are no trails or cabins. Recreation use is almost exclusively water oriented. Hiking and hunting occasionally take place on land. Many small beaches are used for beach combing, and the two lagoons are also popular recreation spots. Recreation use was reported to be 3,000 RVDs in 1994. Recreation use can be expected to increase in the future due to continued population growth within existing communities and in newly selected State lands.

Misty Fjords National Monument Wilderness

This is a very large Wilderness. By far the majority of this Wilderness offers visitors outstanding opportunities for risk, challenge, remoteness and solitude. The rugged environment of Misty Fjords has a profound influence upon the types of recreation which occur. The dense forest understory, sheer mountain slopes, extensive ice fields and long narrow fjords encourage the use of boats, airplanes and developed trails. Cross-country travel is arduous. Annually, the unique scenic beauty of the rock cliffs in Rudyerd Bay draws approximately 2,800 floatplanes and numerous cruise ships from Ketchikan. Rudyerd Bay is about 40 miles from Ketchikan, so flights generally take an hour and a half, and cruises nearly a full day. The Rudyerd Bay area and the associated flight paths are areas of extreme crowding during summer. In this area, remoteness and solitude is often interrupted. Forest Service Wilderness rangers board cruise ships in summer and teach Wilderness concepts. In 1994, 8,064 contacts were made by Wilderness rangers. There are 14 public recreation cabins, four shelters and 47 miles of trail. Recreation use was reported to be 239,300 RVDs in 1994.

Petersburg Creek-Duncan Salt Chuck Wilderness

The proximity to Petersburg and Kupreanof along with facilities spread throughout the Wilderness (two public recreation cabins, two trails and three private cabins) and 11 outfitter-guides result in extensive use of the area. The Petersburg Creek drainage is a major flyway for west bound floatplanes and an occasional jet. Opportunities for risk, challenge, remoteness and solitude are moderate to low. Current recreation uses include hiking and boating from nearby Petersburg, heavy fishing pressure along Petersburg Creek, cabin use, waterfowl hunting, photography and, for some, simply as a place to escape the pressures of modern life. Access from Petersburg is easy with a short boat ride to the Petersburg Creek Trailhead. Other access includes boating up Duncan Salt Chuck or a short floatplane flight. Recreation use was reported to be 6,400 RVDs in 1994.

Pleasant-Lemesurier-Inian Islands Wilderness

Uses in and around this Wilderness include: heavy cruise ship traffic accessing Glacier Bay, subsistence deer hunting on the islands and subsistence fishing in the surrounding waters by nearby residents, heavy boat traffic from these local residents and one outfitter-guide who provides kayak trips and guided hiking on the islands. Most of the use affecting this Wilderness occurs in the surrounding waters. Because of the heavy use surrounding the islands, opportunities for risk, challenge, remoteness and solitude are limited. Recreation use occurring on the islands was only reported to be 90 RVDs in 1994.

Russell Fiord Wilderness

This Wilderness offers a visitor outstanding opportunities for risk, challenge, remoteness and solitude. Visitors can be in large areas for days and never see or hear a sign of civilization. The major evidence of other users or of human alterations is confined to the subsistence tent camps of Nunatak Beach and Chicago Harbor, several un-maintained airstrips within the Fiord, one recreation cabin, three miles of trail, and dispersed outfitter-guide base camps. Access to the fiords is mostly by float or wheel plane from Yakutat. The Situk Lake cabin is accessible by floatplane, a six-mile trail from Forest Highway 10; or in the winter, by snowmobile, skis or snowshoe. Power boats are noticeably absent within the fiords due mostly to the difficulty of navigating through the ice and currents near Osier Island at the face of Hubbard Glacier. In 1994, there was a large increase in the number of cruise ships in Disenchantment Bay (51). Disenchantment Bay is directly outside of Russell Fiord and affords prime viewing of the advancing Hubbard Glacier. Recreation use was reported to be 1,100 RVDs in 1994.

South Baranof Wilderness

Generally, this Wilderness offers visitors outstanding opportunities for risk, challenge, remoteness and solitude due to its inaccessibility and wild character, particularly on the Gulf of Alaska side. There are three public recreation cabins and two trails totaling seven miles. Much of the recreation use is associated with these developed facilities. Common recreation activities include freshwater lake fishing, big game hunting, camping, hiking and boating. Eighteen outfitter-guides are providing the following activities camping, bear hunting, fishing, hiking, sightseeing, beach combing and exploring. South Baranof Wilderness receives moderate deer and goat hunting pressure from Sitka, Kake and Angoon residents. Commercial fishing boats often seek refuge from storms in the many sheltered bays along the coasts. Beach combing, photography and fishing are also popular activities. Recreation use was reported at 6,541 RVDs in 1994.

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South Etolin Wilderness

Primary access to this Wilderness is by boat or occasionally by floatplane with most use coming from Wrangell, Ketchikan, Meyers Chuck, and other outlying community residents. There are opportunities for risk, challenge, remoteness and solitude. Recreation opportunities include fishing, hunting, canoeing, mountain climbing and observing and photographing wildlife. No recreation improvements exist. In 1994 there were seven outfitter-guide permits to provide services such as fishing, hunting, sightseeing and hiking. Recreation use was reported to be 1,800 RVDs in 1994.

South Prince of Wales Wilderness

The exposed location of this Wilderness on the southern tip of Prince of Wales Island makes access difficult. There are no developed recreation facilities or trails. Two outfitter-guide permits were issued in 1994 for beach combing and sport fishing. Recreational use is very limited due to its isolated location. Most use is generated by subsistence fishing, kayaking and commercial fishing boats during the open fishing seasons. This Wilderness offers visitors extremely outstanding opportunities for risk, challenge, remoteness and solitude. Recreation use was reported to be 400 RVDs in 1994.

Stikine-LeConte Wilderness

With the exception of the Stikine River Valley, LeConte Bay and the adjacent ice fields, opportunities for risk, challenge, remoteness and solitude are very good. Though difficult to access, the back country contains some of the finest Wilderness recreation opportunities anywhere in southeast Alaska. There are also some of the most crowded conditions in southeast Alaska closer to Petersburg and Wrangell. Access methods vary. Areas in and near LeConte Bay are primarily accessed by boats including kayaks, small boats and small (less than 200 passengers) cruise ships. Helicopter and airplane overflights occur almost daily. Along the Stikine River, boats provide the main access. Floatplanes use the larger sloughs and lakes.

The Forest Service maintains 12 public recreation cabins near the Stikine River. Cabins are used to support waterfowl hunting, fishing, boating, skiing, hot tubbing, recreational prospecting and wildlife viewing. Five public cabins and numerous private structures along the main stem of the river support intensive activity during moose hunting season. An 1871 international treaty guaranteed free access to and from Canada via the Stikine River, and the river is regularly used by Canadians transporting supplies to support mining operations by cargo airplanes and boats.

In 1994, there were 24 special use permits for activities ranging from jet boating to kayaking to photography. In addition, 54 approvals for motorized equipment such as chain saws and portable motorized winches were granted in 1994. Recreation use was reported to be 5,900 RVDs in 1994.

Tebenkof Bay Wilderness

This Wilderness provides excellent opportunities for risk, challenge, remoteness, and solitude, although these opportunities can be slightly reduced when a commercial fishery is open. Tebenkof Bay is still a very pristine Wilderness. The remoteness of Tebenkof Bay results in low dispersed use of the area. Most people reach this Wilderness by boat or floatplane. Visitor use is primarily saltwater oriented. During spring and fall, black bear hunting occurs along beaches and major streams. During April and May steelhead fishing

occurs in several streams. Kuiu Island is experiencing growth in steelhead fishing and kayaking. Kayakers and canoeists use the area during summer, occasionally portaging one of two trails entering the bay from Keku Straits.

Sixteen special use permits were issued in 1994 for activities including environmental education, kayaking, beach combing, hiking, sport fishing, big game hunting, sight seeing and photography. Recreation use was reported to be 3,700 RVDs in 1994.

Tracy Arm-Fords Terror Wilderness

There are no public trails or facilities in this Wilderness. The major recreational use occurs in Tracy and Endicott arms by large cruise ships, and smaller tour boats and permitted outfitter-guides mainly from Juneau. Use in this Wilderness and Chuck River Wilderness together was reported to be 35,000 RVDs in 1994. Most of this high use is attributable to cruise ships in Tracy and Endicott arms. Tracy and Endicott arms are extremely heavily used areas with solitude and remoteness often interrupted by tours. Tracy Arm-Fords Terror Wilderness is very large, however. Like Misty Fiords National Monument Wilderness, the majority of this Wilderness offers outstanding opportunities for risk, challenge, remoteness and solitude.

Warren Island Wilderness

Large fishing fleets frequent the waters surrounding Warren Island and boat traffic around of Cape Pole, Edna Bay and Port Alice can often be seen. This evidence of human use plus the heavily harvested hillsides of Kosciusko Island a few miles to the east result in reduced opportunities for risk, challenge, remoteness, and solitude. Small boats are occasionally used to access Warren Island by people from Cape Pole, Edna Bay and Port Alice. Almost all of this use is beach combing. Camping and hiking rarely take place on the island due to its relative inaccessibility and the availability of such opportunities on neighboring developed islands. Recreation use was reported to be 600 RVDs in 1994.

West Chichagof-Yakobi Wilderness

The distance of this Wilderness from population centers and its relative inaccessibility have allowed most of the area to retain its primitive Wilderness character. Visitors can expect a high probability of experiencing isolation from the sights and sounds of humans, closeness to nature, tranquillity and self-reliance through the application of outdoor skills in a environment that offers a high degree of challenge and risk. Facilities include three recreation cabins, and five hiking trails totaling 6.8 miles. The opportunity for solitude is reduced around these facilities. Use is especially concentrated around White Sulphur Cabin and Hot Springs, a favorite stop for boaters, commercial fishers, kayakers, guided groups, and others who enjoy the hot springs. Visitation has been steadily increasing. During 1994, there were 20 permitted outfitter-guides. Recreational fishing, sightseeing, camping, picnicking, hiking, hunting and gathering forest products have increased in popularity during recent years. Kayaking, in particular, has become a major recreational pursuit and means of transportation for visitors. Long-term increases in recreation will probably focus on the outer coast of Chichagof and Yakobi islands. Recreation use was reported at 5,400 RVDs in 1994.

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Wild and Scenic Rivers

The rivers eligible for Wild and Scenic River designation that have helicopter access areas within their identified corridors are listed in Table 3-3 below.

Table 3-3. Rivers within Tongass National Forest Wildernesses eligible for Wild and Scenic River designation.

*Wilderness	Eligible River	Status	# Access Areas
Endicott River	Endicott River and Lake	**W	6
Karta River	Karta River-Salmon Lake	W	6
Kootznoowoo (Admiralty Island)	Hasselborg River and lakes	W	6
	King Salmon River	W	1
Misty Fiords National Monument	Bakewell Creek-Badger Lake	W	1
	Big Goat Creek and Lake	W	1
	Chickamin river	W	2
	Gokachin-Mirror-Low-Fish Creek	W/S	7
	Humpback Creek and Lake	W	6
	Orchard Creek and Lake	W	1
	Punchbowl Creek	W	1
	Sockeye Creek-Hugh Smith Lake	W	1
	Unuk River	W	4
	Wilson River and Lake	W/S	3
Petersburg Creek- Duncan Salt Chuck	Duncan Salt Chuck Creek	W	1
	Petersburg Creek	W	1
Russell Fiord	Dangerous River	W/S	2
South Prince of Wales	Klakas Lake and streams	W	1
Stikine-LeConte	LeConte Glacier	W	1
	Andrews Creek	W	1
	Stikine River	S	3

* Wildernesses without eligible Wild and Scenic Rivers are not displayed

** W - Wild River, S - Scenic River

As stated in the Forest Service Manual (2354.42e),

Manage rivers that are entirely or partially within a component of the National Wilderness Preservation System to preserve the wilderness resources including solitude, natural environments, and opportunities for primitive, unconfined activities that offer challenge. Resolve any conflicts between provisions of the Wilderness Act and provisions of the Wild and Scenic Rivers Act in favor of the more restrictive of the provisions unless a specific exception is stated.

This analysis does not authorize the construction or maintenance of airfields. Access areas used for the landing of helicopters are natural openings and no site modifications are needed for their use. As there are no site modifications included with this use there is no changes to the free flowing or natural character of these rivers that may affect their eligibility.

Recommendations for rivers to include in the Wild and Scenic River System will be forthcoming in the revised supplement to the draft EIS for the Tongass Land Management Plan Revision due out in the spring of 1996. A final recommendation will be made in Tongass plan Record of Decision expected in the fall of 1996.

For the purposes of this analysis, maps and descriptions from Appendix E of the 1991 supplemental draft EIS for the Tongass Land Management Plan Revision were reviewed to determine whether access areas were located within eligible Wild and Scenic River corridors. If there are changes between the 1991 and 1996 versions of the Tongass Plan revision , they will be addressed in the Helicopter Landings in Wilderness Final EIS.

Off-site Human Environment

The importance of forest resources to the regional economy of southeast Alaska cannot be overemphasized. Most communities in the region are characterized by a dependence on one or more natural resource-based industries including: wood products, commercial fishing and fish processing, tourism and commercial recreation, mining and mineral development. Government, especially in Juneau, transportation services and educational services are also significant income sources. Residents of the numerous small, rural communities also depend heavily on subsistence fishing and hunting to meet their basic needs. The following sections provide overviews of the regional economy, trends in tourism and recreation and the helicopter industry in southeast Alaska.

With respect to the social and economic environment, the primary area of influence for this draft EIS includes all of southeast Alaska. This geographic region extends roughly 500 miles from Ketchikan in the southeast to Yakutat in the northwest and is generally unpopulated wild country. Nearly 80 percent of the region is located within the Tongass, the largest forest in the National Forest System. As a result, the population of 69,000 is divided among 33 cities, towns and villages located within, or very near, the boundaries of the Tongass.

Settlements in southeast Alaska range in size from one person living near a sheltered bay to more than 28,000 people living in a full-service community. Although some communities are on Forest road systems, most settlements are accessed primarily, if not exclusively, by aircraft or boat. This relative degree of remoteness, combined with the considerable scenic and recreation opportunities provided by the Tongass National Forest,

Regional Economics

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is sought by many wanting a more self-reliant lifestyle. Residents are often quick to point out the quality of life found in southeast Alaska outweighs the possible disadvantages of seasonal employment, lack of jobs, costs of importing goods and services, transportation and weather.

The residents of most communities in southeast Alaska depend almost exclusively upon the forested environment of the Tongass for their livelihood, via commercial fishing and fish processing, timber harvesting and processing, mining, tourism and commercial recreation (Table 3-4). The Forest also provides a rich reserve of fish and game for Native and non-Native subsistence use. Because there is only a limited amount of private land in the region, continued access to the abundant natural resources of the Tongass is of utmost importance to many residents.

Table 3-4. Southeast Alaska Employment 1994 and 1996 Forecast

Employment Sector	Annual Average Employment		
	1994	1996	Change
Goods Producing	5,850	5,550	-300
Mining	150	225	+75
Construction	1,550	1,525	-25
Manufacturing	4,150	3,800	-350
Seafood Producing	1,650	1,525	-125
Forest Products	2,200	1,950	-250
Other	300	325	+25
Service Producing	29,400	30,000	+600
Transportation	2,900	2,975	+75
Trade	6,550	6,750	+200
Wholesale	550	550	0
Retail	6,000	6,200	+200
Finance, Insurance, Real Estate	1,450	1,600	+150
Services and Miscellaneous	6,200	6,575	+375
Government	12,300	12,100	-200
Federal	2,000	1,950	-50
State	5,350	5,250	-100
Local	4,950	4,900	-50
Total	35,200	35,550	+300

Source: Alaska Economic Trends, Alaska Department of Labor, May 1995.

A mixed bag of employment growth and decline is projected for southeast Alaska in the near term. Gains are expected in the mining industry following reopening of the Greens Creek mine on Admiralty Island and construction employment is expected to increase in response to a number of residential and public works projects. As the number of visitors to southeast Alaska continues to increase, so too does employment in the retail trade and service sectors of the economy. Gains in these industries are expected to be tempered by the effects of recent sawmill closures and reduced logging activity. The outlook for the government sector is also bleak as budget concerns are expected to lead to job cuts. Finally, new individual fishing quotas for some species may lead to a reduction in the number of seasonal and short-term processing and fishing crew positions.

Trends in Tourism and Recreation

According to International Tourism and Resort Advisors (ITRA), Alaska's visitors can be classified into the following market segments:

"Packaged" Tours - Visitors that buy a pre-packaged vacation to Alaska. Tour packages typically include transportation to and from the state, accommodations while in the state, and/or sightseeing options. Cruiseship passengers are an example of this market segment.

"Inde-Package" Travelers - Visitors who plan their own itineraries and make their own travel arrangements, including the purchase of local tours and sightseeing options upon arrival. Purchased activities range from sightseeing tours, tour boat excursions, and salmon bakes to excursions of one or more nights in duration.

"Independent" Travelers - Visitors who have made all their own arrangements and do not plan to purchase sightseeing tours or other organized activities upon arrival.

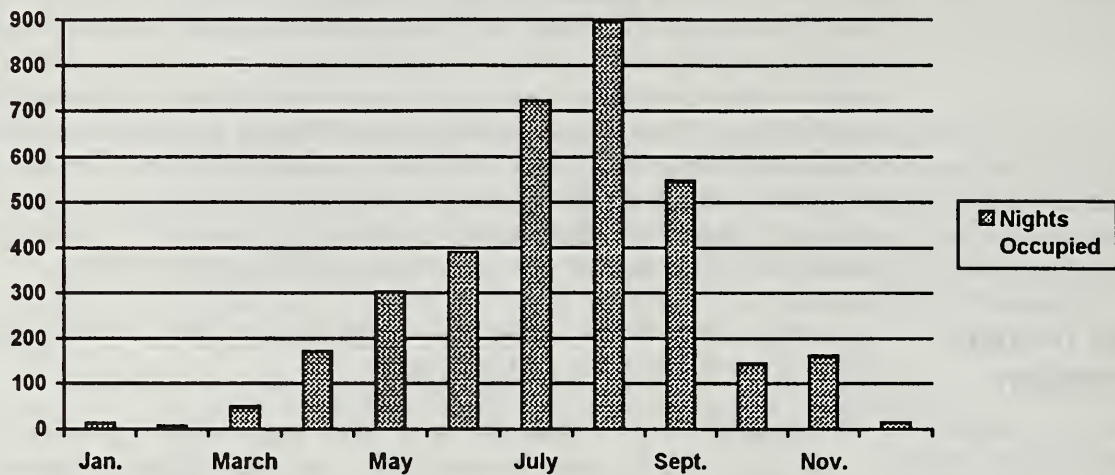
Although cruise ship passengers currently account for the largest share of visitor volume in Alaska, the "inde-package" sub-group is the fastest growing segment among all visitor types and is the most likely target for marketing of Wilderness helicopter tours. Accounting for only 3 percent of Alaska's visitors in 1985, "inde-package" visitors now represent 19 percent of total visitation. Moreover, this market segment is expected to grow at an average annual rate of 10 percent (ITRA 1992). Expansion of local tour opportunities and better in-State marketing of tour options have contributed to the rapid rate of growth. During the summer of 1993, an estimated 60,203 visitors were "inde-package" travelers and 69,465 were independent travelers (McDowell 1994).

Seasonality and Growth of Recreation Use on the Tongass National Forest

Recreation use on the Tongass National Forest tends to be seasonal due to several factors. Both the relatively small local population and the large number of summer visitors primarily recreate during summer. Much recreation on the Forest is accessed by boat or floatplane since the Tongass is made up of many small islands, unconnected by roads. Because of this, unpredictable fall, winter and spring weather causes residents to reduce the amount of travel to favorite recreation places during this time of the year also. The seasonality of recreation use is illustrated by Figure 3-1 displaying 1994 use of Ketchikan Area public recreation cabins.

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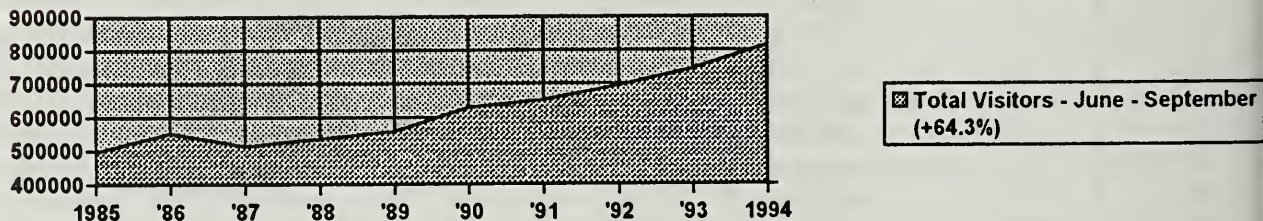
Figure 3-1. 1994 Ketchikan Area Cabin Use - Nights Occupied



Source: Ketchikan Area Cabin Data Base 1994.

Tourism throughout southeast Alaska has been increasing rapidly in recent years. This growth is expected to continue. It may mean rapid tourism/recreation growth in Wilderness. Figure 3-2 depicts growth in visitor arrivals for the four-month period (June through September) annually from 1985 through 1994. There has been a 64.3 percent growth in non-resident June to September visitors during those 10 years.

Figure 3-2. Visitor Arrivals June through September 1985 to 1994.



Source: Alaska Department of Commerce and Economic Development 1995.

Commercial Wilderness Use

In 1994, 197 outfitter-guide permits were issued for activities within these Wildernesses and another 16 requests were on file. Permitted activities include: Wilderness camping, kayaking, sport fishing, big game hunting, sightseeing, nature hiking, flight seeing, beach combing, photography, hiking and environmental education.

Eight Wildernesses have a high level of permitted commercial activity while offering outstanding opportunities for solitude and a remote setting. These include: Kootznoowoo (Admiralty Island), Kuiu, Misty Fiords National Monument, Russell Fiord, South Baranof, Tebenkof Bay, Tracy Arm-Fords Terror and West Chichagor-Yakobi. Although other Wildernesses also receive high levels of commercial use, due to the concentration of other users, isolation is not the primary attraction or marketable quality.

Even if philosophically polarized on the political issue of designation of Wilderness most permittees agree on the need for Wilderness resources: scenery, wildlife and solitude.

These elements of Wilderness are frequently mentioned in association with specific activities, such as fishing, photography, kayaking and hiking. The outfitter-guides, pilots and tour operators are not universally opposed to any further development of any kind within the forest, yet they are quick to point out that they depend on quiet inlets and secluded coves--the essence of the Wilderness experience they "export". Undeveloped natural areas, inside and outside of Wilderness are a must for these businesses.

The Alaska Department of Fish and Game conducted a survey of businesses operating in Southeast that were believed to cater to clients interested in viewing, photographing, filming, or studying wildlife. Non-consumptive uses of wildlife in Alaska are of growing interest and are important activities of both resident and non-resident tourists. The results of this survey indicate that businesses catering to clients seeking wildlife viewing experiences are most adversely effected by logging and growing recreation pressure in remote areas. Survey responses also suggest that the chance encounter of as few as four other groups of visitors was cause for 49 percent of the businesses to avoid an area. The number of clients reported by the 78 businesses responding to the survey was 85,084 in 1989. At that time there were an estimated 120 businesses of this type in operation in southeast Alaska (ADF&G 1990).

Growth Opportunities in Commercial Wilderness Use

Increasing worldwide interest in learning about native cultures and the natural environment and the fascination with true Wilderness experiences, could give Alaska a leading edge over its nearest competitors and a unique position in the world market. Thus, further opportunities for expanding visitation to Alaska are primarily associated with the State's natural environment, its cultural resources and the vacation experiences that access to these resources offers.

Table 3-5. Growth in recreation special use permits (SUPs) by Wilderness.

Wilderness Name	# Guide SUP - 1990	# Guide SUP 1994	Change
Chuck River	0	0	0
Coronation Island	0	1	+1
Endicott River	0	0	0
Karta River	0	0	0
Kootznoowoo (Admiralty Island)	14	36	+22
Kuiu	0	16 + 7 on file	+16
Maurelle Islands	0	0	0
Misty Fjords National Monument	15	20	+5
Petersburg Creek-Duncan Salt Chuck	0	11	11
Pleasant-Lemesurier-Inian Islands	0	0	0
Russell Fiord	4	5	+1
South Baranof	1	18	+17
South Etolin	0	7	+7

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Wilderness Name	# Guide SUP - 1990	# Guide SUP 1994	Change
South Prince of Wales	5	2	+2
Stikine-LeConte	4	24	+20
Tebenkof Bay	5	16 + 9 on file	+11
Tracy Arm-Fords Terror	4	21	+17
Warren Island	5	0	0
West Chichagof-Yakobi	3	30	+27
Total	52	208	+156
Average per Wilderness	2.7	10.9	+8.2

Note: Numbers on file represent outfitter-guide special use permit applications awaiting processing; totals and averages do not include any applications on file.

The potential for Wilderness tours is greater than the level currently provided in Alaska. Often called natural history tourism, adventure travel, soft adventure, eco-tourism and specialty travel, Wilderness tours are of growing interest among an increasingly urbanized U.S., European and Asian population. Europeans, as an Alaska visitor market, are more inclined toward this type of tourism than traditionally packaged tours. The Wilderness tour potential for Japan and other Asian markets is undeveloped. The closest offerings are aurora borealis viewing trips to the Interior and custom sport fishing tours (ITRA 1992).

Wilderness touring is labor intensive, requiring higher ratios of employees to clients than do other less rigorous tours. However, revenues are high relative to the volume of visitors accommodated. Per day costs of Wilderness touring range from \$100 to \$300 or more. Only a handful of small firms and a number of individuals offer true Wilderness back-country tours. Alaska Discovery is one of the largest, yet handles only about 600 visitors a year. There is no reliable estimate as to the number of visitors who participate in commercial Wilderness tours each year (ITRA 1992).

During the four years between 1990 and 1994, outfitter-guide permits increased almost by a factor of four (from an average of 2.7 to 10.9 permits per Wilderness). This shows how rapidly the outfitting and guiding is expanding on the Tongass National Forest. It should be noted that outfitter-guide permit numbers tend to fluctuate from year to year depending on industry trends and the ability of the Forest Service to issue permits. Overall increases in permit numbers are, however, good indicators of growth in the industry. Table 3-5 shows growth in recreation special use permits by Wilderness.

The tourism industry is essentially selling, or "exporting" the scenic beauty and unspoiled Wilderness of Alaska, whether it is experienced from the deck of a cruise ship or the cockpit of a kayak. The industry's trend toward greater promotion of designated Wilderness parallels marketing efforts highlighting the vast natural areas of the State. The Alaskan "image" that has been promoted by the State over the past 20 years is personified in the designation of an area as "Wilderness", an official recognition of "natural beauty and absence of civilization". In the words of historian Roderick Nash, "The nature exporting that has historically been the mainstay of Alaska tourism depends on how different Alaska is from the rest of the nation and the world (Nash 1981)." To maintain this difference the

single most coveted element of Southeast--the wild, unspoiled nature of its landscape--must be sustained.

The Helicopter Industry

In 1995, five helicopter companies involved in tourism operated in southeast Alaska. Temsco, Era and Coastal Helicopters each had a base operation in Juneau and a total of 31 helicopters are located there. Temsco also had a base operations in Ketchikan (10 helicopters), Skagway (5 helicopters), Petersburg (2 helicopters) and Wrangell (1 helicopter). Mountain Aviation operated a helicopter service out of Sitka. C & I Helicopters operated a helicopter service out of Ketchikan (4 helicopters). Together, the companies employed around 100 persons in southeast Alaska during the peak season of operation (personal communications).

The helicopter companies have been operating in southeast long before tourism became a growth industry in the economy. According to one operator, prior to 1987 his business wasn't even affiliated with the tourism industry; it was affiliated with a mixture of mineral exploration, logging and agency administrative uses (personal communication Bill Zeman 1995). However, as the timber and mining industries began to taper off, so did the need for helicopters in support of such activities. Thus, the rise in the demand for helicopter glacier tours in recent years has helped the companies offset some of the decline in the more traditional business and recreational activities.

In terms of the current business mix, the companies provide charter and contract air service to the Forest Service, Bureau of Land Management, Alaska Department of Fish and Game and private individuals. They provide airborne assistance for construction and survey work, wildlife and fisheries studies, film work, access to Forest Service cabins and passenger transportation for point-to-point access. The operators were in general agreement that recreational access currently accounts for about 10-20 percent of their business, more traditional project work counts for 30-40 percent and glacier tours make up the remaining 50 percent.

Assuming that the demand for recreational access grows at the same pace as the anticipated increase in the number of inde-package visitors (10%), cruise ship visitation increases at 4 percent and project-related work remains constant, the business mix for the helicopter industry will change accordingly. By 2004, recreational access would account for 26% of total revenues to the industry. This projection assumes that the percent of cruise ship passengers and inde-package visitors choosing helicopters as a means of transport remains relatively stable for the next few years.

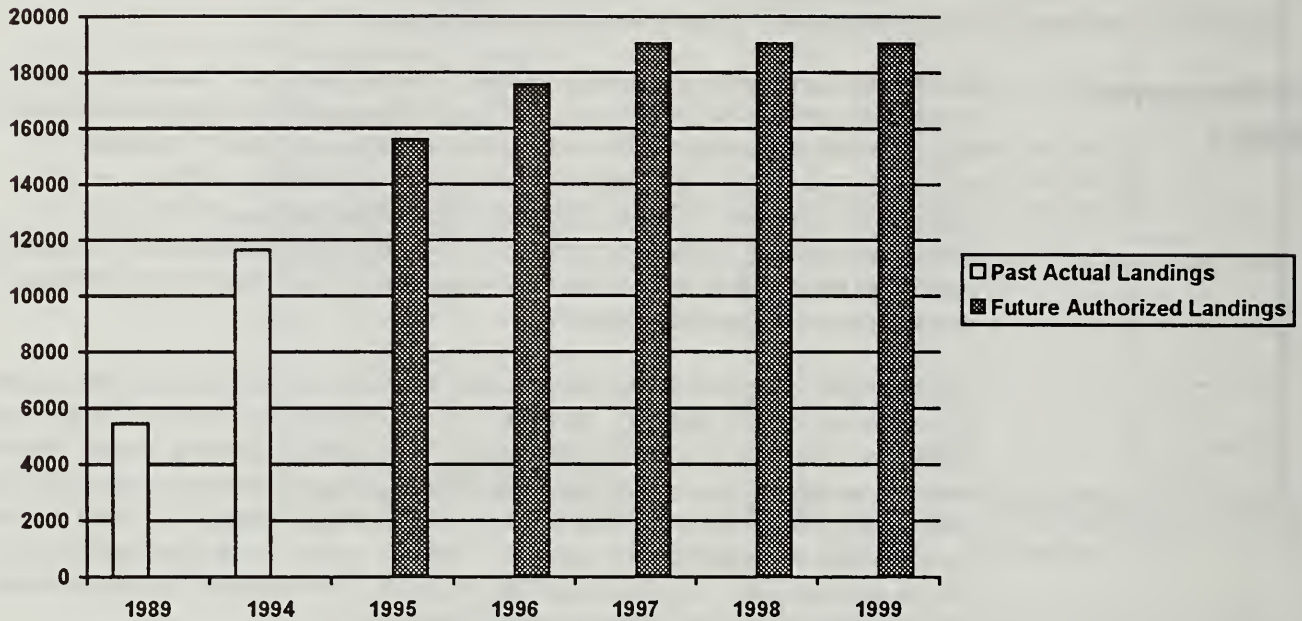
Helicopter use is largely regulated by economics. At \$640 per hour, helicopters are over three times more expensive than floatplanes. Helicopters travel at about 120 knots; however, the time it takes to access a given area depends quite a bit on the terrain and site-specific weather conditions. A one-hour drop-off flight and subsequent pick-up could cost upwards of \$2,500. As a result, it is likely that helicopter use will be the highest in areas of close proximity for which there are no alternative, lower cost means of access. Of course there are always exceptions.

Tongass Helicopter Recreation Use Patterns Outside Wilderness

The use of helicopters for recreational access and tours has been growing quickly in recent years in southeast Alaska. Helicopters that carry five or six passengers are generally used in the industry. The growth of Juneau Icefield tours and proposed glacier tours and heli-hiking (helicopter access hiking) in the Haines Skagway area illustrate this (USDA 1994). Figure 3-3 depicts growth in Juneau Ice Field helicopter glacier tours from 1989 to 1999.

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Figure 3-3. Growth in Helicopter Glacier Tours - Juneau Ice Field



During the seven years between 1987 and 1994 helicopter landings on the Juneau Icefield tripled, from 3,636 landings to 11,276 landings. By 1999, an estimated 17,960 landings will be occurring on the Juneau Icefield.

Recent requests to the Juneau Ranger District from helicopter operators indicate that interest in providing alpine and glacier landings beyond the boundaries of the Juneau Icefield is also growing rapidly. By 1999, almost 12,000 helicopter landings will be occurring in the Haines and Skagway area; about 3,000 on National Forest lands and about 8,000 on other public lands managed by the Bureau of Land Management. Figures 3-4 and 3-5 displays authorized helicopter landings for glacier tours and heli-hiking in the Haines and Skagway area of northern southeast Alaska by the Forest Service and Bureau of Land Management.

Figure 3-4. Authorized Haines/Skagway Helicopter Landings - Forest Service

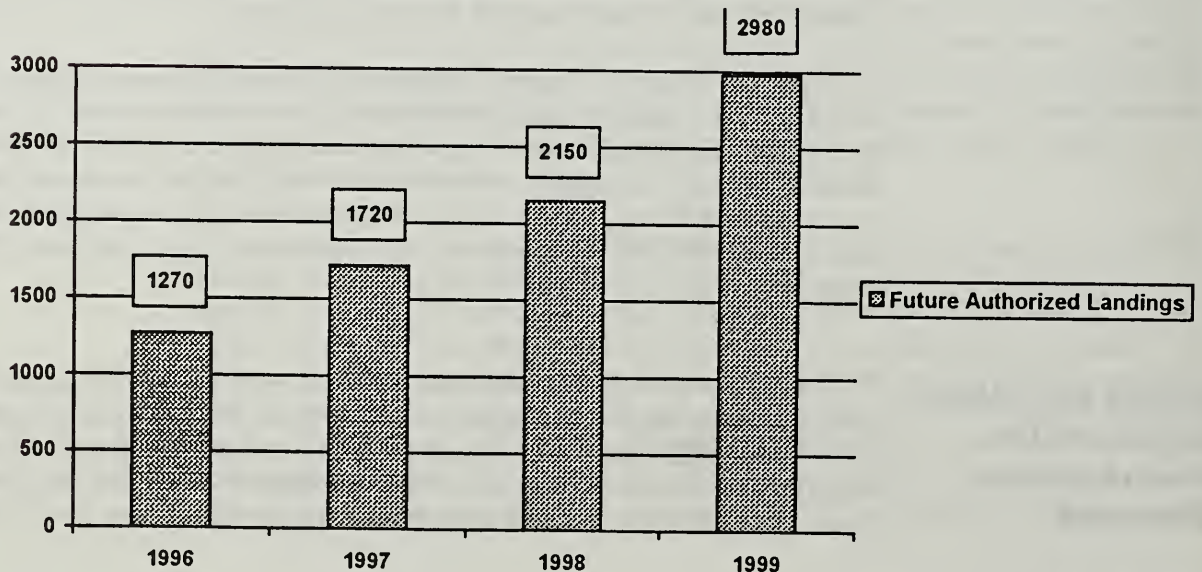
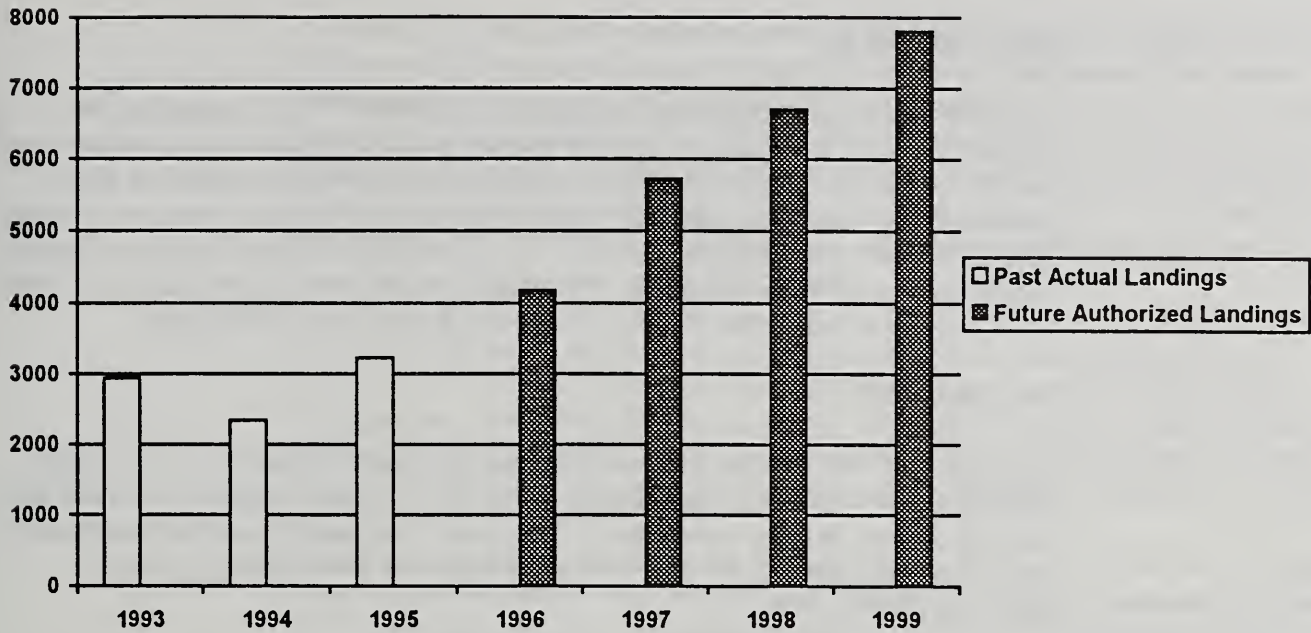


Figure 3-5. Authorized Haines/Skagway Helicopter Landings - Bureau of Land Management



These examples indicate that the amount of helicopter use on the Tongass is increasing rapidly and will continue into the future. Juneau is the first to experience this growth due to the number of operators and the proximity of attractions to town, but already other cities like Petersburg and Wrangell are experiencing growth too. It may not be long until many other areas begin to feel this growth too. More cost effective methods of using helicopters are being considered such as using floatplanes to transport passengers to remote areas where they transfer to helicopters to cut helicopter flight times. This method may bring helicopter use to even the most remote locations where flight costs would otherwise restrict the use of helicopters.

Scientific Resources and Uses

Section 4(b) of the Wilderness Act states that, "wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use." This section addresses the Research Natural Areas designated or proposed in Wilderness.

Research Natural Areas

Research Natural Areas (RNA's) are part of a national network of ecological areas designated for research and education and/or to maintain biological diversity on National Forest lands. RNA's are used for non-manipulative research, observation, and study. They also serve to carry out provisions of special acts, such as the Endangered Species Act and the monitoring provisions of the National Forest Management Act. Currently, six RNAs are established on the Tongass National Forest. Two are within Wilderness: Pack Creek RNA in Kootznoowoo Wilderness and Red River RNA within Misty Fiords National Monument Wilderness.

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Pack Creek RNA

This 5,837-acre area on Admiralty Island was established in 1951. It represents the old-growth spruce-hemlock forest type in northern southeast Alaska and productive coastal brown bear habitat. The Pack Creek RNA also includes excellent examples of diverse alpine meadows, rock falls, and snow fields representative of much of northern Admiralty Island. Recently, the Pack Creek area has received much use from the public as a brown bear viewing area, so Forest Service officials have decided to de-list the Pack Creek RNA and substitute an area in Gambier Bay, also within Kootznoowoo Wilderness.

Red River RNA

Established in 1980, this RNA represents the northern range of Pacific silver fir (*Abies amabilis*). Pacific silver fir has a limited distribution in Alaska, apparently confined to the extreme southern degrees north latitude. The species has special ecological significance near the northern limits of its range owing to its apparent slow northern expansion following glacial retreat.

Potential Research Natural Areas within Wilderness

The Supplement to the Draft Environmental Impact Statement for the Tongass National Forest Land Management Plan Revision (1991) identified 30 additional potential Research Natural Areas of which 14 are in Wilderness. Table 3-6 displays the 14 proposed Research Natural Areas in Tongass Wildernesses.

Table 3-6. Proposed Research Natural Areas within Wilderness.

Wilderness	Proposed Research Natural Areas
Kootznoowoo	W. Gambier Bay (in place of Pack Creek), Tiedeman Island, Swan Cove
Misty Fiords National Monument	Blue Lake Lava, Marten River, Robinson Lake
Pleasant-Lemesurier-Inian Islands	Pleasant Island
Russell Fiord	Mountain Lake, Upper Situk
South Baranof	Plotnikof-Port Banks
South Etolin	South Etolin
South Prince of Wales	Klakas
Stikine-LeConte	Twin Lakes
West Chichagof-Yakobi	Myriad Islands

Soils and Vegetation

A review of the available information indicated that soils had not been mapped within the wilderness at a site-specific level sufficient for describing consequences of helicopter landings in the Wildernesses. For this analysis, cover types that are sensitive to trampling damage are used as indicators for dealing with the concerns for vegetation damage and potential soil erosion. The cover type data stored in the forest Geographical Information System (GIS) timber type database (TIMTYPE) served as the source of information for this analysis. TIMTYPE was developed from aerial photograph interpretation and has not been field verified for most of the Wildernesses.

Old-growth forests are cover types distinguished by old trees and related structural attributes. Old growth includes the later stages of stand development. Old growth is different from younger stands in that it usually has larger trees, a wide variety of sizes and spacing of trees. Old growth stands usually have large accumulations of dead and downed material on the forest floor and many standing dead trees (USDA Forest Service 1993).

Old-growth forests have been characterized as being highly productive (those producing over 8,000 board feet of timber per acre) and non-productive (those producing less than 8,000 board feet per acre). Non-productive old growth forest may include openings of meadows, brush or muskegs where helicopters may land. Non-productive forest also includes willow, cottonwood and alder forests. Helicopter access areas in highly productive old-growth stands are relatively unusual due to the small openings and tall canopy of the dominant trees.

Non-forest cover types include the tidal meadows, wetland bogs, fens, marshes, swamps, grass or sedge meadows and brush field areas below 1500 feet in elevation. Rock and ice includes the cliffs, rock outcrops and ice fields found within the Wildernesses. Alpine cover types include the alpine and subalpine cover types typically found above tree line in Southeast Alaska. These cover types are usually found above 1500 feet but may occasionally be found near 1000 feet in elevation on steep norther exposures. The low-productive forest, non-forest, rock, ice and alpine cover types are considered to be the most typical to be visited.

Table 3-7 indicates the amount of the various cover types (by Wilderness) found within the 12 Wildernesses considered in this project.

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Table 3-7. Acres of various cover types found within 12 Wildernesses.

Wilderness	Productive Forest	Non-productive Forest	Non-forest	Rock	Ice	Alpine
Endicott River	15,022	22,337	59,850	26,536	5,399	20,336
Karta River	21,194	13,356	5,339	1,580	0	3,619
Kootznoowoo	544,970	263,148	157,893	25,877	1,580	105,053
Misty Fjords N. M.	566,922	756,974	839,219	292,642	118,417	423,001
P'burg Creek-Duncan	22,716	21,039	4,320	20	0	6,560
Russell Fiord	24,223	44,286	234,404	71,587	48,062	5,161
South Baranof	64,967	110,471	140,218	68,548	3,558	41,997
South Etolin	35,120	38,329	9,071	3,160	0	9,853
South Prince of Wales	32,154	48,057	7,116	1,919	0	1,960
Stikine-LeConte	72,041	47,794	329,429	103,141	141,724	31,337
Tracy Arm-Fords Terror	33,879	31,030	540,417	197,737	255,947	15,742
West Chichagof-Yakobi	60,655	114,384	96,719	38,239	320	33,417
Totals	1,493,863	1,511,205	2,423,995	830,986	575,007	698,036

Source: Tongass Land Management Plan Revision Database QW1016.

Within each of the cover types considered, the soils and vegetation are strongly influenced by climate, parent material, hydrology and topography. Soils and vegetation often interact and changes in one will affect the other.

Over 100 different kinds of soils have been identified in the Tongass National Forest. Soils in Southeast Alaska develop in parent materials originating from a variety of geological or vegetative sources. Parent material is the inorganic (mineralized) or organic (mostly vegetative) matter in which the soils develop (USDA 1991). The amounts of each parent material determines the classification of the soil into mineral and organic soils. Both occur extensively in the Forest.

Studies of trampling in alpine and subalpine plant communities suggests that certain vegetation types have thresholds of vulnerability. They are capable of resisting damage as long as trampling intensity is low. Once trampling intensities exceed these thresholds, damage occurs and increases as trampling increases. Once damage has occurred, trails and tracks persist for long periods in the alpine cover types. Some of the vegetation damaged by trampling may take many years to recover (Cole 1995a).

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Table 3-8 is a summary of the acres of cover type characteristics of the access areas considered in this analysis.

Table 3-8. Summary of acres of cover type characteristics within access areas in 12 Wildernesses.

Wilderness	Access Areas*	Prod. Forest	Non-prod. Forest	Non-forest	Rock	Ice	Alpine	Totals
Endicott River	6	816	991	493	0	0	307	2,607
Karta River	6	41	34	5	0	0	0	80
Kootznoowoo	*28	6,396	643	5,923	1,458	10	5,115	19,544
Misty Fiords N. M.	54	630	167	265	41	11	61	1,175
P'burg Creek-Duncan	2	2,355	522	1,632	0	0	0	4,515
Russell Fiord	4	170	0	46	125	0	0	341
South Baranof	*6	516	142	169	149	0	175	1,150
South Etolin	1	820	13	398	400	0	554	2,185
S. Prince of Wales	2	20	24	5	0	0	0	44
Stikine-LeConte	10	4,860	146	1,575	145	15,669	881	23,275
Tracy A.-Fords Terror	*4	300	1	137	220	1,385	0	2,043
W. Chichagof-Yakobi	*1	20	23	17	0	0	0	60
Grand Totals	*124	16,943	2,705	10,735	2,538	17,075	7,097	57,017

* Data unavailable for a five access areas in these wildernesses.

Threatened, Endangered or Sensitive Plants

The only plant federally listed or proposed for listing by the U.S. Fish and Wildlife Service in Alaska is *Polystichum aluticum*, which is endangered. It is only known from Adak Island and is not expected to occur in the project area.

Twenty-two vascular plants are designated as sensitive in the Alaska Region (Appendix B). Sensitive plants are those species designated by the Regional Forester for which population viability is a concern.

Table 3-9 displays the general habitats where sensitive species have been reported. The table also indicates the Ranger Districts where these plants are known or suspected to occur.

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Table 3-9. Alaska Region Sensitive Plants

General Habitat	Scientific Name	Admiralty	Craig	Hoonah	Juneau	Ketchikan	Misty Fjords	Petersburg	Sitka	Thorne Bay	Wrangell	Yakutat	
Maritime beaches	<i>Stellaria ruscifolia ssp. aleutica</i>												
Upper beach meadows	<i>Senecio moresbiensis</i>												
Well drained open areas	<i>Romanzoffia unalaschcensis</i>												
Forest edge	<i>Ranunculus orthorhynchus var. alaschensis</i>		X										
Forest	<i>Puccinellia kamtschatica</i>	X	X										
Open forest	<i>Poa laxiflora</i>		X										
Streamsides, riverbanks	<i>Platanthera gracilis</i>		X										
Lake margins, marshy areas	<i>Platanthera chorisiana</i>		X										
Shallow freshwater	<i>Papaver alboroseum</i>		X										
Muskeg	<i>Ligusticum calderi</i>			X									
Heath	<i>Isoetes truncata</i>												
Dry meadows	<i>Hymenophyllum wrightii</i>			X	X								
Wet meadows	<i>Glyceria leptostachya</i>					X	X	X					
Alpine and subalpine	<i>Draba kamtschatica</i>												
Rock outcrops	<i>Draba borealis var. maxima</i>						X	X	X				
	<i>Dodecatheon pulchellum ssp. alaskanum</i>		X										
	<i>Cirsium edule</i>			X									
	<i>Carex lenticularis var. dolia</i>						X	X	X				
	<i>Arnica lessingii ssp. norbergii</i>					X	X	X	X				
	<i>Aphragmus eschscholtzianus</i>					X	X	X	X				
Occurrence by Ranger District:		K = known; S = suspected											
Admiralty		S	S										
Craig			S										
Hoonah			S										
Juneau			S	K	K								
Ketchikan			S	K	K	S							
Misty Fjords													
Petersburg								S					
Sitka								S					
Thorne Bay								S					
Wrangell								S					
Yakutat		S	K					S					

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Table 3-10 displays the general habitats for sensitive species by cover types that occur in the project area. It also lists the number of sensitive species likely to occur within each major cover type.

Table 3-10. Sensitive plant habitats and likely occurrences.

Cover types	General habitats	# sens. plant species likely
Productive Forest	Forest, forest edge, stream sides, riverbanks	7
Low-productivity forest	Forest, forest edge, open forest stream sides, riverbanks, muskeg	13
Non Forest	Maritime beaches, upper beach meadows, well drained open areas, stream sides, riverbanks, lake margins, marshy areas, shallow freshwater, dry meadows, wet meadows, muskeg, heath	16
Alpine	Alpine and subalpine meadows, muskeg, heath, wet meadows, dry meadows	8
Rock	Rocky areas, rock outcrops, ridge tops, talus, seeps, wet areas	2
Ice	Permanent ice fields	0

The following habitats and sensitive plants are suspected to occur within the project area.

Maritime Beaches: Kamchatka alkali grass is found on maritime beaches in the mid to upper tidal ranges or beach meadows. Plant species occurring on these beaches are tolerant of saline conditions.

Upper Beach Meadows: Beach meadows, occur slightly above the typical higher high tide on nearly level areas between maritime beaches and forested areas. The meadows are dominated by plants that are intolerant of saline or brackish conditions, and often support scattered Sitka spruce seedlings and saplings. Several species of sensitive plants may occur in these areas: Choris Bog Orchid, Slender Bog Orchid, Loose Flowered Bluegrass, Straight-beak Buttercup, Pretty Shooting Star, Smooth Alkali Grass and Kamchatka Alkali Grass (*Botrychium ascendens*).

Coastal Forest: Low elevation, wet coastal forests contain potential habitat for a sensitive plant, Wright filmy fern. The fern grows on tree trunks, downed logs and stumps.

Forest Edge: Five species of sensitive plants, edible thistle, Unalaska mist maid, Wright filmy fern, calder lovage and loose-flowered bluegrass occur in edges between forests and non-forested areas. In these areas, higher light intensities are sufficient to support these species which are unable to tolerate more than light shade.

Stream sides/River Banks/Lake Margins/Marshes (non-forested): Non-forested moist to wet soils surrounding water features potentially support several sensitive plants. Unalaska mist-maid may occur on wet rocks and along stream margins. Straight beaked buttercup, goose grass sedge, edible thistle and circumpolar starwort may be found in moist open habitats, including the margins of streams and ponds. Many species could occur along

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shorelines. Davey mannagrass could occur in swamps, marshes and along stream and lake margins.

Shallow Freshwater: In non-forested slow moving streams, lake margins, or standing water within wetlands, two sensitive species, Davey mannagrass and truncate quillwort, potentially occur.

Muskeg/Heath: *Aphragmus*, *Norberg arnica*, goose grass sedge, northern rockcress, Queen Charlotte butterweed, choris bog orchid and slender bog orchid could occur in the extensive non-forested muskeg areas found throughout the project area.

Meadows: Grass and sedge meadows are potential habitat for *Norberg arnica*, loose-flowered bluegrass, straight-beak buttercup, goose-grass sedge, pretty shooting star, Queen Charlotte butterweed, *Botrychium ascendens*, edible thistle and slender bog orchid.

Alpine/Subalpine: Several sensitive species potentially occur in non-forested alpine areas. Calder lovenge occurs in rocky or boggy habitats at the edges of the subalpine and mixed coniferous forests. Queen Charlotte butterweed occurs in shady or open wet or boggy areas in the subalpine to alpine zones. Goose-grass sedge is found in wet meadows and along lake shores in alpine and subalpine areas. *Norberg arnica* occurs in alpine and subalpine meadows. Kamchatka rockcress occurs in rocky alpine habitat. Northern rockcress, *Aphragmus* and *Salix reticulata* may be found in the alpine tundra. Finally, circumpolar starwort occurs along alpine creeks.

Rock Outcrops/Talus Slopes: Northern rockcress is a sensitive plant that could potentially occur on well drained talus slopes or crevices in rock outcrops. Unalaska mist-maid, calder lovenge and circumpolar starwort could potentially occur on wet rock outcrops at low elevations.

Wildlife

A wide range of impacts (disturbances) to wildlife due to aircraft overflights have been reported in the literature. There are many reports of behavioral responses in animals, these responses are highly variable depending on the type of study, the species under consideration, spatial and temporal parameters, and other broad ecosystem characteristics.

Indirect effects on wildlife such as accidental injury, energy losses and impacts to offspring survival have been documented. Current literature supports the argument that aircraft overflights may negatively impact wildlife populations. However, the significance of such impacts is not clear. Additional studies are still needed to better assist land managers in substantiating the effects on population subgroups (ADF&G 1995). It is certain that impacts do occur under certain circumstances and that it is a Forest Service priority to protect wildlife, especially threatened and endangered species, whenever a probable impact exists or is expected.

Management Indicator Species (MIS) are vertebrate or invertebrate species whose population changes are used to indicate the effects of land management activities (USDA Forest Service 1982). Through the MIS concept, the total number of species that occurs throughout a planning area can be reduced to a manageable set that collectively represents the complex of habitats, species and associated management concerns. Table 3-11 displays MIS and species of interest by Wilderness.

Table 3-11. Management Indicator Species and species of interest distribution by wilderness.

Species	Endicott River	Karta River	Kootz-noowoo	Misty Fiords	Petersburg Creek-Duncan	Russell Fiord	South Baranof	South Etolin	South Prince of Wales	Stikine-LeConte	Tracy Arm-Fords Terror	West Chichagof-Yakobi
Bald Eagle	X	X	X	X	X	X	X	X	X	X	X	X
Black bear	X	X		X	X	X		X	X	X	X	
Brown bear	X		X	X		X	X			X	X	X
Gray wolf	X	X		X	X	X		X	X	X	X	
Mountain goat	X			X		X	X			X	X	
Vancouver Canada goose	X	X	X	X	X	X	X	X	X	X	X	X
Goshawk			X	X				?	?			
Moose	X			X	X					X		
Osprey				X	X							
Peale's Peregrine Falcon				X			X					X
Trumpeter Swan		X	X	X	X	X			X	X	X	
Marine mammals			X	X		X			X	X	X	

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Currently, there are thirteen wildlife MIS selected for the Tongass Land Management Plan Revision: mountain goat, Sitka black-tailed deer, river otter, marten, brown bear, black bear, gray wolf, red squirrel, Vancouver Canada goose, bald eagle, red-breasted sapsucker, hairy woodpecker, and brown creeper.

The following MIS species have been selected to represent the species, habitats and concerns dealing with the analysis of effects in considering the use of helicopters to access landing areas within the wilderness. These species were selected in order to respond to the issues regarding wildlife for this EIS. These species represent species of interest and or habitats that were likely to be directly or indirectly affected by the use of helicopters to access Wilderness sites.

Management indicator species selected for this analysis include bald eagle, black bear, brown bear, gray wolf, mountain goat and Vancouver Canada goose. Tables 3-11, 3-12 and 3-13 present a general overview of the habitats these species use on the Tongass National Forest. Not all species are found on each Wilderness. Table 3-11 shows the distribution of the management indicator species by Wilderness area. Helicopter access to Wildernesses would only be of concern if the species of interest are present in that Wilderness.

Table 3-12 displays the major habitat categories used by the MIS. Other species occur in the project area. A range of low to high volume old-growth upland hemlock spruce habitats provide habitats for deer, marten, wolf, cavity-nesting species, mountain goats (rock, low elevation winter) and Vancouver Canada goose. Deciduous Forest provides shrub habitat for moose and wolf. Alpine Tundra habitats provide summer forage for deer, kidding habitat for mountain goats, and breeding habitat for brown and black bear. Grass and sedge meadows provide foraging areas for brown bear, deer, and Vancouver Canada Goose. Marsh, Estuarine, Lacustrine and Riverine habitats provide feeding, resting, and breeding areas for bald eagles, Vancouver Canada Goose, wolf, deer, black and brown bears.

Table 3-12. Major habitat categories used by the Management Indicator Species.

Species	Spruce Hemlock Forest	Deciduous Forest	Alpine Tundra	Grass Sedge Meadow	Estuarine	Marsh	Stream & Beach Riverine	Lake
Black bear	X	X	X	X	X		X	
Brown bear	X	X	X	X	X		X	
Mountain goat	X	X	X					
Gray wolf	X	X	X	X	X	X	X	X
Vancouver Canada goose	X			X	X	X	X	X
Bald eagle	X				X		X	X

Note: Gray wolves use all habitat categories used by their prey species.

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Habitat category definitions:

Spruce-hemlock forest: Closed or open forests dominated by Sitka Spruce, western hemlock, or a mixture of the two species

Deciduous forest: Deciduous forests or tall shrub community dominated by red alder, willow, cottonwood or other deciduous species.

Alpine tundra: Includes areas above tree line in Southeast Alaska

Grass sedge meadows: Meadows, coastal grass flats above high tide (often associated with estuarine) and all other upland habitats dominated by grasses and/or sedges.

Estuarine: Fiord and tidal mixed estuaries and associated mud flat habitats and immediately adjacent habitats.

Marsh: Freshwater and saltwater marshes including tidal marshes, dominated by grasses and sedges.

Streams & Beach Riverine: Freshwater rivers and streams.

Lakes: Freshwater lakes and ponds.

Table 3-13 describes the relative importance of the non-conifer habitats for the MIS considered for this analysis. It also indicates when these habitats are most important to the MIS. Changes in the vegetation type, community composition or year-long suitability of these habitats would be expected to change the abundance, distribution and populations of the MIS.

To determine the effects of the project on these species, changes in the vegetation or availability of these habitats were considered. The relative importance indicated in the table represent which seasons and/or habitats that may be most limiting or most affected by the human activities associated with the proposed project.

Estuarine and stream habitats are moderate to high relative importance to black bear, brown bear, Vancouver Canada Goose and bald eagles. Lakes are high relative importance to Vancouver Canada Goose and bald eagle. Avalanche Chutes (slides) are moderate to high relative importance to black and brown bears during spring, summer and fall. Muskegs are low relative importance to black bears, brown bears and Vancouver Canada Goose.

Alpine areas are low to moderate relative importance to black bear and brown bear but are moderate to high importance for mountain goats. Alpine areas are breeding habitat for brown bears and are important as kidding areas for mountain goats during early summer. Cliffs and rocks are moderate relative importance to mountain goats as escape cover.

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Table 3-13. Relative importance and season of use of habitats by Management Indicator Species and species of interest.¹

Season & Species ²	Spruce Hemlock Forest	Ocean	Estuarine	Stream	Lake	Cottonwood	Red alder	Avalanche chutes	Muskeg	Alpine	Cliff rocks
Bald eagle (2,3)	L	H	H	L-H	L-H	M	M	O	O	O	O
Black bear (5)	M	O	H	M-H	O	L	L	M-H	-	-	O
Brown bear (2,3,4)	M	O	H	M-H	O	L	L	M	L	L-M	
Gray wolf ³ (5)	-	-	-	-	-	-	L	-	-	-	-
Mountain goat (5)	●	O	O	O	O	O	O	O	O	M-H	M-H
Vancouver Canada goose (2,3)	L	L	H	●	H	L	O	O	L	O	O

¹ H - Highest importance with highest population densities; M - Moderate importance with moderate population densities; L - Least importance with lowest population densities; 0 - not used. (Data from USDA, 1991).

² Season of use codes: 1-Winter, 2-Spring, 3-Summer, 4-Fall, 5-all year.

³ Wolves use all habitats which are used by their prey species.

Spruce Hemlock Forest - Closed or open forests dominated by Sitka spruce, western hemlock or a mixture of the two species.

Ocean - Habitat found adjacent to salt water; includes beaches, grassy areas and brushy areas along the beaches but not influenced by fresh water.

Estuarine - Fjord and tidal mixed estuaries and associated mud flat habitats and immediately adjacent habitats; includes meadows, coastal grass flats above high tide (often associated with estuaries) and all other upland habitats dominated by grasses and/or sedges and fresh water and salt water marshes including tidal marshes, dominated by grasses and sedges.

Stream - Fresh water rivers and streams.

Lake - Fresh water lakes and ponds.

Cottonwood - Deciduous forests or tall shrub community dominated by cottonwood species.

Red alder - Deciduous forests or tall shrub community dominated by red alder.

Avalanche chutes - Includes areas subject to frequent disturbance due to avalanches, usually dominated by shrubs or forbs.

Muskeg - Bog, fen and mixed conifer vegetation on poor to very poorly drained soils.

Alpine tundra - Includes areas above tree line and alpine and all categories of tundra in Southeast Alaska.

Cliff, rocks - Includes rock outcrops, cliffs or talus.

Cultural Resources

The *Cultural Resource Overview of the Tongass National Forest* (Arndt et al. 1987) describes the diversity of cultural resources that are known or have the potential of being discovered in southeast Alaska. The overview presents basic cultural and environmental contexts within which site significance can be evaluated. It provides background information and identifies gaps in the present understanding of the cultural heritage of southeast Alaska. It also serves as an interpretive document for sensitizing the general public and Forest Service personnel to the significance and fragile nature of cultural resources. The reader is directed to that overview for a more detailed description of southeast Alaska's cultural heritage. The following description is a summary of information gathered during an extensive literature and files search.

Some sites in the region, including the Ground Hog Bay 2 site on the Chilkat Peninsula and the Hidden Falls site on Baranof Island suggest the first occupation of southeast Alaska dates to at least 10,000 years ago. Small groups of people focusing on a maritime subsistence pattern characterize the earliest cultural period in southeast Alaska, from about 8000 to 4500 B.C. These early people used distinctive small volcanic glass blades, known as obsidian microblades and other tools chipped from stone. This early period is followed by one of transition, roughly between 4500 and 3000 B.C., when people changed their emphasis from chipped stone tools to ground and polished stone tools. Archaeologists have dated very few sites to this transitional period and understanding of associated lifestyles is limited. By about 3000 B.C. it appears the environment stabilized and salmon and other natural resources became more dependable. Large winter villages, defensive sites, shell midden deposits and a preponderance of ground stone tools characterize a Northwest Coast culture that emerged by 500 A.D. This period lasted until European contact in the mid to late 1700s.

The point at which Tlingit peoples first entered southeast Alaska is still speculative. The Tlingits are the most widespread and numerous indigenous group in southeast Alaska. They are composed of a number of kwans (loosely referred to as tribes) whose boundaries have continuously fluctuated. Smaller political divisions known as clans are present within each kwan. Each clan owned tangible property, such as salmon streams, berry patches, offshore waters for hunting sea mammals and bottom fish and both winter and summer homes. In addition they also hold intangible property such as crests, house and personal names, songs and origin stories.

By the time the first European explorers arrived, Tlingit, Haida, Tsetsaut, Eyak and Athabaskan people occupied various portions of southeast Alaska. Until the early to mid-1700s southern southeast Alaska was the home of the Henya-Klawock, Sanya-Cape Fox, Stikine and Tongass Tlingit kwans. Then, the Kaigani Haida who had migrated from the Queen Charlotte Islands, displaced many of the Tongass Tlingits. The Tsetsaut, an Athabaskan group with origins in the interior, also arrived relatively recently. Evidence suggests they quickly assimilated under the influence of Tlingit groups. Northern southeast Alaska was occupied by Athabascans at Dry Bay and Eyak people were known at Yakutat. During the eighteenth century the Eyak language was spoken west of Yakutat and Athabaskan at Dry Bay. However, by the time of Russian contact the Tlingit influence was noted. Colnett (1788) noted the Native peoples spoke different languages at Yakutat Bay.

The mid to late 1700s marked the arrival of Russian, British, Spanish and French explorers dispatched to investigate the Northwest Coast of North America. They came to lay claim

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to new lands for their countries, to appraise the vast natural resources and to look for a shorter trade route to China. In June 1741, the Russian ship *Sv. Pavel*, lead by Aleksei Chirikov, sailed into southeast Alaska marking the first arrival of European explorers. Reports brought back about Alaska's riches lead to increased interest by the Russians to claim Alaska. Hearing of the Russian interest, Spain sent several expeditions to explore the Northwest Coast. Spain had previously laid claim to all lands in America bordering the Pacific Ocean. *Sonora*, under the command of Juan Francisco de la Bodega y Quadra, made landfall in 1775 near present-day Sitka. France also lead expeditions into southeast Alaska in 1786 and 1791. These early explorers claimed the land and, they left an insidious item, disease. The introduction of infectious diseases such as smallpox left the indigenous population decimated, with estimated human losses of up to 50 percent in some areas.

Britain also took notice of the interest in the Northwest Coast. The British claimed the Northwest Coast and were obsessed with discovery of a shorter route to China, the fabled Northwest Passage. Captain James Cook sighted and named places on the outer coast of southeast Alaska in 1778, but he did not land. Cook obtained sea otter pelts on Vancouver Island and sold them at great profit in China. This eventually lead to the establishment of a maritime fur trade that forever transformed southeast Alaska. Captain George Vancouver provided detailed information about southeast Alaska from British explorations made in 1793 and 1794. Vancouver was the first European to explore in detail the interior passages and channels. His journeys disproved the existence of a Northwest Passage, extended the British claims to the Northwest Coast and, most importantly, resulted in the preparation of nautical charts that served as the standard for many years. Many of southeast Alaska's place names are attributable to Vancouver's voyage.

By 1799 the Russians had expanded their hunting and trading enterprise from the Aleutian Islands and Kodiak area toward southeast Alaska. In 1797 and 1798 the Russians sent large Aleut hunting parties to Sitka Sound with productive results. In 1799 Baranov arrived with three ships to begin the construction of a settlement at what is known today as Old Sitka. The indigenous Tlingit people, as well as the British and American traders, viewed the settlement as a threat. Although initially friendly, the Tlingit people sensed Russian vulnerability and began to test their fortitude. The Tlingits destroyed the settlement in 1802 and it is not surprising that the attack was rumored to have been supported by British and American traders. The Russians were unable to reestablish a settlement at Sitka until 1804, but by 1808 it became the capital of the Russian-American Company possessions in America.

By the 1810s sea otter populations dwindled and the Russians were even more insistent on excluding the trading ventures of others. The Russian-American Company began to rely solely on trade to obtain furs. This explains their motivation in blocking a move by the Hudsons Bay Company in 1834 to establish a trading post along the Stikine River. This action resulted in the establishment of Redoubt Dionysius at the site of present-day Wrangell. The Russian-American Company abandoned the redoubt in 1840 and the Hudson's Bay Company established Fort Stikine.

The campaign of expansion undertaken by the Russian-American Company ended about 1850. The company was in financial trouble and the Russian government lost interest in the American colony due to other events such as the Crimean War. In October 1867, the United States flag was raised in Sitka and Alaska entered a period of military rule. The Army established three posts in southeast Alaska at Sitka, Wrangell and Ft. Tongass near the mouth of Portland Canal. The Navy also had a presence in southeast Alaska with

assigned duties of nautical charting, establishment of navigational aids, enforcement of a liquor ban and general peacekeeping.

The latter part of the nineteenth and early part of the twentieth centuries witnessed new economic ventures along with an influx of people. Gold strikes in the Cassiar District of British Columbia brought a wave of people to southeast Alaska in the 1860s and 1870s. In 1878 entrepreneurs established salmon canneries at Sitka and Klawock. The salmon fishing industry began to flourish by the 1880s and included commercial interest in herring and whales. Ketchikan, Petersburg and Craig attribute their founding to the fishing industry. Mining also became an important economic force. Placer deposits on the mainland near Taku Inlet led to a gold rush in the winter of 1880-1881 and the founding of Juneau. Discovery of gold in the Yukon led to a rush of people through southeast Alaska in the late 1890s.

The region's expanding economy created a demand for local timber. In August 1902, President Theodore Roosevelt proclaimed the establishment of the Alexander Archipelago Forest Reserve (Rakestraw 1981:15-16). Southeast Alaska residents had mixed reactions about the reserve's creation (Rakestraw 1981:21). The skeptics believed the reserve would unduly restrict their use and access to the surrounding natural resources. Some loggers also believed it would decrease the economic value of the timber since it was in public ownership. In 1908 a presidential proclamation combined the Alexander Archipelago Forest Reserve and the Tongass National Forest into a single national forest, bearing the latter's name. Federal management significantly shaped southeast Alaska's twentieth century history.

Fur farming became a major endeavor in the 1910s and 1920s. In 1899 a blue fox farm was in operation on Sumdum Island (within the boundaries of Tracy Arm-Fords Terror Wilderness) and by 1905 ranchers had stocked several islands with blue foxes. Around 1913 fox farming began to expand with the practice of stocking small islands with free-roaming foxes. Other operators raised the animals in pens to reduce the risk of predator loss and disease. As fashions changed and fishing regulations made obtaining fox feed harder, people abandoned many of the island fox farms. They allowed the Forest Service permits under which they occupied the islands to lapse.

Cultural Resources and Previous Investigations

Previous cultural resource surveys within Tongass National Forest Wildernesses have been relatively limited in number and scope. Forest Service archaeologists conducted most of the surveys between 1974 and the present. The purpose of most surveys was to examine the effects of Federal projects or permits on significant cultural resources. These projects were generally on a small scale and included trails, cabins, land exchanges, beach log salvage, special-use permits and various site monitoring activities. Previous investigations also included cultural resource overviews, management plans, architectural assessments and determinations of eligibility for the National Register of Historic Places (National Register). Table 3-14 presents a summary of previous cultural resource investigations and their dates of accomplishment. It also lists sites included on the Alaska Heritage Resource Survey, a statewide inventory maintained by the Alaska Office of History and Archaeology. There are currently 446 sites listed on the Alaska Heritage Resource Survey for Tongass National Forest Wildernesses.

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Table 3-14. Previous cultural resource investigations and known sites.

WILDERNESS	PREVIOUS INVESTIGATIONS	KNOWN SITES
CHUCK RIVER	Stanford & Lightfoot 1981 Autrey 1982, 1983b Brown 1993g Swanson 1983b, 1985	SUM-002, 010
CORONATION ISLAND	None	CRG-068
ENDICOTT RIVER	Autrey 1983a Iwamoto 1994	None
KARTA RIVER	Sealaska 1975 Fifield 1991 Lively 1992, 1993a,b Young 1993 Autrey 1994b Lively 1994b	CRG-029, 052, 053, 055, 060, 061, 064, 153, 228, 384
KOOTZNOOWOO	deLaguna 1960 Stevens 1974 Sealaska 1975 Clark 1976a, b Fields & Davidson 1979 Moss 1980, 1981, 1987 Stanford & Davis 1980 Harris 1982a, b McAfee et al. 1982 Anderson 1983a, b, c Cantley 1983a, b, c, d Erlandson & Moss 1983 Moss & Erlandson 1985 Erlandson & Moss 1988 Moss 1989a, b Sorenson 1989 Lively et al. 1990 Irish 1991a, b Myron 1992b Mobley 1993, 1994 Hilton 1994b Brown 1995	JUN-023, 045, 089, 616 SIT-014, 015, 017, 019, 033, 034, 038, 041, 043, 049 thru 051, 052, 081, 083, 099, 124 thru 134, 137, 139 140, 148, 149, 152, 153, 157, 158, 159, 161, 166, 169, 171, 172, 176, 179, 182, 183, 184, 225, 241 thru 245, 247 thru 250, 257, 259, 260, 263 thru 266, 268 thru 278, 280, 281, 283, 286, 293, 298, 311, 312, 322, 329 thru 331, 361 thru 375 SUM-004, 011, 037, 038,
KUIU	Reger 1974a Brooks 1976a Roberts 1985, 1986a, b	XPA-032, 086 PET-262, 263, 266, 267
MAURELLE ISLANDS	Sealaska 1975 Autrey 1991, 1994a	CRG-109, 137, 168, 372 thru 374

WILDERNESS	PREVIOUS INVESTIGATIONS	KNOWN SITES
MISTY FIORDS NATIONAL MONUMENT	Sealaska 1975 Autrey 1988, 1990, 1991 Foskin 1992 Goodall 1992, 1993 Edmondson 1993 Young 1993 Lively 1993a, b, c Autrey 1994b Lively 1994a, 1995a, b	KET-003, 005, 020, 023, 029, 035, 036, 038 thru 040, 042, 043, 048 thru 050, 052, 056, 057, 059, 063 thru 065, 104, 109, 110, 232, 305, 307, 350, 353, 354, 357 thru 359, 362, 363, 406 thru 408, 420, 421, 429 XBC-014, 017, 020 XPR-001, 002 thru 013, 016 thru 019
PETERSBURG CREEK- DUNCAN SALT CHUCK	McCallum 1991 Dixon and Griffin 1993	PET-339
RUSSELL FIORD	de Laguna et al. 1964 deLaguna 1972 Sealaska 1975 Davis 1981 Swanson 1987 Irish 1990 Myron 1992a Brown 1993a, b, c	YAK-007, 009, 010, 011, 012
SOUTH BARANOF	Stevens 1974 Sealaska 1975 Cantley 1981b, c Lightfoot 1981 Bergey 1983 Muenster 1993a, b	XPA-010, 011, 056, 059, 065, 075, 077, 096 thru 099
SOUTH ETOLIN	Reger 1974b Brooks 1976d Plaskett 1977 Roberts 1983, 1986c	CRG-056 thru 058, 065, 066 PET-168 thru 170
SOUTH PRINCE OF WALES	Sealaska 1975 Autrey 1991, 1994 b, c Young 1993 Lively 1993a, b	DIX-001, 003, 007, 008, 015, 018, 024, 026 thru 030, 035, 037, 041, 044, 045, 047, 048, 058, 116
STIKINE-LECONTE	Sealaska 1975 Brooks 1976b Hester 1986 Hardin 1990 Hanks 1992, 1995	PET-097, 100, 105 XBC-033
TEBENKOF BAY	Reger 1974a Sealaska 1975 Brooks 1976c Roberts 1982 Maschner 1990	XPA-029, 030, 031, 038, 039, 050, 069, 106 thru 252

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WILDERNESS	PREVIOUS INVESTIGATIONS	KNOWN SITES
TRACY ARM-FORDS TERROR	Stevens 1974 Sealaska 1975 Rawlinson 1979 Swanson 1986 Brown 1993d, e, f, 1994 Brown 1995	SUM-005, 012 , 014, 022, 028 , 029 029,
WARREN ISLAND	None	None
WEST CHICHAGOF - YAKOBI	Ackerman 1974 Sealaska 1975 Davis 1977 Cantley 1981a Autrey & Swanson 1983 Swanson 1983a Dilliplane 1990 Starr 1991a, b Hilton 1994a	XMF-054, 055, 056 , 057, 060 SIT-018, 020, 021, 100 thru 105, 106 , 107, 108, 109 , 110 thru 114, 115 , 116, 151 , 154, 156, 185, 186, 227, 423, 425 thru 428

The scarcity of survey data limits precise statements about the densities and types of cultural resources within each Wilderness. Some noted exceptions are studies completed by Frederica de Laguna (1960) and Madonna Moss and Jon Erlandson (1985) within Kootznoowoo Wilderness. One of the most extensive Wilderness field surveys was conducted in Tebenkof Bay Wilderness between 1988 and 1991 in partnership with the University of California, Santa Barbara. University and Forest Service archaeologists conducted a survey of the entire Wilderness coast, covering all the high probability areas for cultural resources. One hundred fifty-four sites were recorded, an impressive total and one that suggests a relatively high density of cultural resources. Almost every coastal area accessible today revealed evidence of ancient or historic use (Maschner 1992).

In 1975 Sealaska Corporation contracted an inventory of historic and cemetery sites throughout southeast Alaska under provisions of Section 14 (h)(1) of the Alaska Native Claims Settlement Act. This study resulted in the survey of numerous areas within Tongass Wildernesses (Table 3-14). Sealaska Corporation received ownership of 25 historic and cemetery sites within the Tongass Wildernesses. Sites conveyed to Sealaska Corporation are indicated in Table 3-14 in bold typeface.

The results of previous cultural resource surveys and literature searches suggest the types of sites archaeologists expect within the Wildernesses. Possible ancient land uses include subsistence activities such as hunting, fishing, berry picking and wood harvest. Sites along the coast may include villages, camps, defensive sites, graves, fish traps and weirs, rock art, portages and concentrations of culturally modified trees. Traditional cultural sites and sacred landscapes are another site type that may be present within the Wildernesses. These are often difficult to discern with traditional field survey techniques due to a lack of physical attributes or artifacts. Historic period sites may include camps, homes, graves, canneries and other fishing industry sites, mines, roads and various natural resource extraction sites.

Subsistence

In 1980, with the passage of ANILCA, Congress formally recognized the importance of subsistence resources to the rural communities throughout Alaska. ANILCA defines subsistence as:

The customary and traditional use 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; and for customary trade.

The law also provides for "the continuation of the opportunity for subsistence uses by rural residents of Alaska" on public lands. It also specifies under Section 804:

Except as otherwise provided in this act and other Federal laws, the taking on public lands of fish and wildlife for nonwasteful subsistence uses shall be accorded priority over the taking on such lands of fish and wildlife for other purposes.

On July 1, 1990, the Federal government assumed subsistence management of fish and wildlife on Federal public lands. The Federal Subsistence Board is the governing body charged with the responsibility for regulation and allocation of subsistence resources. The taking of fish and wildlife on Alaska federal public lands for subsistence is restricted to residents of rural areas and communities. Under ANILCA there is no subsistence provision for non-rural residents or communities. The communities of Ketchikan and Juneau have been determined non-rural under ANILCA by the Federal Subsistence Board.

Most of the rural communities of southeastern Alaska rely on renewable natural resources for at least a portion of their subsistence needs. About one-third of the rural communities of the region take at least half of their meat and fish by hunting and fishing (Holleman and Kruse 1991). Subsistence resources are much sought after food items by these residents, regardless of their social status or income levels. Some of the major regional subsistence resources exploited include deer, salmon, moose, trout, halibut, crab, clams, berries, and waterfowl (Kruse and Muth 1990).

In many rural communities, subsistence activities play a major role in the seasonal activities of residents. These resource gathering activities include hunting, fishing, clam digging, gathering shellfish, gathering firewood and collecting other resources from berries to herring eggs. It also means giving, receiving and trading subsistence items.

Hunting and collecting subsistence resources plays an important role in the lives of the regions rural residents. It reflects deeply held beliefs, values, traditions and attitudes. Some of the foods are available through means other than subsistence. Many of these subsistence gathering activities become social events for families and communities. Historical resource use patterns, such as Native fish camps or communal deer hunts, are linked to traditional social and subsistence use patterns.

Sharing of subsistence resources is important for families and communities, as well as relatives and friends in other parts of the region. This sharing of subsistence resources can also mean providing resources for families unable to participate in subsistence activities. It may also mean allowing access to resources not available in all communities. Resource

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sharing occurs between communities, as well as within communities throughout the region.

Historical Tlingit Clan Hunting Boundaries

Various authors have attempted to draw boundary lines for Tlingit territory. One of the first to mention the Tlingit is the geographer Aurel Krause (1956). Krause did not well define the boundaries between the Tlingit and neighboring groups. Albert P. Niblack (1970), an ensign in the U.S. Navy, spent the years 1885 and 1887 observing the Native cultures during his tour of duty in southeast Alaska. He provided an early delineation of Tlingit territory. Walter Goldschmidt and Theodore Haas (1946) performed extensive ethnographic field research in southeastern Alaska. Goldschmidt and Haas identified land use patterns associated with southeast Alaska Native communities which existed in the mid-19th century. A comparison of their maps, those from the 1987 Tongass Resource Use Cooperative Survey (TRUCS) maps and Alaska Department of Fish and Game Subsistence Division maps, indicates that hunting and fishing patterns by Natives in southeast Alaska are still tied to a limited extent with historical traditions of land and resource exploitation. Regardless of technological innovations that would allow residents the option of ranging over a much wider area, their use is still, somewhat focused on traditionally claimed areas or boundaries recognized prior to the arrival of Euro-Americans. On the other hand, the non-Native harvesters use patterns tend to be more opportunistic and often dispersed throughout the region.

Communities with Subsistence Uses

Subsistence is a complex and evolving issue which encompasses many different and varied aspects of human use of natural resources. In attempting to meet the subsistence needs of the various users of the project areas, the Forest Service has determined which communities should be considered in this subsistence analysis. A wide range of information was consulted in making the determination. The data from the 1987-88 TRUCS mapping effort, as well as recent Alaska Department of Fish and Game deer harvest information, were consulted in the process of identification of communities using the project area for subsistence.

The following communities were determined to have used the project area for subsistence purposes: Angoon, Craig, Haines, Hollis, Hoonah, Hydaburg, Hyder, Kake, Kaasan, Klawock, Metlakatla, Pelican, Petersburg, Point Baker-Port Protection, Port Alexander, Saxman, Sitka, Skagway, Tenakee Springs, Thorne Bay and Wrangell.

Important Subsistence Use Areas

Much of the beach fringe, within the project area has been identified as having been used for subsistence resource gathering. This coastal area or beach fringe has been identified in the TLMP Revision as an area of land at 500-foot slope distance inland from the coastline. Based on the TRUCS maps, important use areas may be located from three to six miles from the coastline. Historically, important use areas for many of the communities hunting for deer include sheltered bays and inlets. The estuaries found within these bays and inlets also provide important habitat for waterfowl; the tidally exposed sediments provide important shellfish habitat; and many of the bays have important salmon runs which support the abundant wildlife resources.

Subsistence Use by Community

The 1988 TRUCS effort was directed by the Institute of Social and Economic Research, University of Alaska-Anchorage, and jointly carried out by the Forest Service, Alaska Department of Fish and Game, Subsistence Division and the Institute (Krause and Frazier 1988). All the figures displayed in this section are based on a sampling of community households surveyed. It is possible that actual amounts harvested could be higher or lower than reported by the TRUCS sampled community households. This cooperative subsistence study documents the historical use and intensity of use for 31 recognized rural communities in southeast Alaska. Some communities are considered together (e.g., data

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for the community of Kupreanof is incorporated within the Petersburg sphere of influence). Table 3-15 displays the communities reporting subsistence use within Tongass Wildernesses. Tables 3-16 through 3-19 display community harvests.

Table 3-15. Communities reporting subsistence use in Wildernesses.

Wilderness	Communities
Chuck River	Kake, Petersburg
Coronation Island	Edna Bay, Hydaburg, Point Baker, Wrangell
Endicott River	Gustavus, Haines, Wrangell
Karta River	Coffman Cove, Craig, Hollis, Hydaburg, Kasaan, Klawock, Metlakatla, Myers Chuck, Petersburg, Port Protection, Saxman, Thorne Bay, Wrangell
Kootznoowoo	Angoon, Haines, Hoonah, Kake, Klukwan, Petersburg, Point Baker, Port Alexander, Port Protection, Sitka, Skagway, Tenakee Springs, Wrangell
Kuiu	Petersburg, Point Baker, Port Protection, Sitka, Wrangell
Maurelle Islands	Craig, Edna Bay, Hydaburg, Klawock, Port Protection, Wrangell
Misty Fiords National Monument	Hydaburg, Hyder, Metlakatla, Myers Chuck, Saxman, Thorne Bay, Wrangell
Petersburg Creek-Duncan Salt Chuck	Petersburg, Point Baker, Port Protection, Wrangell
Pleasant, Lemisurier, Inian Islands	Elfin Cove, Gustavus, Haines, Hoonah, Pelican, Sitka, Skagway, Tenakee Springs, Wrangell
Russell Fiord	Yakutat
South Baranof	Edna Bay, Kake, Petersburg, Port Alexander, Sitka, Tenakee Springs, Wrangell
South Etolin	Metlakatla, Myers Chuck, Petersburg, Point Baker, Port Protection, Thorne Bay, Wrangell
South Prince of Wales	Craig, Hydaburg, Hyder, Klawock, Metlakatla, Wrangell
Stikine-LeConte	Petersburg, Port Protection, Wrangell
Tebenkof Bay	Kake, Petersburg, Port Alexander, Port Protection, Sitka, Wrangell
Tracy Arm-Fords Terror	none
Warren Island	Edna Bay, Point Baker, Wrangell
West Chichagof-Yakobi	Elfin Cove, Gustavus, Hoonah, Pelican, Petersburg, Port Protection, Sitka, Wrangell

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Angoon

Angoon is situated on the west side of Admiralty Island at the mouth of Kootznahoo Inlet. The 1990 population was reported at 540. Ninety-seven percent of the population is Native American. Per capita income for the residents of the community in 1987 was reported as \$5,364 (Kruse and Frazier 1988).

Angoon began as a permanent winter village for the Tlingit Indians and remains so to the present. The major sectors of the Angoon economy are educational services, fishing, construction and retail trade. Employment in all sectors of the Angoon economy is largely seasonal with corresponding high unemployment. Subsistence hunting and fishing are vital sources of food and important to the community's culture and lifestyle.

Angoon residents harvest deer, salmon, other finfish, waterfowl and shellfish and other resources. The annual harvest of subsistence resources was approximately 240 pounds per person in 1987; to 74 pounds of deer, 34 pounds of other mammals, 70 pounds of salmon, 57 pounds of finfish and shellfish and seven pounds of other resources. The average Angoon household derived 46 percent of its meat and fish from subsistence harvests. Deer account for 30 percent of the subsistence harvest.

A study of fish and wildlife use by Angoon residents (George and Bosworth 1988) from 1957 to 1985 reveals that they primarily use areas on Admiralty Island. The area around Kootznahoo Inlet was used by an average of 70 to 100 percent of the households. The area north of Angoon between Poison Water and Fishery Creek was used by an average of 46 percent of the community's households.

The same study indicates that Admiralty Island was the preferred place to hunt because of deer abundance, less competition from other hunters, proximity, knowledge of the area and beaches suitable for boat access.

Craig

Craig is located along the southwest coast of Prince of Wales Island. The 1990 census for the community was set at 1,182, with Natives Americans making up 28 percent. It was first settled by the Tlingit as a series of fishing camps and seasonal villages. Over time, the community continued to grow and prosper as commercial fisheries were developed. A saltery was built there in 1907; a cold storage plant in 1908. Its population and economy has fluctuated with the fishing economy. In recent years its population has increased due to improved transportation, revitalization of the cold storage plant, timber harvesting and expanded moorage facilities.

The community's economy is based on retail trade, fishing and timber products. Employment is largely seasonal in fishing, timber, retail and construction sectors. Mean per capita income level for the community in 1987, \$12,121.

Craig residents harvested invertebrates and deer, salmon and other finfish. Invertebrates make up 26 percent of the subsistence harvest, while deer, salmon and other finfish each make up 22 percent. Marine mammals (five percent and other (three percent) account for the remainder of the community's harvest. Mean pounds harvested per person was 189 pounds. In 1987, the annual harvest of subsistence resources was 135 pounds of deer, six pounds of moose, 131 pounds of salmon, 130 pounds of finfish and 30 pounds of other resources.

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TRUCS information indicates that the majority of the communities residents harvest subsistence resources within the core area around the community and its outlying islands.

Haines

Haines is located on the northern edge of Lynn Canal on the Chilkat Peninsula. The 1990 census reported 2,117 residents. Thirteen percent of the population is Native American. Per capita income of Haines residents in 1987 was reported as \$12,467.

Haines originated as a mission site and became a trade center and supply point for early Klondike gold rush miners. Haines is now the population center for the Chilkoot Tlingits. Haines' principal economic sectors are trade, government, forestry, commercial fishing, tourism and transportation. The vast majority of the employment is highly seasonal.

Haines harvested a total of 105 pounds of subsistence resources per person in 1987. Of that total, other finfish comprised 36 percent, salmon, 27 percent, deer, 15 percent; invertebrates and other resources each comprised five percent and marine mammals made up 12 percent of the harvest (Kruse and Frazier 1988).

Table 3-16. Mean pounds of edible subsistence harvest per capita by community.

	Angoon	242
	Craig	189
C	Haines	105
	Hollis	165
O	Hoonah	404
	Hydaburg	337
M	Hyder	401
	Kake	160
M	Kassan	185
	Klawock	239
U	Metlakatla	71
	Pelican	355
N	Petersburg	203
	Point Baker	345
I	Port Alexander	308
	Port Protection	311
T	Saxman	89
	Sitka	139
Y	Skagway	52
	Tenakee Springs	343
	Thorne Bay	189
	Wrangell	164

0 100 200 300 400
Pounds

Source: Kruse and Frazier 1988.

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Hollis

Hollis is located on Prince of Wales Island, within West Kasaan Bay. The 1990 census lists a population of 82, with 18 percent Native American. Settlement at Hollis began as a mining camp at the turn of the century and then developed as a logging camp when harvesting began within the Maybeso Valley in the mid-1950s. In 1960, when Thorne Bay became the center of the logging industry on central Prince of Wales, most Hollis residents moved to Thorne Bay. In recent years, Hollis has developed as a community, due in part to the location of the Alaska Marine Highway terminal, as well as the land disposal program sponsored by the state of Alaska. The road network now connects Hollis to most of the other communities of Prince of Wales Island.

The principal economic sectors include timber, construction, transportation services, highway maintenance, fishing, schools and retail trade. The economy is highly seasonal in all sectors except government. Average per capita income is \$23,478 which is the highest in southeast Alaska.

Based on edible pounds harvested, salmon at 27 percent, deer at 23 percent and finfish other than salmon at 22 percent are the most important subsistence resources for Hollis households.

Table 3-17. Deer as a percentage of total mean edible pounds of subsistence harvest by community

	Angoon	30%
	Craig	25%
C	Haines	15%
	Hollis	42%
O	Hoonah	23%
	Hydaburg	37%
M	Hyder	0
	Kake	24%
M	Kassan	31%
	Klawock	52%
U	Metlakatla	16%
	Pelican	30%
N	Petersburg	22%
	Point Baker	27%
I	Port Alexander	36%
	Port Protection	13%
T	Saxman	19%
	Sitka	27%
Y	Skagway	6%
	Tenakee Springs	39%
	Thorne Bay	20%
	Wrangell	13%

Source: Kruse and Frazier 1988

Hoonah

Hoonah is located at the entrance of Port Frederick in the northeastern portion Chichagof Island. The 1990 population was reported as 795. Sixty-seven percent of the population is Native American. Per capita income of Hoonah residents in 1987 was \$9,353.

Hoonah is predominantly a Native community and has been the principal village of the Huna Tlingit clans since the late 1880's. Commercial fishing and canning has been a part of Hoonah's economy since the 1880s. A cold storage plant is still in operation. Large scale logging on Tongass National Forest and Native Corporation lands began after 1980 (Schroeder & Kookesh 1990). Employment is highly seasonal.

Hoonah residents harvest an average of 404 pounds of subsistence resources per capita. Salmon comprises 26 percent; deer, 23 percent; other finfish, 19 percent; marine mammals, 15 percent; invertebrates, 14 percent and other resources, three percent. The average Hoonah household derived 50 percent of its meat and fish from subsistence activities in 1987.

Hydaburg

Hydaburg is situated on the southwest coast of Prince of Wales Island. 1990 census figures were recorded at 379, with eighty-seven percent Native American.

Haida Natives made their way north from the Queen Charlotte Islands during the seventeenth century and settled along the south coast of Prince of Wales Island. At the turn of this century, three Haida population centers on Prince of Wales Island combined to form Hydaburg. It is primarily a fishing oriented community. Seafood processing was active from the late 1930s until 1982, when a fire destroyed the cannery. A new cannery and processing facility currently face economic difficulties.

Hydaburg's economy is dominated by fisheries, forestry and educational services. Employment is highly seasonal. Average per capita income was \$7,000 a year in 1987. Based on edible pounds harvested, salmon at 40 percent; other finfish, 16 percent; and deer at 13 percent are the most important subsistence resources for the community's households. Mean pounds of harvested resources total 337 pounds per person.

Hyder

Hyder is located at the northern end of Portland Canal on the fringe of Misty Fjords National Monument and less than two miles west of the town of Stewart, British Columbia. Hyder is one of three southeast Alaskan communities connected by road to Canada. One percent of the town's 78 residents is Native American

The town's economy is based on retail trade, construction, transportation, communications and utilities. Employment is highly seasonal. The average per capita income for the town is \$6,000.

Salmon is the major source of subsistence, at 30 percent, other finfish was set at 22 percent and other mammals such as moose and bear, 16 percent, make up the most important subsistence resources harvested for the towns residents. Mean pounds harvested total 401 pounds per person.

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Kake

Kake is located along the northwest coast of Kupreanof Island. The 1990 census reported a population of 700, with seventy-three percent being Native. Per capita income of Kake residents in 1987 was reported to be \$9057 (Kruse and Frazier 1988).

Kake was one of the many camps and villages occupied by the Tlingit during the late 18th and early 19th centuries along this rocky perimeter of Kupreanof Island. These camps and villages eventually consolidated into the area of the present day community. Its original name was "S'ikanakhse", which is said to mean "from a black bear town". Additional interpretations include "town that never sleeps" and "Black bird on the rock" (Firman and Bosworth 1990:18, Orth 1967:486). The Kake people, like other Tlingit of the region, are heavily dependent on the sea for their livelihood. The Kake people were introduced to a succession of missionary groups not long after western colonization. With that physical presence the Kake people witnessed a succession of changes to the physical and cultural landscape. A school and store were built there in 1891, and a cannery was constructed in 1912. A cold storage plant, owned by Kake Tribal Corporation, was built in 1980 and has operated sporadically since that time (personal communication Lonnie Anderson 1992). Logging commenced in the 1940s and has largely been restricted to Kake Tribal Corporation lands. Employment within the community is largely seasonal, with fishing and fish processing, transportation, communications and education the major economic sectors. A high relative percentage of the community's population depends on the subsistence taking of fish and wildlife.

According to the TRUCS survey, the community harvested a total of 160 pounds per capita of subsistence resources (Kruse and Frazier 1988). Kake averages 22 percent of its fish and wildlife from subsistence. Deer makes up 24 percent of the total subsistence harvest. Presently, the majority of the community deer harvest comes from the southern coast of Admiralty Island.

Kasaan

Kasaan is situated along the east coast of Prince of Wales Island. In 1990 the population was 54. Forty-three percent of its population is Native American. The Haida village of Kasaan was settled at its present site around 1900. The original village site was located seven miles from the present location. A sawmill and school were built at the original site, and a new post office was built at the new town site in 1900. Canneries appear to be the major enterprise, functioning intermittently from 1901 to 1953.

Kasaan's economic sectors include fisheries, educational services and local government. Employment is highly seasonal. The average per capita income for the town's residents is \$8,900. Invertebrates make up a major portion of the community's subsistence harvest and account for 40 percent of the harvest. Deer make up 22 percent and salmon and other finfish account for 17 percent. Mean pounds harvested was 186 pounds per person (Kruse and Frazier 1988).

Klawock

Klawock is on the west coast of Prince of Wales Island, approximately five miles north of Craig (Orth 1967:529). The 1990 U.S. Census lists the total population at 722 individuals. Per capita income based on the TRUCS project totalled \$8595. Kruse and Frazier (1988) note that 38% of the community is comprised of Alaska Natives.

In 1779, the Spanish explorer Don Ignacio Arteago's expedition reportedly put into what would eventually be referred to as the Klawock area; Arteago called it "la Galere". The Tlingit village name for the area was noted in 1853 on the Russian Hydrographic Department Chart No. 1493, as "Klyakkhan settlement", on the west side of Shinaku Inlet. Orth (1971:530) suggests that this may be the location for the village prior to the establishment of the cannery at the present site in 1878. At least two different names for the community were suggested or referred to during the intervening years. It wasn't until 1890, and the U.S. Census, that the name Klawock officially appears. The first saltery and trading post appeared in 1868, and the first Alaskan cannery was built there in 1878. Subsequently, more canneries and a sawmill were installed by 1920. In 1971, a new sawmill was constructed and by 1991 the enterprise had closed its doors. Employment in the community is largely seasonal.

According to TRUCS, Klawock harvested a total of 239 pounds per capita of subsistence resources in 1987. Based on that total, deer and salmon made up over 50 percent of the harvest. Deer alone comprised 19 percent of the total per capita harvest. Subsistence harvest includes 159 pounds of deer, 265 pounds of salmon, 353 pounds of finfish and shellfish and 21 pounds of other resources.

A study documenting the community's use of fish and wildlife (Ellanna and Sherrod 1987) reveals that the majority of the community's deer harvest is from the surrounding area and outlying islands.

Table 3-18. Community Harvests

	%			%			
	Households	Mean Edible		Households			
	Harvesting	Pounds		Harvesting			
	<u>Mammals</u>	<u>Harvested</u>	<u>Deer</u>	<u>Goats</u>	<u>Brown</u>	<u>Bear</u>	<u>Seal</u>
Angoon	82%	400	76%	0%	0%	32%	
Craig	52%	161	53%	0%	2%	7%	
Haines	21%	75	15%	-	8%	-	
Hollis	40%	115	40%	4%	11%	0	
Hoonah	69%	471	65%	0%	3%	27%	
Hydaburg	37%	175	40%	0%	2%	8%	
Hyder	21%	132	0	9%	18%	3%	
Kake	51%	211	42%	0%	0%	29%	
Kassan	50%	121	43%	0%	0%	7%	
Klawock	53%	159	19%	0%	3%	19%	
Metlakatla	19%	44	16%	-	-	3%	
Pelican	69%	352	63%	0%	0%	11%	
Petersburg	76%	207	39%	0%	0%	0	
Point Baker	63%	219	67%	0%	21%	0	
Port Alexander	66%	324	68%	0%	3%	3%	
Point Protection	36%	92	36%	0%	4%	0	
Saxman	28%	82	23%	0%	0%	8%	
Sitka	38%	112	38%	1%	1%	1%	
Skagway	7%	11	6%	1%	1%	0	
Tenakee Springs	55%	306	55%	0%	0%	3%	
Thorne Bay	59%	130	58%	1%	7%	0	
Wrangell	34%	164	27%	3%	0%	3%	

Source: Kruse and Frazier (1988)

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Metlakatla

Annette Island in southern southeast Alaska is the location of Metlakatla. Seventy-three percent of the population of 554 is Native American. In 1887, a minister of the Church of England and his Tsimshian followers moved from British Columbia to Metlakatla in search of religious freedom. In 1891, Congress declared Annette Island an Indian Reservation. Metlakatla has prospered largely due to its self sufficiency and successful involvement in commercial fisheries and timber industries.

Commercial fisheries and educational services are the major economic sectors of the local economy. Other economic sectors are wood processing and fish processing. Metlakatla's 1987 per capita income was \$8,600.

Based on edible pounds harvested, salmon at 29 percent, finfish other than salmon and invertebrates at 23 percent and deer at 15 percent are the most important subsistence resources harvested. Mean pounds of harvested resources are 71 pounds (Kruse and Frazier 1988).

Pelican

Pelican is a fishing community along Lisianski Inlet on the northwest coast of Chichagof Island. A major portion of the community is built on pilings over the saltwater. A boardwalk serves as the town's main thoroughfare. Pelican's population in 1990 was recorded at 243, with 27 percent listed as Native American.

Fisheries and fish processing employ the majority of the community's population. Educational services is the other major economic sector. Pelican Cold Storage is a year-round employer, other employment in the community is highly seasonal. The average per capita income is \$11,000.

Other finfish make up 33 percent of the community's yearly pounds harvested. Deer makes up 30 percent and salmon at 17 percent are the leading subsistence resources harvested by the community's residents. Mean pounds harvested total 355 pounds (Kruse and Frazier 1988).

Petersburg

Located in the approximate center of southeast Alaska, Petersburg is situated along the northern coast of Mitkof Island at the northern terminus of the Wrangell Narrows. Population in the 1990 census was 3207. Eleven percent of the population is Native American (Smythe 1988:49). Per capita income for the community in 1987 was reported at \$12,602 (Kruse and Frazier 1988).

Petersburg was founded by Norwegian immigrants in 1899 and incorporated in 1906. The community continues a distinctly Scandinavian flavor up to the present time. Petersburg grew up around a cannery and sawmill and quickly became a regional center for fishing, processing and transportation. Population figures indicate a gradual, and for the most part, consistent growth rate for the community throughout the years.

The economic base for the community remains in the fish processing and manufacturing sectors; local, state and federal government is the next leading employer. Fishing, tourism,

retail trade, construction and timber make up several other components of the local economy. Employment is largely seasonal.

Petersburg's residents use the full range of subsistence resources available to them. Per capita harvest of subsistence resources for the community in 1987 was reported at 203 pounds. The average household in 1987 obtained 31 percent of its fish and meat from subsistence sources (Smythe 1988:71). Deer made up nearly 22 percent of the total community harvest (Smythe 1988:94). Deer harvest for the community is very dispersed throughout the region. Petersburg's deer harvest patterns during historical times to the recent past can be characterized as largely opportunistic. Deer harvest appears to focus on the Peril Strait/Tenakee Inlet areas of Chichagof/Baranof Islands; the southern portion of Admiralty Island; and the northeastern portion of Prince of Wales Island

Point Baker and Port Protection

Point Baker and Port Protection are located along the northwestern coast of Prince of Wales Island. The two communities are geographically separated, but share a fairly common history, services, economy and subsistence. The 1990 census lists the population for the two communities as 39 and 62 respectively; with three percent and two percent Native Americans. Per capita income for the two communities in 1987 was \$6,212 and \$5,912 (Kruse and Frazier 1988).

The first floating fish packer came to Point Baker to purchase fish caught by local fishers in 1919, but the area was not officially settled until the 1930s when the Forest Service opened the area to home site selection. A post office and stores opened for business during the 1930s and 1940s. Both communities grew as increasing numbers of hand and power trollers used the area as a home base. Additionally, the State of Alaska sold parcels of land through their land sale program during the 1970s and 1980s, resulting in the building of homes, warehouses and other structures by the old and new residents of these communities. Students attend the combined grade/high school in Port Protection. The local economy is based on fishing, primarily trolling and gill-netting.

Residents of the two communities harvest a wide variety of subsistence resources. Based on the 1987 TRUCS information, the respective communities harvest 345 and 311 pounds per capita. This amounts to 173 and 86 pounds of edible deer, 164 and 241 pounds of salmon, 124 and 197 pounds of other finfish and 90 and 101 pounds of shellfish. The average household in the two communities derived at least 50 percent of their meat and fish from subsistence activities in 1987 (Kruse and Frazier 1988).

Port Alexander

Port Alexander is located along the southeastern coast of Baranof Island. The 1990 census lists the population for the community as 119. Five percent of the population is Native American. Per capita income of Port Alexander residents in 1987 was reported as \$6,343.

In 1795, Captain George Vancouver entered what would later become known as Port Alexander. Vancouver noted what he thought was an abandoned Tlingit village there. Fifty-five years later the Governor of the Russian American Company visited the area and is credited with naming the locality Port Alexander.

Its safe anchorage and proximity to the abundant fishing grounds of Chatham Strait led to fishers utilizing it as a seasonal base. Along with this marine use came commercial

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development of the uplands. By 1916, developments included a salmon cannery, store and bakery. Following that, a fish buyer, fuel dock, radio telephone station, restaurant, general store, warehouse and butcher shop were added. During the 1930s, Port Alexander was known as the center of the trolling fleet, with over 100 individuals (Orth 1967:772). With the decline in herring and salmon stocks and the Second World War, population in the community began a spiralling decline. The decline bottomed out in 1960 at 18 residents.

The annual harvest of subsistence resources was about 331 pounds per capita in 1987. Deer was the predominant resource harvested at 36 percent; salmon and other finfish together make up 46 percent; invertebrates, nine percent; other resources, eight percent; and marine mammals, one percent (Kruse and Frazier 1988).

Saxman

Saxman is situated on the west coast of Revillagigedo Island on the Tongass Highway, south of Ketchikan. It has a recorded 1990 population of 266, with 80 percent Native American.

Tlingit Natives from Cape Fox and Tongass tribes chose Saxman as their permanent home in 1894. Fishing and milling lumber for themselves and the growing community of Ketchikan were the economic mainstays. The major economic sectors of the Saxman economy are local government, social and health services, retail trade and fisheries.

Table 3-19. Mean per capita edible pounds harvested in 1987

	<u>Deer</u> <u>Harvest</u>	<u>Other</u> <u>Mammals</u>	<u>Salmon</u> <u>Harvest</u>	<u>Finfish/</u> <u>Shellfish</u>	<u>Other</u> <u>Harvest</u>	<u>Mean Total</u> <u>Harvest</u>
Angoon	74	34	70	56	7	242
Craig	41	9	40	63	26	186
Haines	16	12	28	44	5	105
Hollis	38	9	44	36	27	165
Hoonah	94	60	133	104	12	404
Hydaburg	43	8	137	83	52	337
Hyder	0	-	242	176	25	443
Kake	39	25	35	49	12	160
Kassan	40	2	32	33	72	185
Klawock	52	0	71	42	83	248
Metlakatla	11	1	20	35	35	122
Pelican	307	-	175	338	31	851
Petersburg	45	19	46	80	3	203
Point Baker	173	0	164	214	31	345
Point Alexander	321	0	202	286	67	306
Port Protection	86	0	241	298	32	311
Saxman	17	7	33	28	28	113
Sitka	38	2	38	56	5	139
Skagway	3	1	18	28	2	52
Tenakee Springs	135	8	49	140	11	343
Thorne Bay	37	6	48	227	93	411
Wrangell	21	24	30	84	5	164

Source: Kruse and Frazier 1988, Betts et al. 1994.

Employment is seasonal in all sectors except for local government. The average per capita income in 1987 was about \$7,000.

Of the edible pounds of harvested foods for the community, salmon was 37 percent; other finfish at 20 percent; and deer at 19 percent. These resources were listed as the most important harvested by the community's residents (Kruse and Frazier 1988).

Sitka

Sitka is situated along the west coast of Baranof Island. The 1990 census reports a population of 8,588. Eighteen percent of the population is Native American. Per capita income for the community in 1987 was reported to be \$14,572 (Kruse and Frazier 1988).

Sitka has been occupied since time immemorial. The Tlingit Indians of southeast Alaska claim the area and have numerous oral histories concerning their occupation and use of the regions natural resources. Sitka became the center for the fur trade along the northwestern Pacific coast beginning in 1741. It was the Russian American capital until the United States purchase of Alaska in 1867. Sitka served as the Alaska territorial capital from 1884 to 1906, when the state capital was moved to Juneau. Following the fur trade the community shifted rapidly to fishing and fish processing. With World War II came another shift to a more diverse economy. Until recently, the Sitka economy has been based on wood pulp manufacturing, as well as education, tourism, government, commercial fishing, retail trade, construction and community services. A number of these occupations are largely seasonal.

Residents of Sitka harvest a wide variety of natural resources which include deer, moose, goat, black bear, seal, salmon, shellfish and waterfowl. The annual harvest of subsistence resources in 1987 was reported as 139 pounds per capita. Deer made up 27 percent of the harvest, along with 28 percent for salmon, 25 percent for other finfish, 16 percent for shellfish and six percent for marine mammals and other resources.

Skagway

Skagway was known by various names (i.e., Skagus, Skagua, Mooreville and Skagway). It was first settled by seafarer, Captain William "Billy" Moore. Moore is credited with the discovery of the White Pass route to the Canadian interior. This route allowed access to the Klondike gold fields. By the winter of 1898, Skagway boasted a population of 5,000, and 3,000 people lived in nearby Dyea.

In 1899, a narrow gauge railroad was constructed between Skagway and Lake Bennett. The railroad was eventually extended to Whitehorse, Yukon Territory. This provided an important link between the rich mineral resources of interior Canada with the economical processing and shipping routes of coastal Alaska.

Today, six percent of the community's population of 692 are Native American. Until recent years, it has been the shipping hub for zinc and copper ore from the Canadian interior. The mainstay of the local economy is tourism. Approximately 145,000 tourists visit Skagway each year. The major economic sectors of the local economy are retail trade, entertainment, recreation, tourism services, transportation, communications and utilities. Employment is highly seasonal. The average per capita income is \$12,000.

Based on edible pounds of subsistence harvest, residents of Skagway report Salmon at 34 percent; other finfish, 31 percent; invertebrates, 23 percent; deer, six percent; other resources,

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four percent; and marine mammals, one percent. Per capita mean pounds harvested was reported at 52 pounds (Kruse and Frazier 1988).

Tenakee Springs

Tenakee Springs, commonly referred to as Tenakee, is located along the northeast limits of Tenakee Inlet, Chichagof Island. Many of the early gold rush entrepreneurs and miners coming into the country made use of the natural hot springs there. The springs made Tenakee a booming resort town, with all the related facilities and activities. In 1895, the springs were enlarged by blasting to form a large tub. Gradually, the community developed around the springs with store, post office, associated cabins and cannery.

The community has the highest percentage of senior citizens of any community in the state. Tenakee is popular with the region's residents, as well as the seasonal destination site for many summer residents and boaters. The major sectors of the economy are fisheries, retail trade and local government. Per capita income in 1987 was \$9,080.

The annual harvest of subsistence resources amounts to 39 percent for deer; other finfish, 24 percent; invertebrates, 17 percent; salmon, 14 percent; other resources, three percent; and marine mammals, two percent. Mean pounds harvested totaled 343 pounds (Kruse and Frazier 1988).

Thorne Bay

Thorne Bay is located along the east-central coast of Prince of Wales Island. The community grew out of a logging camp in the early 1960s. It has grown to serve as the central hub of timber harvesting activities for much of Prince of Wales Island. A road system connects it with many of the other towns and communities of the island. State lands sales, municipal government and small scale entrepreneurs led the development of the permanent community. The 1990 census recorded a population of 569, with three percent Native American.

Forestry and wood processing employ the vast major of the local work force, as well as a limited retail trade sector. Approximately 80 percent of the population remains there year round. Average per capita income for the community is \$11,432.

Based on edible pounds harvested, other finfish made up 40 percent of the yearly harvest; salmon, 25 percent; deer, 20 percent; invertebrates, 10 percent; marine mammals, three percent; and other resources, two percent. Mean pounds harvested total 188 pounds (Kruse and Frazier 1988).

Wrangell

Wrangell is situated along the northern limits of Wrangell Island. The 1990 census reported a population of 2,479. Thirty eight percent of the population is Native American. Per capita income for the community in 1987 was listed as \$11,989 (Kruse and Frazier 1988)

Proximity to the Stikine River and its resources made the location a key to the control of commerce and trade from time immemorial. The Stikine River provides access to and from the Canadian interior. Native peoples of Alaska and Canada have oral histories related to early use of this waterway well before the arrival of the white man (Cohen 1989).

The Russians were the first non-Natives to establish a fort at Wrangell, followed by the British and Americans. Later the community served as the jumping off point for a succession of gold

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rushes into the Canadian interior. As a result, the community has experienced a series of boom and bust cycles which adversely affected the local population and economy. During this time a sawmill and two canneries were established. Presently, the community's economy is dominated by limited wood processing, commercial fishing, education, community services, retail trade and government.

Wrangell residents hunt for moose, deer, goat, black bear and waterfowl. They also fish for salmon, halibut, shellfish and other finfish. In 1987, the annual subsistence harvest of resources was 164 pounds per capita (Kruse and Frazier 1988). This accounts for an average of 130.6 pounds of useable meat harvested by hunting and 25.6 pounds from gathering (Cohen 1989: 40). Mean useable weight accounted for 57.2 pounds for deer, 34.6 pounds for moose, 19.6 pounds for seal, 8.3 pounds for black bear, 6.2 pounds for birds and 4.5 pounds for goats (Cohen 1989: 45-46). Deer made up 13 percent of the subsistence meat harvested by Wrangell residents during 1987.

Chapter 4

Environmental Consequences

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Environmental Consequences

Introduction

This chapter provides the analytic basis for the comparison of alternatives presented in Chapter 2. It presents the expected effects on Wilderness, access, recreation, soils and vegetation, wildlife, cultural resources and subsistence. Economic effects and other environmental considerations are also presented. Effects are quantified where possible, and qualitative discussions are included. Many of the effects of these alternatives can only be addressed in qualitative terms.

Table 4-1 is referenced in several sections of this chapter. It identifies which access areas have cabins, shelters or trail heads. It also displays for each access area ROS class, maximum number of historic landings, and the maximum number of landings that would be allowed under each alternative.

A key tool used in developing the alternatives is the Recreation Opportunity Spectrum (ROS). This method of classification defines key characteristics of an area considering physical, social and administrative settings. The spectrum ranges from Primitive to Semi-Primitive Non-Motorized and Motorized to Urban. The entire Tongass National Forest has been inventoried using ROS. (See Appendix A for additional information.)

Standards and guidelines have been established for setting indicators such as visual quality, access, remoteness, social encounters and others. It is important to note that when discussing the number of encounters a user may experience, an encounter with a group hiking on a trail or kayaking may be perceived much differently than an encounter with a group arriving or departing in a helicopter. Not all encounters are perceived as equal, since many personal biases exist that influence this perception. Due to this large fluctuation in personal opinions, a consistent view of the difference in impact between motorized and non-motorized encounters is difficult to reach. Therefore, the guidelines by ROS class have been adopted equally for all types of encounters.

Primary ROS classes found in Wildernesses are Primitive and Semi-Primitive Motorized and Non-motorized. There are two access areas found at Lake Kathleen and Lake Florence on Admiralty Island that are classified as Roaded Modified. This class reflects the recent logging on private lands in the immediate vicinity of the lakes. One access area in Stikine-LeConte Wilderness is classified as Roaded Natural, Twin Lakes Cabin. For purposes of this analysis, these three areas are addressed as Semi-Primitive which would be the desired future condition of the areas.

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Table 4-1. Access areas, developed sites, ROS class, historic number of landings and maximum number of landings a year by alternative.

Access Area Number	Wilderness and Access Area Name	Develop. Site	ROS Class	Historic # Landings a Year	Maximum Number of Landings a Year by Alternatives							
					Prop'd Action	3A Max	3B Max	4 Max	5 Max	6 Max	7 Max	
Endicott River												
EN-02	Endicott Lake	No	P	5	5	405	5					
EN-05	Endicott River	No	SP	25		810	25		25			
EN-07	Central Plateau #2	No	SP	25		810	25		25			
EN-08	S. End of Lake	No	SP	25		810	25		25			
EN-09	Central Plateau #3	No	P	5		405	5		5			
EN-10	Lower River-Gravel Bed	No	SP	5		810	5			810		
Endicott River Totals				90	5	4,050	90	0	80		1,215	0
Karta River												
KA-02	Andersen Creek	No	SP	5		810	5				810	
KA-03	Black Bear Lake	No	P	5		405	5				405	
KA-07	Northeast Karta	No	SP	5		810	5				810	
KA-08	Karta Creek	No	SP	5		810	5				810	
KA-09	Flagstaff Creek	No	SP	5		810	5				810	
KA-13	Karta Lake North	No	SP	5		810	5				810	
Karta River Totals				30	0	4,455	30	0	0		4,455	0
Kootznoowoo												
KO-02	Young Lake South	Cabin	SP	25		250	25		250			
KO-03	Young Lake North	Cabin	SP	25		250	25		250			
KO-04	Central Ridges	No	SP	5		810	5					
KO-05	Central Ridges	No	SP	5		810	5			5		
KO-13	Central Wheeler Area	No	P	5		405	5					
KO-15	King Salmon River	No	SP	25		810	25				810	
KO-18	Lake Kathleen	Cabin	RM	5		250	5		250			
KO-20	Windfall Harbor	Shelter	SP	5		810	5		5			
KO-21	Windfall Harbor	No	SP	5		810	5				810	
KO-22	Lake Florence West	Cabin	RM	5		250	5		250			
KO-23	Lake Florence East	Cabin	RM	5		250	5		250			
KO-25	Thayer Lake	Shelter	SP	5		810	5		5			
KO-28	Hasselborg Lake	2 Cabins	SP	5		250	5		250			
KO-29	Hasselborg Lake	Cabin & shelter	SP	5		250	5		250			

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Access Area Number	Wilderness and Access Area Name	Develop. Site	ROS Class	Max. Historic # Landgs a Year	Maximum Number of Landings a Year by Alternatives							
					Prop'd Action	3A Max	3B Max	4 Max	5 Max	6 Max	7 Max	
MF-56	Humpback Lake	No	P	5		405	5					
MF-57	Humpback	Cabin	P	5		250	5	250				
MF-71	1st Unuk Canyon	No	P	5	5	405	5		5			
MF-72	Unuk River	No	P	5		405	5		5			
MF-74	Lake Creek	No	P	5		405	5		5			
MF-89	King Creek	No	P	5		405	5		5			
MF-90	Mount Hayford	No	P	5		405	5		5			
MF-91	East Walker Lake	No	P	5		405	5					
MF-92	Walker Lake Mountain	No	P	5		405	5		5			
MF-96	Upper Portage Creek	No	P	5		405	5		5			
MF-98	East Lake Grace	Trailhead	P	5		405	5	5				
MF-104	W. Manzanita Lake	Cabin	P	5		250	5	250				
MF-105	Manzanita Lake	Trailhead	P	5		405	5	5				
MF-107	S. Manzanita Lake	Cabin	P	5		250	5	250				
MF-108	East Manzanita Lake	No	P	5	5	405	5					
MF-109	Mirror Lake	No	P	5		405	5					
MF-110	Ella Bay	Trailhead	SP	5		810	5	5				
MF-114	Punchbowl	Shelter	SP	5		810	5	5				
MF-116	Little Goat Lake	No	SP	5		810	5					
MF-117	Big Goat Lake	Cabin	SP	5	5	250	5	250				
MF-118	Wilson Lake	Cabin	P	5		250	5	250				
MF-119	Wilson River	No	P	5		405	5		5			
MF-124	Wasp Cove	No	P	5		405	5					
MF-125	Third Lake	No	SP	5		810	5					
MF-128	Gokachin Lake	No	P	5	5							
MG-131	Mesa Lake	No	P	5		405	5					
MF-133	Tombstone Bay	No	P	5								
MF-134	Dome Creek	No	P	5		405	5		5			
MF-136	Narrow Pass	No	P	5								
MF-144	Weasel Creek	No	P	5		405	5					
MF-145	W. Quadra Creek	No	P	5		405	5					
MF-146	Boca de Quadra	No	P	5		405	5					
MF-148	Mid Reef Lake	No	P	5		405	5					
MF-154	Hugh Smith Cabin	Cabin	P	5		250	5	250				
MF-160	Lower Humpback Creek	No	P	5		405	5					

Access Area Number	Wilderness and Access Area Name	Develop. Site	ROS Class	Max. Historic # Land'gs a Year	Maximum Number of Landings a Year by Alternatives								
					Prop'd Action	3A Max	3B Max	4 Max	5 Max	6 Max	7 Max		
MF-161	Humpback Creek	No	P	5		405	5						
MF-162	Bower Creek	No	P	5	5	405	5		5				
MF-166	Mid Humpback Creek	No	P	5		405	5				405		
MF-167	Billy Goat	No	P	5		405	5				405		
MF-168	Peninsula Lake	No	P	5		405	5				405		
MF-173	Unuk River	No	P	5		405	5		5				
MF-179	Manzanita Bay	Trailhead	P	5		405	5	5			405		
	Misty Fiords Totals			290	125	24,025	270	1,775	70		18,355	0	
	Petersburg Creek-Duncan Salt Chuck												
PC-01	Petersburg Creek	Cabin	P	25		250	25	250			250		
PC-02	E. Salt Chuck Cabin	Cabin	P	25		250	25	250			250		
	Petersburg Creek-Duncan Salt Chuck Totals			50	0	500	50	500	0		500	0	
	Russell Fiord												
RF-02	Harlequin Lake	No	SP	25		810	25				810		
RF-03	Harlequin Lake	No	SP	25		810	25				810		
RF-05	Upper Beasley Creek	No	SP	25		810	25				810		
RF-24	Cape Enchantment	No	P	25		405	25				405		
	Russell Fiord Totals			100	0	2,835	100	0	0		2,835	0	
	South Baranof												
SB-04	Lake Above Gut Bay	No	SP	5		810	5				810		
SB-06	Lake Plotnikof Cabin	Cabin	SP	5		250	5	250			250		
SB-07	Rezanof Lake	No	SP	5		810	5				810		
SB-08	Lake Diana	No	SP	5		810	5				810		
SB-11	Avoss Lake Cabin	Cabin	SP	5		250	5	250			250		
SB-14	Davidof L. Cabin	Cabin	SP	5		250	5	250			250		
SB-15	Mid-Plotnikof Lake	No	SP	5		810	5				810		
	South Baranof Totals			35	0	3,990	35	750	0		3,990	0	
	South Etolin												
SE-02	South Etolin Lakes	No	SP	5		810	5				810		
	South Etolin Totals			5	5	810	5	0	0		810	0	

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Access Area Number	Wilderness and Access Area Name	Develop. Site	ROS Class	Max. Historic # Landings a Year	Prop'd Action	Maximum Number of Landings a Year by Alternatives						
						3A Max	3B Max	4 Max	5 Max	6 Max	7 Max	
South Prince of Wales												
S-03	North Klakas Lake	No	P	5		405	5					
S-20	Hessa Island	No	P	5	5	405	5					
South Prince of Wales Totals												
				10	5	810	10	P				0
Stikine-LeConte												
SL-02	N. Shore LeConte Glacier	No	SP	25		810	25		25	810	810	
SL-04	LeConte Glacier (near bay)	No	SP	25		810	25		25	810	810	
SL-05	Red Slough	Cabin	SP	5		250	5	250		250		
SL-09	Mallard Slough Cabin	Cabin	SP	5	5	250	5	250		250		
SL-10	Jap Creek	No	SP	5		810	5			810		
SL-11	Andrews Slough	No	SP	25		810	25			810		
SL-12	Twin Lakes Cabin	Cabin	RN	5		250	5	250		250		
SL-13	North Arm Creek	No	SP	5		810	5			810		
SL-14	Horn Cliffs	No	SP	25	25	810	25			810		
SL-15	Devil's Thumb	No	P	25	25	405	25					
SL-16	Upper LeConte Ice Field	No	P	5	5	405	5		5	405	405	
Stikine-LeConte Totals												
				155	60	6,420	155	750	55	6,015	2,025	
Tracy Arm-Fords Terror												
TA-06	Powers Creek	No	SP	25	25							
TA-17	Fords Terror (Penin.)	No	SP	25		810	25			810		
TA-18	Sumdum Island	No	SP	5	5							
TA-23	Ice Fields S. of Sawyer Gl.	No	P	25	25	405	25		25			
TA-24	Fords Terror North	No	SP	25		810	25			810		
TA-31	Knob N. of Tracy Arm	No	P	25	25	405	25		25		405	
Tracy Arm -Fords Terror Totals												
				130	55	2,430	100	0	50	1,620	405	
West Chichagof-Yakobi												
WC-05	Goulding Lake	Cabin	SP	5		250	5	250		250		
WC-07	White Sulphur	Cabin	SP	25		250	25	250		250		
West Chichagof - Yakobi Totals												
				30	0	500	30	500	0	500	0	
GRAND TOTAL												
				1,315	325	65,165	1,265	7,295	435	49,775	2,430	

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For each access area in a Primitive ROS class, no more than three landings a day would be authorized. For the Semi-Primitive ROS class no more than six landings a day would be authorized. These limitations for encounters by respective ROS class also apply to the alternatives that use historic levels of use. For the purposes of this analysis, an average season of 135 days is used as explained on page 2-6 in Chapter 2. Multiplying the average season of use times the maximum number of landings allowed by the ROS class guidelines results in a theoretical maximum of 810 landings a year at Semi-Primitive ROS class areas and 405 a year at Primitive ROS class areas. Because most cabin sites are Semi-Primitive ROS and cabin visitors stay an average of three nights, 250 landings a year was set as the maximum number of landings per cabin site for purposes of analysis. The ROS and cabin visits use numbers that are unlikely to be reached for most of the access areas because many are accessible by other means or helicopter access is cost prohibitive, but they are used as theoretical high use levels for the purpose of analysis.

The analysis includes effects associated with helicopter travel to and from access areas as well as landings. A landing is defined as a helicopter touching down in the Wilderness. For example, if a helicopter brought passengers to an access area, the passengers left the helicopter, the helicopter left the area and returned to the same access area later and picked up the passengers, it would be considered two landings. If a helicopter brought passengers to an access area, the passengers left the helicopter, the helicopter remained on the ground until the passengers returned, then the helicopter left the area with the passengers, it would be considered one landing.

Access areas range from less than five acres to over 14,000 acres. Relative access area sizes are depicted on the maps in Chapter 2 and on the detailed maps in Appendix C. Within most access areas, helicopters could land at several locations, sometimes hundreds to thousands of feet apart. In some of the very large access areas, such as PC-01, the general location of helicopter landings would be related to the activities the passengers wish to pursue. For example, a helicopter transporting anglers would land near the creek; whereas a helicopter transporting visitors to the public recreation cabin would land near the cabin. Even in the small access areas, it is unlikely that helicopters would regularly land on the same spot. Exact landing spots would vary depending on the type of helicopter, weather (especially wind direction and speed) and other factors pilots use to select off-airport landing spots.

The following activities were assumed likely to occur using helicopter access: beach combing, cabin and shelter access, camping, canoeing/kayaking, clamming, climbing, collecting ice, educational trips, fishing, hiking, hot springs access, ice field and glacier access, photography, picnicking, recreating, searching for solitude, sight seeing, skiing including cross country and extreme skiing, and wildlife viewing.

Wilderness

Issue

Helicopter use in Wilderness could impact Wilderness values such as solitude, sense of isolation, sense of remoteness, self-reliance, challenge and risk, and the untrammelled natural character. People are concerned about noise associated with helicopter landings and related overflights, increased presence of other visitors and visual intrusions of helicopters in remote, pristine, natural settings. Concerns were also expressed about the cumulative effects of all forms of motorized access on Wilderness values.

4 Environmental Consequences

Introduction

The Wilderness resource and the values of Wilderness are difficult to qualify and quantify because of the complexity of the resource and the range and variety of personal feelings about Wilderness. For that reason, and for the purposes of this analysis, one must fall back upon the Acts that created Wilderness in Alaska. Chapter 3, Affected Environment, described elements of definition found within the Wilderness Act and ANILCA. From these elements can be drawn the primary values of Wilderness. To respond to the issues raised concerning the effect of helicopters landing in Wilderness, each alternative is analyzed with regard to the effects on the following elements:

- * Opportunity for **solitude**, sense of isolation.
- * Opportunity for a sense of **remoteness** - that is, remoteness from the sights and sounds of human activities.
- * Opportunity and setting for **primitive recreation**, including the elements of challenge and risk.
- * Protection of the **natural state** of Wilderness - undeveloped, untrammelled, **unaltered, undisturbed ecosystems**.

Effects to ecosystems are discussed under the soils and vegetation and wildlife sections of this chapter.

Generally, the factors associated with helicopter landings (and the resulting flights to and from the access areas) include increased noise from the helicopter, possibility of an increase in the number of people in an area, and increased possibility of encountering those people (i.e. being within sight or sound of others).

Impacts from the presence of helicopters may be most acute in the actual access areas, but noise from flights generated from these landing trips may also impact people under or near flight paths. It is difficult to state to what extent since such variables as altitude of helicopter, wind direction, weather, topography, and type and size of helicopter may influence the visibility and auditory presence to those on the ground.

As the number of helicopter flights over and landings in a Wilderness increases, it is accurate to say that the resultant noise, visual intrusions of helicopters, and possibilities of encountering others increase. These effects are directly proportional to the number of landings. Table 4-1 displays the maximum amount of use in each Wilderness that would be authorized by alternative.

Helicopter flights and landings diminish opportunities for solitude and sense of isolation and remoteness from the sights and sounds of human activities. Some people may sense a decrease in the feeling of risk and challenge in accessing an area where a helicopter is present or may arrive. Primitive types of recreation generally do not involve motors or mechanization. In Alaska (as authorized by Section 1110 of ANILCA), motorboats and airplanes frequently provide access to Wildernesses, and motorboats on interior lakes are not uncommon.

Difficult to assess are the indirect effects to people who appreciate Wilderness vicariously or support the concept and need for Wilderness for the spiritual and inherent/intrinsic values of the "Enduring Resource of Wilderness." As Driver, Nash and Haas note in "Wilderness Benefits: A State-of-Knowledge Review,"

Two types of users of wilderness and other natural areas are frequently identified in the literature, the on-site visitor and the off-site user. The latter either uses the resources from a distance vicariously or

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appreciatively according to a variety of held values, or realizes personal gains from the off-site use of wilderness-related commodities such as minerals, increased quantities or quality of water, range forage, and tourism income.

Both types of users receive personal benefits from wilderness resources. In fact, if personal benefits accrued only to on-site users, there would be little support for a wilderness preservation system simply because of the low percentage of the United States population that actively visits (or has visited) designated wilderness areas.

. . . Inherent/intrinsic values . . . at least gently hypothesize that non-human organisms have their place on Earth and that perhaps even inanimate objects have the right to exist. Wilderness preservation, as a form of restraint, helps temper the tendency of aggressive humankind to conquer and subdue the entire Earth.

This sense that there are still wild places on this earth and the realization of the spiritually sustaining and cleansing powers these areas provide are important to many people. This aspect of the Wilderness resource is difficult to analyze in terms of magnitude. To some, any use of helicopters in Wilderness is compromising the intent and purpose of the National Wilderness Preservation System. It is impossible to quantify effects of any action alternative on these off-site visitors and their concerns, but it may be safe to hypothesize that as numbers of helicopter access areas and helicopter landings increase within Wilderness, concerns regarding preservation of an enduring resource of Wilderness would increase proportionally.

Alternative 1 No Action

No helicopter access areas would be authorized in any Wilderness under this No Action Alternative. The alternative would not generate additional helicopter noise. The current probability for remoteness from the sights and sounds of human activities, isolation and a sense of privacy would be maintained. There would be no additional impacts or disturbances to the ecosystem from general public helicopter access. This alternative best addresses concerns raised about degrading Wilderness values and the character of these Wildernesses and would best preserve existing opportunities for solitude, primitive types of recreation and perceptions of isolation, remoteness, challenge and risk.

Alternative 2 Proposed Action

This alternative would authorize 325 landings annually at 41 access areas in seven Tongass Wildernesses. A variety of access areas would be authorized, including seven Forest Service public recreation cabins, a trail head, alpine areas, muskeg areas, fresh water lakes, ice field locations, and a number of creeks. This alternative would limit landings authorized to reported historic use levels. These historical use levels would provide generally low levels of use at a relatively small number of access areas. The probability of impacting Wilderness visitors is generally low to moderate with this alternative and in relationship to those alternatives that do not limit use to historic levels.

Endicott River Wilderness

This alternative would authorize one access area within Endicott River Wilderness at Endicott Lake (EN-02), with up to five landings a year. Helicopter access could slightly increase the amount of use the area receives by up to 30 additional people, although the cost of a helicopter may be prohibitive for many. For those who use other means of

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access, helicopters may have negative effects on their Wilderness experience. The sight and sound of helicopters and slightly increased potential for encounters with others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquility sought in such a remote, pristine setting. Because of the remote setting and the low number of landings proposed annually, the probability of encountering others would still remain low.

Up to five landings a year and related flights over Endicott River Wilderness may impact a small number of other Wilderness visitors's experiences by increasing aircraft noise, visibility of motorized transportation and numbers of people in the Wilderness. This Wilderness, although traditionally receiving very low use, receives the majority of the year's use during moose hunting season. Helicopters could disrupt hunts by disturbing animals.

Kootznoowoo Wilderness

This alternative would authorize six access areas in Kootznoowoo Wilderness: North and South Young Lake cabins (KO-02 and 03), Lake Kathleen Cabin (KO-18), East and West Lake Florence cabins (KO-22 and 23) and Jim's Lake Cabin (KO-38). All these access areas are public recreation cabins with floatplane access. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to any noise difference between floatplanes and helicopters. Because a cabin permit is required for landing a helicopter at a public recreation cabin, these landings would likely not affect other visitors at these places. There are two public recreation cabins each on Young Lake and Lake Florence. Young Lake cabins are approximately 1.5 miles from each other. Lake Florence cabins are over three miles apart. People at one cabin may be aware of a helicopter landing at the other cabin but it is difficult to say if it would have any more effect on their sense of solitude, remoteness or isolation than if the other group arrived by floatplane. Depending upon the helicopter approach, people may not be aware of helicopter access to the other cabin. A floatplane uses the surface of the lake for landing or take-off and may be more noticeable.

Helicopters may expand the season of use for these cabins. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude motorized access in the early spring, winter and fall. (Sometimes people that have arrived by floatplane cannot depart by floatplane because of an unexpected freeze). Year-round motorized access may increase recreation use at these cabins. A greater sense of remoteness, isolation and solitude might be possible for the cabin user during the off-seasons. Conversely, other winter Wilderness users may find helicopters especially intrusive during these seasons of traditionally very low use.

Up to five landings a year would be authorized at KO-18, 23 and 38. Up to 25 landings a year may occur in the remaining access areas. Multiple landings at cabin locations are unlikely since the helicopter would be used to reach the cabin. Most cabin visitors stay one or more nights without leaving until departure date.

This alternative would authorize a total of up to 90 landings a year in these six access areas in Kootznoowoo Wilderness. Up to 90 helicopter landings and related flights over the Wilderness may be noticeable to some users near flight paths, depending on the altitude of each flight, weather and topography. Aircraft noise would be increased. Wilderness users may consider helicopter flights intrusive upon the opportunity to seek solitude and remoteness from the sights and sounds of human activities.

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Misty Fiords National Monument Wilderness

This alternative would authorize 25 helicopter access areas spread throughout Misty Fiords with the number of landings at historic levels of up to five a year for all access areas. This would allow a maximum of 125 landings a year in the Wilderness.

Helicopter access could increase Wilderness use, although the cost of helicopter travel may be prohibitive for many. To those arriving at these access areas by other means, helicopters may have negative effects on their Wilderness experiences.

Helicopter access to Big Goat Lake Cabin (MF-117) may expand its season of use. Helicopter use during the off-season extends the impacts of motorized access to 12 months a year. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude motorized access in the early spring, winter and fall. (Sometimes people that have arrived by floatplane cannot depart by floatplane because of an unexpected freeze). Year-round motorized access may increase recreation use at these cabins. A greater sense of remoteness, isolation and solitude might be possible for the cabin user during the off-season. Conversely, other winter Wilderness users may find helicopters especially intrusive during these seasons of traditionally very low use.

The historical use limits set by this alternative reduce the potential impacts on Wilderness character. One hundred twenty-five helicopter landings with a maximum of 750 additional people visiting the Wilderness each year could be authorized. This would have less of an impact on the Wilderness character than alternatives that do not limit the use to historic levels but would have more impact than the no action alternative.

South Etolin Wilderness

This alternative would authorize one access area within South Etolin Wilderness, South Etolin Lakes (SE-02), with up to five landings a year. Thirty passengers could visit South Etolin Wilderness by helicopter each year. To those that may reach this area by other means, helicopters may have negative effects on their Wilderness experiences. The sight and sound of a helicopter and increased potential for encounters of others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquillity. Floatplanes can land at nearby lakes reducing the expectation of a non-motorized experience at this area.

South Prince of Wales Wilderness

This alternative would authorize up to five landings a year at Hessa Island (S-20), with up to 30 people arriving by helicopter each year. Helicopter access could increase the amount of use the area receives, although the cost of helicopter travel may be prohibitive for many. A helicopter may have negative effects on the Wilderness experiences of those who reach this area by other means. This would especially be the case because this Wilderness is so remote and receives so little use. The sight and sound of a helicopter and increased potential for encounters with others is not expected in the remoteness, challenge, solitude, isolation and tranquility offered by this extremely remote Wilderness.

Stikine-LeConte Wilderness

This alternative would authorize four access areas within Stikine-LeConte Wilderness: Mallard Slough Cabin (SL-09), Horn Cliffs (SL-14), Devil's Thumb (SL-15) and LeConte

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Ice Field (SL-16). Up to five landings a year at SL-09 and SL-16 and up to 25 landings a year at SL-14 and SL-15 could provide helicopter access to 360 people.

A cabin permit would be required for helicopter access to the Mallard Sough public recreation cabin. Therefore, these landings would likely not affect other visitors at the cabin. Helicopter access to this cabin area may expand the season of use. When the Stikine River ices over in the winter, access is very difficult. A greater sense of remoteness, isolation and solitude might be possible at this cabin during the off-season. Conversely, other winter Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

Helicopter access to Horn Cliffs, Devil's Thumb and LeConte Ice Field could increase the use these areas receive, although the cost of helicopter travel may be prohibitive for many. For those using other means of access, helicopters may have negative effects on their Wilderness experiences. The sights and sounds of helicopters and increased potential for encounters with others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquility sought in such remote, pristine settings. The low use levels set by this alternative would help reduce the impact to Wilderness values.

Tracy Arm-Fords Terror Wilderness

Three helicopter access areas would be authorized. One area is TA-23, a remote area located approximately three miles south of South Sawyer Glacier on a smaller glacier flowing north. Landings would be limited to no more than 25 a year. The maximum number of people that could visit this location annually by helicopter would be 150. Helicopter access could increase the amount of use the area receives, although the cost of helicopter transport may be prohibitive for many. A helicopter would have negative effects on the Wilderness experiences of those who reach this area by other means. The sight and sound of a helicopter and the people that it carries have a high probability of affecting the sense of remoteness, challenge, solitude, isolation and tranquility sought in such a remote, pristine Wilderness.

The other two access areas are Powers Creek (TA-06) and the north end of Sumdum Island (TA-18). These are in a Semi-Primitive Motorized ROS class and present less opportunity for experiencing solitude and sense of isolation primarily because of marine and air traffic. Both are accessible by boats and floatplanes. They are approximately three miles apart across the mouth of Endicott Arm. Authorization of these two access areas would add up to 30 landings a year. Up to 180 people a year could reach these two locations by helicopter.

This alternative would authorize up to 55 helicopter landings a year within this Wilderness. These landings and related flights over the Wilderness may be noticeable to other users that may be near flight paths depending on the altitude of each flight, weather, topography and type of helicopter. Aircraft noise would be increased. Wilderness users may consider helicopters intrusive upon the opportunity to seek solitude and remoteness from the sights and sounds of human activity.

Chuck River, Coronation Island, Karta River, Kuiu, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue.

Environmental Consequences **4**

This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

Alternative 3A

This alternative authorizes the largest number of helicopter access areas and allows the maximum number of landings per access area and per Wilderness of any of the alternatives. Up to 65,165 landings could occur annually in 129 access areas dispersed throughout 12 Wildernesses. This is the **theoretical maximum** number of landings; use may likely fall below this amount. Of these 129 access areas, 29 have Forest Service public recreation cabins.

Alternative 3A would most increase motorized access and resultant noise. It would also most increase the number of people using Wilderness and the probability of encountering greater numbers of other visitors. The visual intrusion of helicopters would also be greatest under this alternative. This alternative would most negatively impact Wilderness values and the Wilderness character of all twelve Wildernesses. Opportunities to escape the sights and sounds of human activities and mechanization would be greatly decreased with selection of this alternative. Opportunities for obtaining a sense of remoteness and solitude in a setting that provides for primitive recreation and an opportunity for challenge and risk would be most reduced.

Endicott River Wilderness

This alternative would authorize landings at six access areas within this Wilderness. Two would be limited to three landings a day: Endicott Lake (EN-02) and Central Plateau #3 (EN-09). Four would be limited to six landings a day: Endicott River (EN-05), Central Plateau #2 (EN-07), the south end of Endicott Lake (EN-08) and Lower River-Gravel Bed (EN-10). Up to 4,050 landings a year would be authorized, with a potential of 24,300 new visitors.

Because this alternative would authorize the largest number of access areas and allow the most landings of any alternative, it would have the greatest impacts on the Wilderness values and character of this Wilderness. It would allow the greatest amount of motorized human activity and resultant increased aircraft noise and numbers of people in the Wilderness. Currently, the Wilderness is remote with little use and very high opportunity for a sense of solitude, challenge and risk in an undeveloped, unaltered natural state. The maximum number of landings authorized in this alternative would reduce the opportunity for solitude, tranquility and a sense of remoteness and may detract from a Wilderness experience for a Wilderness user that had arrived by other means. Aircraft noise, the visual intrusion of helicopters and the number of people that may be encountered would all increase.

The number of helicopter flights over this Wilderness related to landings at six dispersed locations may negatively impact visitors near flight paths. Some may consider helicopter flights intrusive on their opportunities for solitude and avoidance of the sights and sounds of humans and "growing mechanization." Because of the unpredictability of actual days that helicopters would be present, a Wilderness visitor could not assure that a trip to this Wilderness would be free from helicopters. As mentioned elsewhere, the cost of helicopter transportation may be prohibitive for many people.

Karta River Wilderness

This alternative allows the maximum number of access areas, with six landings a day in Semi-Primitive and three landings a day in Primitive ROS classes. This alternative would

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authorize six access areas within Karta River Wilderness: Andersen Creek (KA-02), Black Bear Lake (KA-03), Northeast Karta (KA-07), Karta Creek (KA-08), Flagstaff Creek (KA-09) and Karta Lake North (KA-13). Black Bear Lake (KA-03) would be limited to three landings a day. The other access areas have a use limit of six landings a day. This alternative would authorize a maximum of 4,455 annual landings in the Wilderness.

This Wilderness is very small and encompasses only one drainage. Aircraft noise at any location in the Wilderness can be heard at almost all points in the Wilderness. Because of this, 4,455 annual helicopter landings in this Wilderness would greatly reduce the sense of solitude, remoteness, challenge and risk present.

Kootznoowoo Wilderness

Because this alternative would authorize the largest number of helicopter access areas and allow the maximum number of landings of any alternative, it would have the most negative impacts to the Wilderness values and character of this Wilderness. This alternative would authorize 30 access areas within Kootznoowoo Wilderness. Twelve of these areas include public recreation cabins with other motorized access. Up to 14,340 landings a year are considered under this alternative.

Helicopter access to these cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. Cabin permits would be required for helicopter landings at public recreation cabins. Helicopter landings at cabins at remote lakes (Jim's Lake, KO-38; Lake Florence, KO-22 and 23; Lake Kathleen, KO-18; and Young Lake, KO-02 and 03) would not likely affect other visitors at the lakes. Three of the access areas are at shelters on fresh water lakes (KO-25, 29 and 30).

Helicopter landings at cabins along the Cross-Admiralty Canoe Route may affect people using the trail/canoe system or shelters along the route. Those cabins and shelters include Hasselborg Lake (KO-28 and 29), Distin Lake (KO-32 and 33), Lake Alexander (KO-35 and 36), Davidson Lake (KO-34) and Thayer Lake (KO-25). Helicopters may expand the season of use at all lake locations and increase recreation use since helicopters can land when there is skim ice or lakes are frozen. A greater sense of remoteness, isolation and solitude might be possible for cabin users during the off-seasons. Conversely, other Wilderness users may find helicopters especially intrusive during these seasons of traditionally very low use.

The remaining access areas are primarily high elevation ridge tops and alpine settings (KO-04, 05, 13, 69, 70, 71, 72, 73, 74, 75, 79 and 80) except for K0-15, King Salmon River; Gambier Bay cabin (KO-46) and Windfall Harbor (K0-20 and 21), which are located near salt water. The high elevation access areas are characterized by a high degree of remoteness and opportunity for solitude, isolation and tranquility in a pristine natural setting. There is a high degree of challenge and risk to reach these areas on foot. Helicopter access diminishes the challenge, risk and test of survival skills of those not using helicopters. Authorizing 405 or 810 landings at each of these areas would result in a considerable change from present management. Currently, these areas are managed so that no more than one encounter per week is expected.

Although actual use of these locations by humans may be low, intrusions by helicopters preclude the opportunity to assure a setting removed from the sights and sounds of human activities. Daily number of landings would vary between three and six (see Table 4-1). Because of the unpredictability of actual days that helicopters would be landing at any

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access area, a Wilderness user could not assure that a trip to these areas would be free from helicopters.

The number of landings and related overflights in Alternative 3A would negatively impact other Wilderness visitors near flight paths. The increased aircraft noise, visibility of motorized transport and increased number of people would negatively impact opportunities for solitude and avoiding the sights and sounds of humans and "growing mechanization." The character of the Wilderness would be negatively impacted.

Misty Fjords National Monument Wilderness

This alternative allows the maximum number of access areas within this Wilderness, at the ROS use limits of six landings a day in Semi-Primitive and three landings a day in Primitive areas. This alternative would authorize 54 helicopter access areas spread widely throughout Misty Fjords and would allow a maximum of 24,025 landings a year. It would have the largest impact of any alternative on the Wilderness character.

Helicopter access could increase the amount of use the Wilderness receives, although the cost of helicopter travel may be prohibitive for many. To those using other means of access, a helicopter may have negative effects on their Wilderness experience, especially if the ceiling of 24,025 annual landings is neared.

Helicopter access to South Wilson Lake (MF-39), Humpback Lake (MF-57), West Manzanita Lake (MF-104), South Manzanita Lake (MF-107), Punchbowl (MF-114), Big Goat Lake (MF-117), Wilson Lake (MF-118) and Hugh Smith Cabin (MF-154) may expand the season of use for these cabin and shelter areas. Year-round motorized access may increase use but having helicopters present during the off season extends the impacts of motorized access to 12 months a year. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. (Sometimes people that have arrived by floatplane cannot depart by floatplane because of an unexpected freeze). A greater sense of remoteness, isolation and solitude might be possible during the off-season. Conversely, other visitors may find the presence of helicopters especially intrusive during those seasons of traditionally very low use.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. Cabin permits would be required to land within 1/2 mile of either cabin. A maximum of 500 total landings was analyzed, 250 at each cabin.

Impact to Wilderness character would be minimal as this area already is subject to many motorized uses. Helicopter access may expand the season of use. When Petersburg Lake or Duncan Salt Chuck ices over in the winter, access is very difficult. A greater sense of remoteness, isolation and solitude might be found at these cabins during the off-season. Conversely, other winter Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

Russell Fiord Wilderness

This alternative proposes to authorize four helicopter access areas within this Wilderness: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24). This alternative would authorize up to 2,835 landings in this Wilderness. Each

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access area could have up to 810 landings per year (maximum of six a day) except for Cape Enchantment which could have 405 (maximum of three a day).

This alternative may negatively affect the Wilderness values and resources. All four areas are remote with no permanent facilities, although at Harlequin Lake (RF-02) and Cape Enchantment there are outfitter-guide tent platforms (under special use permit). Harlequin Lake is recognized by Yakutat Ranger District as being at capacity for outfitter-guides. Opportunities for solitude, isolation and tranquility in a pristine, natural setting are currently available. Helicopter landings would negatively impact the experience of users seeking such an experience and setting, especially at areas where outfitter-guides and their clients are using their camps. Helicopter access may displace these camps if this access increases human density with resultant aircraft noise, perceptions of crowding, and visual disturbance.

The number of helicopter flights proposed over this Wilderness may negatively impact other Wilderness users in the vicinity of flight paths. Other users include local residents and guided and non-guided visitors. Some would consider the increased aircraft noise, sight of helicopters and increased number of people intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

South Baranof Wilderness

Under this alternative, seven helicopter access areas would be authorized in South Baranof Wilderness: Lake above Gut Bay (SB-04) Plotnikof Lake (SB-06), Rezanof Lake (SB-07), Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14) and Mid-Plotnikof Lake (SB-15).

At each access area, except cabins, up to 810 landings a year would be authorized. Cabin access was analyzed at 250 landings a year. Up to 3,990 landings could occur annually. No more than six landings a day at each access area would be approved. Three of these areas are public recreation cabins. Cabin permits would be required for landing at a cabin. Helicopter access to cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. All access areas are located at freshwater lakes. Helicopters may expand the season of use. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. (Sometimes people that have arrived by floatplane cannot depart by floatplane because of an unexpected freeze.) A greater sense of remoteness, isolation, and solitude might be possible for cabin users during the off-seasons. However, other visitors may find helicopters especially intrusive during these seasons of traditionally very low use.

The number of helicopter flights would negatively affect the Wilderness experience of users in the vicinity of flight paths. Some would consider the increased aircraft noise, sight of helicopters and increased number of people in the area intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

South Etolin Wilderness

This alternative would authorize up to six landings a day at South Etolin Lakes (SE-02). Up to 810 helicopter landings a year could occur at this one area. Helicopter access could increase the amount of use the area currently receives, although the cost of helicopter

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travel may be prohibitive for many. The presence of a helicopter may have negative effects on the Wilderness experience of those who may reach this area by other means. The sight and sound of a helicopter and increased potential for encounters of others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquility. Floatplanes can land at nearby lakes reducing the expectation of a non-motorized experience at this area.

South Prince of Wales Wilderness

This alternative would authorize up to three landings a day at North Klakas Lake (S-03) and Hessa Island (S-20). Up to 810 helicopter landings a year could occur in the Wilderness. Helicopter access could increase the amount of use the areas receive, although the cost of helicopters may be prohibitive for many. The presence of a helicopter may have negative effects on the Wilderness experience of those who may reach this area by other means. This would especially be the case because this Wilderness is so remote and receives little use. The sight and sound of a helicopter and encounters with others are not expected at these extremely remote, pristine locations.

Stikine-LeConte Wilderness

This alternative allows the maximum number of access areas within this Wilderness, at the ROS use limits of six landings a day in Semi-Primitive and three landings a day in Primitive access areas. This alternative would authorize 11 access areas within Stikine-LeConte Wilderness. Maximum use would be: six landings a day at SL-02, 04, 10, 11, 13 and 14 and three landings a day at SL-15 and 16. Access within 1/2 mile of a recreation cabin (SL-05, 09 and 12) would require a cabin permit. Also, within 1/2 mile of a cabin, the maximum number of landings annually was set at 250 per cabin for purposes of analysis.

Because of the requirement to hold a cabin permit for landing within 1/2 mile of the cabin, these landings would likely not affect other visitors at the cabin area. Helicopter access to cabin areas may expand the season of use. When the Stikine River ices over in the winter, access is very difficult. A greater sense of remoteness, isolation, and solitude might be possible at cabins during the off-season. Conversely, other Wilderness users may find the presence of helicopters especially intrusive during those seasons of traditionally very low use.

Helicopter access to the remote access areas in this alternative (SL-02, 04, 10, 14, 15 and 16) could increase the amount of use the areas receive, although the cost of helicopter travel may be prohibitive for many. To those using other forms of access, helicopters may have negative effects on their Wilderness experiences. The sight and sound of a helicopter and increased potential for encounters with others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquility sought in these remote, pristine settings. Because of the isolated nature of these access areas, encounters with others, especially with others in helicopters, would not be expected. The high use levels set by the ROS limits intensify the impact of helicopters on Wilderness values.

Helicopter access to the remaining less remote settings in the Stikine-LeConte Wilderness (SL-11 and 13) would have less impact on the Wilderness experience of other users. There are frequent motorboat visits and floatplane flights. Helicopter access at ROS limits would impact these areas, but not as severely as the areas which currently receive low use. Some users may feel their Wilderness experience has been impacted unacceptably when a helicopter lands nearby.

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Tracy Arm-Fords Terror Wilderness

Because this alternative would authorize the largest number of helicopter access areas and allow the maximum number of landings of any alternative, it would have the most negative impacts to the Wilderness values and resources of this Wilderness. This alternative would authorize four access areas in this Wilderness.

Up to 2,430 landings a year for all four access areas could occur with no more than three landings a day at TA-23 and 31. Six landings a day could be approved at the two access areas in Fords Terror (TA-17 and 24) based upon the ROS class. Theoretically, 18 to 36 people a day may visit each access area. The maximum number of people a year that could visit the Wilderness by helicopter would be 14,580.

The access area south of Sawyer Glacier (TA-23) is the most remote. It is approximately three miles south of South Sawyer Glacier on a smaller glacier flowing north. Up to 405 landings a year would be authorized. Helicopters could increase the amount of use the location receives - although the cost of helicopter travel may be prohibitive for many. Those using other means of access would find helicopters negatively affecting their Wilderness experience. The sight and sound of a helicopter and the people that it may bring would reduce the sense of remoteness, solitude, isolation and tranquility sought in such a remote, pristine setting.

The knob north of Tracy Arm (TA-31) is also remote and difficult to access without a helicopter. It overlooks Tracy Arm fiord 2000 feet below and provides a vista up the arm. Human activities are likely to be visible, including flight seeing planes, cruise ships and pleasure boats. Up to 405 landings a year would be authorized at this access area. An arduous hike of over 1/2 day would be required to reach either TA-23 or 31 by foot.

The two access areas at the mouth of Fords Terror (TA-17 and 24) are accessible by floatplane and boat. As more popular destinations in this Wilderness, opportunities to encounter other people/boats in this area are already greater than the other two access areas. Helicopters landing in this confined area would have a definite impact on others in the area. Noise would be the most intrusive factor considering the steep walls of Fords Terror, although helicopter rotor wash would also disturb visitors. Up to 810 landings a year per access area would be authorized in this alternative.

The number of helicopter flights over this Wilderness related to the four access areas would negatively impact other Wilderness users near flight paths. Some would consider the increased aircraft noise and visibility of motorized access intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization." Because of the unpredictability of the actual days that helicopters would land, a Wilderness user could not assure that a trip to these areas would be helicopter-free.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake Cabin (WC-05) and White Sulphur (WC-07). Both are public recreation cabins. White Sulphur is extremely popular as there is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides. Although up to 250 landings a year could occur under this alternative at each identified location, it is unlikely that this maximum number would ever be attained.

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The number of helicopter flights over this Wilderness may negatively impact other Wilderness users near flight paths. Some would consider the increased aircraft noise, sight of a helicopter, and potentially increased number of encounters with others intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue. This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

This alternative authorizes the largest number of helicopter access areas but holds the number of landings to reported historic use levels. Up to 1265 landings could occur annually in 129 access areas dispersed throughout 12 Wildernesses. Of these 129 access areas, 29 are public recreation cabins, six are shelters and four are trail heads.

This alternative disperses motorized access and resultant noise throughout 12 Wildernesses as does Alternative 3A, although this alternative is at a considerably lower level. It would also increase the possibility of greater numbers of people in Wildernesses. It would also increase the number of encounters any visitor may expect but again, at a lower level and probability than Alternative 3A. The visual intrusion of helicopters could also be noticeable under this alternative. This alternative would negatively affect the Wilderness values and character of all 12 Wildernesses considered in this analysis. Opportunities to escape from the sights and sounds of human activities and mechanization are decreased under this alternative. Opportunities for obtaining a sense of remoteness and solitude in a setting that provides for primitive recreation and an opportunity for challenge and risk are reduced in this alternative.

Endicott River Wilderness

This alternative would authorize landings at six access areas within this Wilderness. Three would be limited to five landings a year: Endicott Lake (EN-02), Central Plateau #3 (EN-09) and Lower River-Gravel Bed (EN-10). Three access areas would be limited to 25 landings a year: Endicott River (EN-05), Central Plateau #2 (EN-07) and the south end of Endicott Lake (EN-08). Up to 90 landings a year would be authorized, with a potential of 540 new visitors.

Because this alternative authorizes the maximum number of access areas of any alternative, although at a lower use level than Alternative 3A, it would have negative effects on the Wilderness values and character of this Wilderness. Currently, this Wilderness is remote with little use and very high opportunity for a sense of solitude, challenge and risk in an undeveloped, unaltered natural state. The number of landings and access areas to be authorized in this alternative are dispersed throughout the Wilderness and have the potential to disturb the sense of remoteness, solitude and tranquility for those who arrive by other means.

The number of helicopter flights over this Wilderness associated with landings at six dispersed areas may negatively impact other Wilderness visitors near flight paths. Some

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would consider helicopters intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Most use of this Wilderness is for hunting. Helicopters may disturb hunts but cannot be used for any purpose related to hunting (see 1-15). Because of the unpredictability of actual days that helicopters would be present, other visitors could not assure that a trip to this Wilderness would be free from helicopters.

Karta River Wilderness

This alternative allows the maximum number of access areas within this Wilderness at historic use levels. This alternative would authorize six access areas: Andersen Creek (KA-02), Black Bear Lake (KA-03), Northeast Karta (KA-07), Karta Creek (KA-08), Flagstaff Creek (KA-09) and Karta Lake North (KA-13). Up to five landings a year would be authorized at all access areas for a total of up to 30 landings a year in Karta River Wilderness.

This Wilderness is very small and encompasses only one drainage. Aircraft noise at any location in the Wilderness can be heard almost everywhere. Because of this, helicopters have a high probability of reducing the sense of solitude, remoteness, challenge and risk present. The low level of use would help to minimize the impact of helicopters on a visitor's Wilderness experience.

Kootznoowoo Wilderness

This alternative allows the maximum number of access areas within this Wilderness at historic use levels. This alternative would authorize landings at 30 access areas within this Wilderness. Up to 390 landings a year would be allowed. Twelve of these access areas include public recreation cabins with other motorized access (KO-02, 03, 18, 22, 23, 28, 29, 32,33, 35, 38 and 46).

Helicopter access to cabins would, in some cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. Cabin permits would be required for helicopter landings at public recreation cabins. Helicopter landings at cabins at remote lakes would not likely affect other visitors at the lakes (Jim's Lake, KO-38; Lake Florence, KO-22 and 23; Lake Kathleen, KO-18 and Young Lake, KO-02 and 03.) Three of the access areas have shelters on fresh water lakes (KO-25, 29 and 36).

Helicopter landings at cabins along the Cross-Admiralty Canoe Route may affect people using the trail/canoe system or shelters along the route. Those cabins and shelters include Hasselborg Lake (KO-28 and 29), Distin Lake (KO-32 and 33), Lake Alexander (KO-35 and 36), Davidson Lake (KO-34) and Thayer Lake (KO-25). Helicopters could expand the season of use at all lake locations and increase recreation use slightly since helicopters can land when there is skim ice or lakes are frozen, but helicopter access is held at low levels of historic use. A greater sense of remoteness, isolation and solitude might be possible for cabin users during the off-seasons. Conversely, other Wilderness users may find helicopters especially intrusive during these seasons of traditionally very low use.

The remaining access areas are primarily high elevation ridge tops and alpine settings (KO-04, 05, 13, 69, 70, 71, 72, 73, 74, 75, 79, and 80) except for King Salmon River (KO-15), Gambier Bay cabin (KO-46) and Windfall Harbor (KO-20, 21) which are located near salt water. The high elevation areas are very remote and provide opportunities for

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solitude, isolation and tranquility in a pristine natural setting. There is a high degree of challenge and risk required to reach these areas. Helicopter access to these areas removes the challenge and risk, but as this alternative provides for much lower levels of use than Alternative 3A, the reduction of challenge and risk will be less frequent.

Although actual use of these locations by humans may be low, helicopters would preclude the opportunity to assure a setting removed from the sights and sounds of human activities. Use of these areas varies from up to five to up to 25 times annually as indicated on Table 4-1. Current direction manages Primitive ROS locations so that no more than one encounter per week is expected. Because of the unpredictability of the actual days that helicopters would be used, a Wilderness user could not assure that a trip to this Wilderness would be free from helicopters.

Because this alternative would authorize up to 390 landings a year, it would have negative effects on the Wilderness value and character of the area. The number of helicopter flights may detract from the Wilderness experience of visitors near flight paths. The amount of aircraft noise, number of people and sight of helicopters would all be increased. Some would consider it intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Misty Fiords National Monument Wilderness

This alternative allows the maximum number of access areas at historic use levels. This alternative would authorize 54 helicopter access areas spread widely throughout Misty Fiords. Landings would be restricted to five annually per access area and would total up to 270 landings annually in this Wilderness. Cabin permits would be required for helicopter access to public recreation cabins. Theoretically, this alternative would allow a maximum of 1620 passengers annually. However, the cost of helicopter travel to Misty Fiords may be prohibitive for most people.

Helicopters could expand the season of use at cabins and shelters: South Wilson Lake (MF-39), Humpback Lake (MF-57), West Manzanita Lake (MF-104), South Manzanita Lake (MF-107), Punchbowl (MF-114), Big Goat Lake (MF-117), Wilson Lake (MF-118) and Hugh Smith Cabin (MF-154). Helicopter use during the off-season extends the impacts of motorized access to 12 months a year. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. A greater sense of remoteness, isolation and solitude might be possible at cabins during the off-season. Conversely, other Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

The historical use limits set by this alternative reduce the potential impacts on Wilderness character. Alternative 3B would have less of an impact on the Wilderness character than alternatives that do not limit the use to historical levels (Alternatives 3A and Alternative 6) although certainly more of an impact than some of the alternatives which authorize fewer access areas at historical use levels (Alternative 2, Alternative 4 and Alternative 5).

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. A maximum of 50 landings a year would be authorized, up to 25 in each area.

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Impact to Wilderness character would be minimal as this area already is subject to many motorized uses. Helicopter access may expand the season of use. When Petersburg Lake or Duncan Salt Chuck ices over in winter, access is very difficult. A greater sense of remoteness, isolation and solitude might be at these cabins during the off-season. Conversely, other winter Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

Russell Fiord Wilderness

This alternative allows the maximum number of helicopter access areas within this Wilderness but at a level held to reported historic levels. This alternative proposes to authorize four access areas within this Wilderness: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24).

Each access area would have up to 25 landings a year. Up to 100 landings a year would be allowed in Russell Fiord Wilderness. All four areas are remote with no permanent facilities, although at Harlequin Lake (RF-02) and Cape Enchantment there are outfitter-guide tent platforms. Harlequin Lake is recognized by Yakutat Ranger District as being at capacity for outfitter-guides. Opportunities for solitude, isolation and tranquillity in a pristine, natural setting are currently available. Helicopter landings would negatively impact the experience of users seeking such an experience and setting, especially at areas where outfitter-guides and their clients are using their camps. Helicopter access may displace these camps if this access increases human density, resultant aircraft noise, perceptions of crowding and visual disturbance.

Because this alternative would authorize four access areas and up to 100 landings a year in this Wilderness, it would increase mechanized noise, visual intrusions of helicopters and the number of people that may visit each access area. Wilderness values and resources would be negatively impacted. The number of helicopter flights related to these four access areas would negatively impact other Wilderness users near flight paths. These users include local residents and both guided and non-guided visitors. Some would consider helicopters intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

South Baranof Wilderness

This alternative allows the maximum number of helicopter access areas within this Wilderness at historic use levels. Seven access areas would be authorized in South Baranof Wilderness: Lake above Gut Bay (SB-04) Plotnikof Lake (SB-06), Rezanof Lake (SB-07), Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14) and Mid-Plotnikof Lake (SB-15).

All seven of these areas provide access to fresh water lakes; three of the lakes have public recreation cabins. Helicopter transportation to these cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. Cabin permit would be required to land at a cabin. Helicopters may expand the season of use for these cabins. Floatplanes are unable to land on lakes that have skim ice or are frozen, so ice can preclude motorized access in the early spring, winter and fall. A greater sense of remoteness, isolation, and solitude might be possible at these cabin during the off-season. Conversely, other Wilderness users would find the presence of helicopters especially intrusive during these seasons of traditionally very low use.

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Each access area would be authorized up to five landings a year, a total of 35 landings within the Wilderness annually.

The number of helicopter flights over this Wilderness related to landing at these access areas may negatively impact some Wilderness users near flight paths. Some may consider helicopters intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

South Etolin Wilderness

This alternative would authorize up to five landings a year at South Etolin Lakes (SE-02). Helicopters could increase use the area receives, although the cost of helicopter travel may be prohibitive for many. Those using other means of access may find helicopters negatively affecting their Wilderness experiences. The sight and sound of a helicopter and increased potential for encounters with others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquillity. Nearby lakes provide floatplane access to this area. Established floatplane access lowers the expectation of a non-motorized experience.

South Prince of Wales Wilderness

This alternative would allow up to five landings a year each at north Klakas Lake (S-03) and Hessa Island (S-20). These 10 landings could increase use of the area, although the cost of helicopter travel may be prohibitive for many. Those using other means of access may find helicopters negatively affecting their Wilderness experiences. The sight and sound of a helicopter and increased potential for encounters of others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquillity sought in these remote, pristine settings. Because this Wilderness is so remote, encounters with others, especially with others in helicopters, would not be expected.

Stikine-LeConte Wilderness

This alternative allows the maximum number of access areas within this Wilderness, but at a historic use levels of up to a total of 155 landings a year. Eleven access areas would be allowed within Stikine-LeConte Wilderness. Up to five landings a year would be authorized at SL-05, 09, 10, 12, 13 and 16. Up to 25 landings a year would be authorized at SL-02, 04, 11, 14 and 15. Access within 1/2 mile of a recreation cabin (SL-05, 09 and 12) would require a cabin permit.

Because of the requirement to hold a cabin permit for landing within 1/2 mile of the cabin, these landings would likely not affect other visitors at the cabin area. Helicopter access to cabin areas may expand the season of use. When the Stikine River ices over in the winter, access is very difficult. A greater sense of remoteness, isolation, and solitude might be possible at cabins during the off-season. Conversely, other Wilderness users may find the presence of helicopters especially intrusive during those seasons of traditionally very low use.

Helicopter access to the remote access areas in this alternative (SL-02, 04, 10, 14, 15 and 16) could increase the amount of use the areas receive, although the cost of helicopter travel may be prohibitive for many. To those using other forms of access, helicopters may have negative effects on their Wilderness experiences. The sight and sound of a helicopter and increased potential for encounters with others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquillity sought in these remote,

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pristine settings. Because of the isolated nature of these access areas, encounters with others, especially with others in helicopters, would not be expected. The low use levels set by this alternative at no more than five or 25 landings a year per access area would help to reduce the impact to Wilderness values.

Helicopter access to the remaining less remote settings in the Stikine-LeConte Wilderness (SL-11 and 13) would have less impact on the Wilderness experience of others users. There are frequent motorboat visits and floatplane flights. Helicopter access at the low historic use levels would represent little additional motorized use in the area. Some users may feel their Wilderness experience has been impacted unacceptably when a helicopter lands nearby.

Tracy Arm-Fords Terror Wilderness

This alternative allows the maximum number of helicopter access areas within this Wilderness but at a level held to reported historic levels. This alternative would authorize four access areas.

The access area south of Sawyer Glacier (TA-23) is the most remote. It is approximately three miles south of South Sawyer Glacier on a smaller glacier flowing north. Landings would be limited to 25 a year. The maximum number of people a year that could access the area by helicopter would be 150. Helicopters could increase the amount of use the location receives - although the cost of helicopter travel may be prohibitive for many. Those using other means of access may find helicopters negatively affecting their Wilderness experience. The sight and sound of a helicopter and the people that it may bring would reduce the sense of remoteness, solitude, isolation and tranquillity sought in such a remote, pristine setting.

The knob north of Tracy Arm (TA-31) is also remote and difficult to reach without a helicopter. It overlooks Tracy Arm fiord 2000 feet below and provides a vista up the arm. Human activities are likely to be visible, including flight seeing planes, cruise ships and pleasure boats. Up to 25 landings a year would be authorized.

The two access areas at the mouth of Fords Terror (TA-17 and 24) are accessible by floatplane and boat. As more popular destinations in this Wilderness, opportunities to encounter other people/boats in this area are already greater than the other two access areas. Helicopters landing in this confined area would have a definite impact on others in the area. Noise would be the most intrusive factor considering the steep walls of Fords Terror, although helicopter rotor wash would also disturb visitors. A maximum of 25 landings a year per access area would be authorized.

The number of helicopter flights over this Wilderness related to the four access areas would negatively impact other Wilderness users near flight paths. Some would consider the increased aircraft noise and visibility of motorized access intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization." Because of the unpredictability of the actual days that helicopters would land, a Wilderness user could not assure that a trip to these areas would be helicopter-free.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake Cabin (WC-05) and White Sulphur (WC-07). Both are public recreation cabins. White Sulphur is

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extremely popular. There is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides. White Sulphur Cabin is located on the outer coast of West Chichagof Island and is accessed primarily by boat. There is a small lake within a ten-minute walk of the cabin but most pilots will not land on this lake. Helicopter access would contribute to the increasing congestion of this popular day-use and overnight location. Helicopter noise, numbers of people and encounters expected would all be increased with this alternative.

Goulding Lake Cabin is located on a fresh water lake. Helicopter access to this cabin would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. Because Goulding Lake Cabin is not as popular as White Sulphur, helicopters would not have as great an impact as a landing at White Sulphur.

Helicopters may expand the season of use for these two locations. Floatplanes are unable to land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. The outside coast of West Chichagof-Yakobi Wilderness can be dangerous and difficult to travel during storms year round but especially in the fall and winter. A greater sense of remoteness, isolation and solitude might be possible at cabins during the off-season. Conversely, other Wilderness users may find the presence of helicopters especially intrusive during these seasons of traditionally very low use.

This alternative would authorize landings up to 25 a year at White Sulphur and up to 5 landings a year at Goulding Lake. Mechanized noise and sightings of helicopters would be increased.

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue. This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

Alternative 4

This alternative authorizes a maximum of 7,295 landings a year at 38 access areas in six Wildernesses. They are developed areas including public recreation cabins, shelters and trail heads. Access at cabins is only allowed with a valid cabin permit for the specific cabin. The maximum number of landings at each cabin is 250. As this assumes that all cabin access is by helicopter, it is unlikely that this number of helicopter landings would occur at cabins. However, helicopter use could expand the season of use, especially at those access areas inaccessible by boat or floatplane during icing conditions.

Shelter and trail head landings are limited to historically reported use. Most of these areas already have some form of motorized access. Because of this, the Wilderness character surrounding the access areas would be impacted only slightly, especially since use is limited to historic levels at shelters and trail heads and limited by a cabin permit at cabins. Allowing helicopter access to cabins may also extend their season of use. A greater sense of remoteness, isolation, and solitude might be possible at cabins during the off-season. Conversely, other Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

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Kootznoowoo Wilderness

This alternative would authorize 16 helicopter access areas within this "Fortress of the Bears" Wilderness. For purposes of analysis, a maximum of 3,020 landings is considered, but this is unlikely to occur. Twelve of these areas have public recreation cabins and four have shelters. All have floatplane access. Two are also accessible by boat. Helicopter access to cabins would, in some cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters.

Helicopters would expand the season of use for these areas. A greater sense of remoteness, isolation and solitude might be possible during the off-seasons. However, other winter Wilderness users would find helicopters especially intrusive during these seasons of traditionally very low use.

The number of helicopter flights over this Wilderness would negatively affect the Wilderness experiences sought by other visitors who may be near flight paths. Wilderness visitors may consider the increased aircraft noise, visibility of helicopters and potentially increased number of encounters with others as negative impacts on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Misty Fjords National Monument Wilderness

This alternative designates access areas at public recreation cabins, shelters, and trail heads. It includes 12 areas: South Wilson Lake (MF-39), Humpback Lake (MF-57), East Lake Grace (MF-98), West Manzanita Lake (MF-104), Manzanita Lake (MF-105), South Manzanita Lake (MF-107), Ella Bay (MF-110), Punchbowl (MF-114), Big Goat Lake (MF-117), Wilson Lake (MF-118), Hugh Smith Cabin (MF-154) and Manzanita Bay (MF-179). A maximum of 250 landings a year at each cabin was analyzed although, as explained elsewhere, this is highly unlikely. At the trail heads and shelters, access would be limited to the historic use number of up to five landings a year. Up to 1,775 helicopter landings could occur each year in Misty Fjords National Monument Wilderness.

This alternative would cause limited impact on the Wilderness setting due to the low number of access areas and the limited amount of use projected. Only cabin users would be authorized helicopter access to a cabin. Therefore, these landings would likely not affect other visitors at the cabin. Helicopter access to cabins may expand the season of use. When lakes ice over in winter, access is very difficult. A greater sense of remoteness, isolation and solitude might be possible by access to these cabins during the off-season. Conversely, other winter Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. A maximum of 500 total landings was analyzed, 250 at each access area.

Impact to Wilderness character would be minimal as this area already is subject to many motorized uses. Helicopter access may expand the season of use. When Petersburg Lake or Duncan Salt Chuck ices over in the winter, access is very difficult. A greater sense of remoteness, isolation and solitude might be at these cabins during the off-season.

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Conversely, other winter Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

South Baranof Wilderness

Under this alternative, three access areas would be authorized in South Baranof Wilderness: Plotnikof Lake (SB-06), Avoss Lake (SB-11) and Davidof Lake (SB-14).

A maximum of 750 landings a year was analyzed with 250 landings at each cabin area. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. A cabin permit would be required to land at a public recreation cabin. Helicopter access would be directly tied to use of the cabins. Helicopters would expand the season of cabin use. A greater sense of remoteness, isolation and solitude might be possible for cabin users during the off-seasons. However, other winter Wilderness users would find helicopters especially intrusive during these seasons of traditionally very low use.

The number of helicopter flights over this Wilderness may negatively impact other Wilderness users in the vicinity of flight paths. Some would consider the increased aircraft noise and visibility of helicopters negatively affecting their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Stikine-LeConte Wilderness

This alternative would authorize three access areas within Stikine-LeConte Wilderness. A maximum of 250 landings a year at each cabin area (750 total) was analyzed. As described above, cabin permits would be required.

The impact to Wilderness character would be minimal. Only cabin permit holders would use these access areas. The only additional impacts from this helicopter use would be along the flight paths into the Wilderness. Some would consider the increased aircraft noise and visibility of helicopters negatively affecting their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Helicopter access to these cabins may expand the season of use. When the Stikine River ices over in the winter, access is very difficult. A greater sense of remoteness, isolation, and solitude might be possible during the off-season. Conversely, other winter Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake (WC-05) and White Sulphur (WC-07). Both are public recreation cabins. White Sulphur is extremely popular because there is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides.

Helicopters may expand the season of use for these two locations. Floatplanes are unable to land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. The outside coast of West Chichagof-Yakobi Wilderness can be dangerous and difficult to travel during storms year-round but especially in the fall and winter. A greater sense of remoteness, isolation and solitude might be possible at cabins

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during the off-season. Conversely, other Wilderness users may find the presence of helicopters especially intrusive during these seasons of traditionally very low use.

Although up to 250 landings a year could occur under this alternative at each identified location, it is unlikely that this maximum number would ever be attained.

The number of helicopter flights over this Wilderness may negatively impact other Wilderness users near flight paths. Some would consider the increased aircraft noise, sight of a helicopter, and potentially increased number of encounters with others intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Chuck River, Coronation Island, Endicott River, Karta River, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Etolin, South Prince of Wales, Tebenkof Bay, Tracy Arm-Fords Terror and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue. This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

Alternative 5

This alternative would authorize up to 435 landings a year at 31 access areas in five Wildernesses. Use would be limited to historic levels. This alternative would provide access to very remote Wilderness settings which have no other forms of motorized access. The only other way to reach the Wilderness surrounding these access areas is by long, arduous, overland hikes often involving several days travel. This alternative allows people with limited time or physical ability easy access to some extremely remote Wilderness settings. This makes it possible for a greater number of visitors to easily enjoy more remote Wilderness locations.

Although the probability of disturbing another person on area at one of these remote areas is low, the impact on that person if an encounter should occur could be very high. When someone has spent several days hiking to one of these remote areas, one of the important elements of their experience is the feeling of remoteness, solitude, isolation and risk - the feeling that perhaps no one else has ever visited the spot before. An encounter with a helicopter during this remote experience can be very disturbing. The limit of no more than 25 landings a year per access area would help to minimize the chance of this encounter, however.

Endicott River Wilderness

This alternative would authorize landings at four access areas within this Wilderness at the reported historical levels. At Central Plateau #3 (EN-09), landings would be limited to five a year. At Endicott River (EN-05), Central Plateau #2 (EN-07) and the south end of Endicott Lake (EN-08), up to 25 landings would be authorized per year. Up to 80 authorized landings a year could bring 480 new visitors.

This alternative would negatively impact Wilderness values and resources with increased aircraft noise, people and mechanization in areas that are currently considered remote with little use and very high opportunity for a sense of solitude, challenge and risk in an undeveloped, unaltered natural setting. The number of landings authorized in this alternative would disrupt the sense of remoteness, solitude and tranquillity. Helicopter transportation to these access areas diminishes the challenge, risk, and test of survival

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skills otherwise needed to reach these areas. Because of the unpredictability of the actual days that helicopters may land at any access area, a Wilderness user could not assure that a trip to these areas would be free from helicopters.

The number of helicopter flights may negatively impact other visitors that may be near flight paths. Some may consider increased aircraft noise, sight of helicopters and potentially increased number of encounters with others negatively affecting their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Kootznoowoo Wilderness

This alternative would authorize eight access areas within Kootznoowoo Wilderness. Up to 180 landings a year would be allowed with up to 25 landings daily per area for all areas except Central Ridges (KO-05) with up to five landings a day.

The helicopter access areas in this alternative are all high elevation ridge tops and alpine settings (K0-05, 69, 70, 71, 72, 73, 74, and 75). They are characterized by a high degree of remoteness and opportunity for solitude, isolation and tranquillity in a pristine natural setting. There is a high degree of challenge and risk to reach these areas. Helicopter access can remove the challenge and risk of getting to these areas. Although actual use of these locations by humans may be low, intrusions by helicopters preclude the opportunity to assure a setting removed from sights and sounds of human activities. Because of the unpredictability of actual days that a helicopter would be used, a Wilderness visitor could not assure that a trip to these areas would be free from helicopters.

The flights allowed under this alternative may also negatively impact other Wilderness users that may be near or under flight paths. Some would consider it intrusive on their search for solitude and their ability to avoid sights and sounds of humans and "growing mechanization."

Misty Fiords National Monument Wilderness

This alternative designates access areas at the most remote settings in Misty Fiords located greater than a 1/2 day walk from a lake, saltwater or boundary access point. It includes 14 access areas: Unuk River (MF-03), South Grant Creek (MF-07), King Creek (MF-22), First Unuk Canyon (MF-71), Unuk River (MF-72), Lake Creek (MF-74), King Creek (MF-89), Mount Hayford (MF-90), Walker Lake Mountain (MF-92), Upper Portage Creek (MF-96), Wilson River (MF-119), Dome Creek (MF-134), Bower Creek (MF-162) and Unuk River (MF-173). Alternative 5 limits use to historic levels of up to five landings a year for each access area, a total of up to 70 a year for the Wilderness. A concentration of access areas is located along the Unuk River. The remaining areas are spread throughout the Wilderness.

Currently, use at these very remote areas is very low. The only way to reach these areas is by arduous hiking and requires at least one overnight stay both ways. Very few people take the time and effort to reach these remote settings. Because of this, five helicopter landings at each access area has a low probability of degrading the Wilderness experience of anyone already at the access area. The sense of remoteness, solitude, isolation and risk may be reduced for some Wilderness users along the helicopter flight paths.

Although the probability of disturbing another Wilderness user at one of these remote access areas is low, the impact on that user if an encounter should occur could be very

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high. When someone has hiked for several days, one of the important elements of their experience is the feeling of remoteness, solitude, isolation and risk - the feeling that perhaps no one has visited the spot before. An encounter with a helicopter during this remote experience can be very disturbing. The limit of only five landings a year helps to minimize the chance of this encounter, however.

Stikine-LeConte Wilderness

This alternative designates three remote access areas in Stikine-LeConte Wilderness. All are more than a 1/2 day walk from a motorized access point and are on LeConte Glacier and Ice Field. Use would be limited to five landings a year for Upper LeConte Ice Field (SL-16) and to 25 a year at the other two access areas, a total of 55 landings a year in the Wilderness.

Currently, use at these very remote sites is very low although many sight seeing floatplanes fly over all three access areas frequently. The only way to reach these areas is by arduous and often dangerous hiking on extensive ice fields and requires at least one overnight stay coming and going. Very few people spend the time and effort to reach these remote settings other than flying over them in a floatplane. Because of this, a maximum of five or even 25 helicopter landings has a low probability of detracting from the Wilderness experience of anyone already at the access area. The sense of remoteness, solitude, isolation and risk may be reduced for some Wilderness users along helicopter flight paths.

Although the probability of disturbing another Wilderness user at one of these remote access areas is low, the impact on that user if an encounter should occur could be very high. When someone has hiked for several days, one of the important elements of the experience is the feeling of remoteness, solitude, isolation and risk - the feeling that perhaps no one else has ever visited the spot before. An encounter with a helicopter during this remote experience can be very disturbing. Limits of five or 25 landings a year help to minimize the chance of this encounter, however. Also, the noise from frequent floatplane traffic already reduces the feeling of remoteness at these four areas, even though floatplanes do not land and leave passengers.

Tracy Arm Wilderness

This alternative would authorize South of Sawyer Glacier (TA-23) and the knob north of Tracy Arm (TA-31). The access area south of Sawyer Glacier (TA-23) is the most remote access area, approximately three miles south of South Sawyer Glacier on a smaller glacier flowing north. The knob north of Tracy Arm (TA-31) is also remote and difficult to reach without a helicopter. It overlooks Tracy Arm fiord 2000 feet below and provides a vista up the arm. Human activities are likely to be visible including flight seeing planes, cruise ships and pleasure boats. An arduous hike of over 1/2 day would be required to reach either area by foot.

Landings would be limited to the historically reported 25 a year at each access area. The maximum number of people a year that could reach each area by helicopter would be 150 (300 total for the Wilderness).

Helicopter access could increase the amount of use each access area receives. Currently, each location receives very little use. However, the cost of a helicopter may be prohibitive for many. To those that may visit these areas without a helicopter, a helicopter would have negative effects on their Wilderness experience. The sight and sound of a helicopter and

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the people that it may bring would affect the sense of remoteness, solitude, isolation and tranquillity sought in such remote, pristine settings.

The associated flights may negatively impact other visitors in this Wilderness that are in the vicinity of flight paths. Some may consider it intrusive on their search for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

Chuck River, Coronation Island, Karta River, Kuiu, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue. This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

Alternative 6

This alternative authorizes helicopter access areas where either motorized access currently exists by boat or floatplane, or where a Wilderness user has a high chance of encountering motorized transportation such as under a heavily used flight seeing path or adjacent to a heavily used cruise ship route. Up to 49,775 landings a year would be authorized at 97 access areas in 12 Wildernesses. The ROS levels of six landings per access area a day in Semi-Primitive and three landings a day in Primitive would apply. Access within 1/2 mile of a public recreation cabin would require a valid cabin permit for that cabin. As in other alternatives with cabin access, 250 landings a year is the theoretical maximum number of cabin area landings. It is unlikely that this number of helicopter landings would occur at cabins. However, helicopter use could expand the season of use, especially at those access areas inaccessible by boat or floatplane during icing conditions.

Many visitors to the access areas in this alternative expect encounters with boats and/or floatplanes. The sense of remoteness, solitude, challenge and risk at these areas is less than at very remote areas. Allowing helicopters access to these areas would therefore have less of an impact on the Wilderness experience of some visitors.

To others, any motorized access to the Wilderness is a distraction. Allowing helicopters to use these access areas at levels identified in this alternative would detract from the Wilderness experience they are seeking.

Endicott River Wilderness

This alternative would authorize landings at Endicott Lake (EN-02) and Lower Endicott River (EN-10). It would allow up to 1,215 landings a year with a potential of 7,290 additional visitors.

Currently, there is very little motorized access at these locations. This alternative would have negative effects on the Wilderness values and resources of the areas because of increased aircraft noise, people and mechanization in a remote Wilderness with little use and very high opportunity for a sense of solitude, challenge and risk in an undeveloped, unaltered natural setting. The number of landings authorized would disrupt that sense of remoteness, solitude and tranquillity. Helicopter transportation to these access areas diminishes the challenge, risk, and test of survival skills to reach these areas. Because of the unpredictability of actual days that any access area may be visited by helicopters, a Wilderness user could not assure that a trip to these areas would be free from helicopters.

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The flights allowed under this alternative may negatively impact other visitors in this Wilderness in the vicinity of the flight paths. Some would consider it intrusive in their search for solitude and escape from the sights and sounds of humans and "growing mechanization."

Karta River Wilderness

This alternative allows the maximum number of access areas at the ROS use levels of six landings a day per access area in Semi-Primitive and three landings a day per access area in Primitive. Six access areas would be authorized: Andersen Creek (KA-02), Black Bear Lake (KA-03), Northeast Karta (KA-07), Karta Creek (KA-08), Flagstaff Creek (KA-09) and Karta Lake North (KA-13). Black Bear Lake use would be limited to three landings a day. Use of the other access areas would be limited to six landings a day. This alternative would authorize a maximum of 4,455 annual landings.

This Wilderness is a very small Wilderness that encompasses only one drainage. Aircraft noise at any location in the Wilderness can be heard at almost all points in the Wilderness. Because of this, 4,455 annual helicopter landings in this Wilderness would greatly reduce the sense of solitude, remoteness, challenge and risk present.

Kootznoowoo Wilderness

This alternative would authorize landings at 19 helicopter access areas within Kootznoowoo Wilderness. Up to 8,670 landings a year could be allowed. Two areas in Windfall Harbor (KO-20 and 21), Gambier Bay (KO-46) and King Salmon River (KO-15) are located on salt water. Twelve areas include public recreation cabins with established floatplane access. Cabin permits would be required to land at public recreation cabins. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. Four of the areas access shelters on freshwater lakes (KO-25, 29, 34, and 36). Helicopters may expand the season of use for these lake locations. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. A greater sense of remoteness, isolation and solitude might be possible for off-season cabin users. Conversely, other winter Wilderness visitors may find helicopters especially intrusive during these seasons of traditionally very low use.

Up to six landings a day would be authorized at Semi-Primitive areas. The flights would negatively impact the Wilderness experience of other Wilderness users in the vicinity of flight paths. Some would consider helicopters intrusive on their opportunities for solitude and remoteness from the sights and sounds of humans and "growing mechanization."

Misty Fiords National Monument Wilderness

This alternative allows up to 18,355 landings a year in 40 access areas within the Wilderness. Use would range from three to six landings a day depending on ROS class. Access within 1/2 mile of a recreation cabin would require a cabin permit for that cabin. The maximum number of landings per cabin access area is 250 a year.

The access areas are concentrated in the eastern Revilla area, under the Rudyerd Bay flight paths and at recreation cabins. Currently, the access areas designated by this alternative have other motorized access consisting of floatplanes and/or motorboats. Because of this, the sense of remoteness, solitude, challenge and risk is less than at very remote areas. Many of these access areas have floatplane traffic over them at least several times a day

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during the summer tourist season. Allowing helicopters to land at these areas would therefore have less of an impact on the Wilderness experience of some since the sight and sound of motors is common. To others, any motorized access to Wilderness is a distraction. Allowing helicopters would detract from the Wilderness experience they are seeking, especially at the high number of landings projected to occur.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize two access areas. The maximum number of landings is 250 a year per access area (500 total). This number of helicopter landings is very unlikely.

Both cabins have other motorized access. Because cabin permits would be required to land a helicopter within 1/2 mile of the cabin area, these landings would likely not affect other visitors at the cabins. These access areas extend beyond 1/2 mile from the cabins, however, and helicopters could land in other parts of the access areas when the cabins are occupied. This could lead to disturbance of users in the areas beyond 1/2 mile from the cabins. Helicopter access to these cabin areas may expand the season of use. When Petersburg Lake or Duncan Salt Chuck ices over in the winter, access is very difficult. A greater sense of remoteness, isolation and solitude might be possible by access to these cabins during the off-season. Conversely, other Wilderness users may find helicopters especially intrusive during those seasons of traditionally very low use.

Russell Fiord Wilderness

This alternative proposes to authorize four helicopter access areas within this Wilderness: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24). This alternative would authorize up to 2,835 landings in this Wilderness. Each access area could have up to 810 landings per year (maximum of six a day) except for Cape Enchantment (RF-24) which could have 405 (maximum of three a day).

This alternative would affect Wilderness values and resources the same as Alternative 3A. It may negatively affect the Wilderness values and resources. All four access areas are remote with no permanent facilities, although at Harlequin Lake (RF-02) and Cape Enchantment there are outfitter-guide tent platforms. Harlequin Lake is recognized by Yakutat Ranger District as being at capacity for outfitter-guides. Opportunities for solitude, isolation and tranquillity in a pristine, natural setting are currently available. Helicopter landings would negatively impact the experience of users seeking such an experience and setting, especially at areas where outfitter-guides and their clients are using their camps. Helicopter access may displace these camps if this access increases human density with resultant noise, perceptions of crowding, and visual disturbance.

The number of helicopter flights proposed over this Wilderness may negatively impact other Wilderness users in the vicinity of flight paths. Other users include local residents and guided and non-guided visitors. Some would consider the increased aircraft noise, sight of helicopters and increased number of people intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

South Baranof Wilderness

Under this alternative, seven helicopter access areas would be authorized in South Baranof Wilderness: Lake above Gut Bay (SB-04) Plotnikof Lake (SB-06), Rezanof Lake (SB-07),

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Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14) and Mid-Plotnikof Lake (SB-15).

At each access area, other than cabins, up to 810 landings a year would be authorized. Cabin access was analyzed at 250 landings a year. A total of 3,990 landings a year would be authorized. No more than six landings a day at each access area would be approved. Three of these areas are public recreation cabins. Cabin permits would be required for landing at a cabin. Helicopter access to cabins would, in most cases, be in lieu of floatplanes, so impacts would be related to the noise difference between floatplanes and helicopters. All access areas are located at freshwater lakes. Helicopters may expand the season of use. Floatplanes cannot land on lakes that have skim ice or are frozen, so ice can preclude access in the early spring, winter and fall. (Sometimes people that have arrived by floatplane cannot depart by floatplane because of an unexpected freeze.) A greater sense of remoteness, isolation, and solitude might be possible for cabin users during the off-seasons. However, other visitors may find helicopters especially intrusive during these seasons of traditionally very low use.

The number of helicopter flights would negatively affect the Wilderness experience of users in the vicinity of flight paths. Some would consider the increased aircraft noise, sight of helicopters and increased number of people in the area intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

South Etolin Wilderness

This alternative would authorize up to six landings a day at South Etolin Lakes (SE-02). Up to 810 helicopter landings a year could occur at this one area. Helicopter access could increase the amount of use the area currently receives, although the cost of helicopter travel may be prohibitive for many. To those that may reach this area without a helicopter, the presence of a helicopter may have negative effects on their Wilderness experience. The sight and sound of a helicopter and increased potential for encounters of others may be considered intrusive to the sense of remoteness, challenge, solitude, isolation and tranquillity. Floatplanes provide access to this area, landing on nearby lakes. Floatplane access reduces the expectation of a non-motorized experience.

South Prince of Wales Wilderness

This alternative would authorize up to three landings a day at North Klakas Lake (S-03) and Hessa Island (S-20). Up to 810 helicopter landings a year could occur in the Wilderness.

Helicopter access could significantly increase the use of the Wilderness, although the cost of helicopters may be prohibitive for many. To those that reach this area without a helicopter, the presence of a helicopter may have negative effects on their Wilderness experience. This would especially be the case because this Wilderness is so remote and receives little use. The sight and sound of a helicopter and encounters with others is not expected at these extremely remote locations.

Stikine-LeConte Wilderness

This alternative allows up to 6,015 landings a year at ten access areas within the Wilderness, at the ROS level of six landings per access area per day in Semi-Primitive and three landings per access area per day in Primitive settings. Access within 1/2 mile of a

Environmental Consequences **4**

recreation cabin area requires a valid cabin permit for that cabin. Also, 250 landings a year per cabin area is the theoretical maximum. Although a maximum of 250 landings a year per cabin was analyzed, this number of helicopter landings is unlikely.

Currently, seven access areas designated by this alternative (SL-05, 09, 10, 11, 12, 13 and 14) have floatplane and/or motorboat access. Because of this, the sense of remoteness, solitude, challenge, and risk provided at these areas is less than at very remote areas. The other three (SL-02, 04 and 16) don't have motorized access but are subject to frequent sight seeing overflights. Many of these access areas have floatplane traffic over them or motorboats past them at least several times a day in summer. Allowing helicopters to access these areas would therefore have less of an impact on the Wilderness experience of other users since the sight and sound of motors is common. To some, any motorized access to Wilderness is a distraction. Helicopters would detract from the Wilderness experience they are seeking, especially the number of landings authorized by this alternative.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize two helicopter access areas. Up to 1,620 landings a year would be authorized.

Both are accessible by floatplane and boat. Since they are popular destinations in this Wilderness, there is a high likelihood of encountering other people and/or boats. Helicopters landing in this confined area would have a definite impact on others in the area. Noise would be the most intrusive factor here considering the steep walls of Fords Terror, although helicopter rotor wash may be disturbing to visitors, too.

The number of helicopter flights may negatively impact other Wilderness users nearby. Some would consider the increased aircraft noise and sight of a helicopter intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization." Because of the unpredictability of the actual days that any access area might be accessed, a Wilderness user could not assure that a trip to these areas would be helicopter-free.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake (WC-05) and White Sulphur (WC-07). Both are public recreation cabins. White Sulphur is extremely popular. There is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides.

Although up to 250 landings a year could occur under this alternative at each identified location, it is unlikely that this maximum number would ever be attained.

The number of helicopter flights over this Wilderness may negatively impact other Wilderness users near flight paths. Some would consider the increased aircraft noise, sight of a helicopter, and potentially increased number of encounters with others intrusive on their opportunities for solitude and their ability to avoid the sights and sounds of humans and "growing mechanization."

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Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue. This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

Alternative 7

This alternative authorizes four helicopter access areas in two Wildernesses. Use would follow ROS guidelines of six landings per access area per day in Semi-Primitive and three landings per access area per day in Primitive for a total of 2,430 annual landings.

Public input has indicated a large demand for helicopter access to LeConte Glacier. The Tracy Arm area also offers a unique experience. People want to experience the outstanding Wilderness solitude, remoteness and beauty of these spectacular places. This alternative would allow a relatively high level of visitation meeting the requested demand and allowing more Wilderness users these outstanding Wilderness experiences.

The high levels of use at these access areas may jeopardize the very reason that people wish to visit these areas, the outstanding Wilderness solitude, remoteness and beauty. To some, high visitation levels at these locations would be seen as adversely impacting solitude, remoteness, isolation and risk. This is especially the case when visitors have taken the time and effort to hike in - hoping for a true remote Wilderness experience at one of the most spectacular settings in Alaska only to find a helicopter landing as they arrive.

Stikine-LeConte Wilderness

This alternative designates three access areas within Stikine-LeConte Wilderness. The number of landings is limited to ROS levels of six landings a day in Semi-primitive and three a day in Primitive, or six landings a day at SL-02 and SL-04 and three landings a day at SL-16. This would allow a maximum of 2,025 landings annually at these three access areas.

These three areas are associated with LeConte Glacier. SL-02 is located adjacent to the face of the glacier. SL-04 is located on the glacier itself two miles from the face. SL-16 is also located on the glacier, although further from the face than SL-04. LeConte Glacier is the southernmost tidewater glacier in North America. It is also within a 15 minute flight of Petersburg. This makes it an extremely popular tourist attraction. People are drawn to the glacier due to its grandeur and the easy and relatively inexpensive access. Helicopters are the only dependable way to actually land on the ice or get near the glacier's face. Floatplanes provide access, but ice in the bay may prevent landings. Boat access is also difficult. Icebergs in the bay are usually so thick that they prevent boats from getting within viewing distance of the glacier's face.

Aside from helicopters, arduous, often dangerous, hiking on extensive ice fields and rocky cliffs with at least one overnight stay both ways is required to physically reach these areas. Very few people spend the time and effort to reach these remote settings other than flying over them in a floatplane. Because of this, the 2,025 possible landings annually have a low probability of degrading the Wilderness experience of anyone already at the access area. The sense of remoteness, solitude, isolation and risk may be reduced for some Wilderness users along helicopter flight paths.

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Although the probability of disturbing another Wilderness user at one of these remote access areas is very low, the impact on that user if an encounter should occur could be very high. When a Wilderness user has decided to put a large amount of time and effort into reaching one of these remote areas, one of the important elements of their experience is the feeling of remoteness, solitude, isolation and risk; the feeling that perhaps no one else has ever visited the spot before. The aggravation of an encounter with a helicopter during this remote experience can be very disturbing. The potential number of landings under this alternative increase the probability of an encounter. There is already some disturbance of the areas from frequent floatplane fly overs, however.

Tracy Arm-Fords Terror Wilderness

Only one "special place" is proposed outside Stikine-LeConte Wilderness, the knob north of Tracy Arm (TA-31). It lies approximately 14 miles up the Arm, at 2,845 feet, and about one mile from saltwater. This alternative would allow up to 405 landings a year at this access area. As it is Primitive ROS class, a maximum of three landings a day could occur. Therefore, up to 2,430 people could visit this location annually by helicopter.

Helicopter access under this alternative could increase the amount of use this location receives, although the cost of helicopter travel may be prohibitive for many. To those that may reach this location without a helicopter, the presence of a helicopter would have negative effects on their Wilderness experience. The sight and sound of a helicopter and the people that it would bring would affect the sense of remoteness, solitude, isolation and tranquility sought in such a remote, pristine Wilderness setting.

This spectacular location offers views of both arms of Sawyer Glacier, the precipitous walls of Tracy Arm and overlooks the fiord where cruise ships and pleasure boats ply these narrow waters. Access by means other than helicopter is extremely arduous, dangerous and time consuming.

For other users in Tracy Arm, helicopters would contribute noise to an already busy area. Cruise ships, pleasure boats, kayakers and flight seeing aircraft are often in Tracy Arm during summer.

Chuck River, Coronation Island, Endicott River, Karta River, Kootznoowoo, Kuiu, Misty Fiords National Monument, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. The existing motorized impacts from floatplanes and boats would continue. This alternative would not expose visitors in these Wildernesses to additional motorized noise from helicopters.

Access

Issue

Some people want to use helicopters for access into Wilderness, while others are concerned about increasing impacts of motorized access into Wilderness. Some people desire helicopter access because of the inherently difficult access of Tongass Wildernesses for people with health, age, physical ability, time constraint and safety concerns. Others

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desire non-motorized access that emphasizes challenge and risk and which is not subjected to mechanized influences.

Introduction

Access to Wilderness in Alaska is generally very difficult. In other states, most people visit Wildernesses by driving to trail heads located just outside Wilderness boundaries. On the Tongass, long boat trips or floatplane rides are necessary to reach Wilderness. Wind, rain and poor visibility can sometimes make boat or floatplane access difficult. Since difficult access and lack of an extensive trail system sometimes prevents people from visiting Tongass Wildernesses, allowing helicopters to land would make these Wildernesses more accessible and disperse visitors.

Winter contributes to even more difficult access to Tongass Wildernesses as weather is even less predictable. Icing lakes and bays often make boat and floatplane travel more difficult and even impossible in places. Helicopters would allow winter access including access to recreation cabins on lakes and bays that freeze in the winter. Helicopter access could extend the season of use at some recreation cabins.

Most Tongass Wildernesses are extremely large. Some of the most remote spots in the larger Wilderness Areas may be 25 to 30 miles from the nearest boat or floatplane access point. Twenty-five to thirty mile overland hikes require crossing glaciers, ice fields, rough mountain peaks and dense forest undergrowth. Overland hiking in Southeast Alaska is arduous. Helicopters could allow much easier access into these very remote settings.

For some Wilderness visitors, the difficulty and challenge in travelling to and through Wildernesses using primitive, non-motorized means is a major component of their Wilderness experience. Kayaking is growing in popularity. Increasing motorized access to Tongass Wildernesses by allowing helicopters would impact Wilderness users who use non-motorized access.

Alternative 1 No Action

This No Action Alternative does not authorize any helicopter access areas in any of the nineteen Wildernesses on the Tongass National Forest. It maintains the existing motorized access to these areas. It does not increase the amount or type motorized access or expand the seasons of use.

Chuck River Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

Coronation Island Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

Endicott River Wilderness

Endicott River Wilderness is remote with low use. The low use can be attributed, in part, to its distance from population centers and difficulty in getting to the area. There are several unmaintained air strips suitable for small planes such as Piper cubs that are used

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primarily by hunters in the fall. Without helicopter access to the six access areas under consideration in this analysis, Endicott River Wilderness would remain a remote and challenging Wilderness to visit.

Karta River Wilderness

Karta River Wilderness is very small comprising the Karta River drainage. Currently, several convenient forms of access into the Karta River Wilderness make access easy. Not authorizing helicopter access into Karta River Wilderness would not greatly restrict access. All of the proposed helicopter access areas currently have motorized access to them or within one-half day's walk. Salmon and Karta lakes located in the heart of the Wilderness are a short floatplane trip from Thorne Bay or Ketchikan. From these lakes, the entire drainage can be viewed. Also, visitors can take the Alaska Marine Highway to Hollis and then a short skiff ride to the Karta River Trail. The trail crosses the heart of the Wilderness. All four recreation cabins can be reached easily by boat or floatplane.

Kootznoowoo Wilderness

Of the 30 helicopter access areas identified in Kootznoowoo Wilderness, 22 currently have motorized access to them or within a half-day's walk. These access areas are well-distributed throughout the Wilderness. The No Action alternative maintains the existing level of motorized access. The remaining eight helicopter access areas are primarily remote, high elevation ridge tops and alpine settings. There is a high degree of challenge and risk required to get to these areas. This alternative would continue that challenge and risk to reach these areas. This alternative would not increase access nor expand the seasons of use.

Kuiu Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

Maurelle Islands Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

Misty Fiords National Monument Wilderness

Of the 59 helicopter access areas identified in this Wilderness, 45 currently have motorized access (boat or floatplane) to them or within one-half day's walk. Not authorizing helicopter access into this Wilderness would not greatly restrict access at the 45 helicopter access areas currently having other motorized access. Helicopters would allow much easier access to the 14 helicopter access areas in remote settings that do not have floatplane or boat access, however. This alternative would not provide this access.

Petersburg Creek-Duncan Salt Chuck Wilderness

Adjacent to the community of Kupreanof, this Wilderness has many easy access points. Not authorizing helicopter access into Petersburg Creek-Duncan Salt Chuck Wilderness would not restrict access to this area. It is a short skiff ride from Petersburg at high tide to

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the eastern edge of the Wilderness and the Petersburg Creek Trail. The trail is an easy six-mile hike to Petersburg Lake and the Petersburg Lake Cabin which are in the center of the Wilderness. Floatplanes can land at Petersburg Lake. The western edge of the Wilderness and its recreation cabin can be reached by boat and floatplane. The two proposed helicopter access areas are both accessible by floatplane or boat.

Pleasant-Lemesurier-Inian Islands Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

Russell Fiord Wilderness

The four helicopter access areas identified in Russell Fiord Wilderness all have motorized access. This alternative would maintain the existing level of motorized access to these areas. It would not expand the seasons of use.

South Baranof Wilderness

Seven helicopter access areas, all on fresh water lakes, are considered in this analysis. All seven currently have motorized access by floatplane. This alternative would maintain existing motorized access but would not expand the seasons of use.

South Etolin Wilderness

One helicopter access area is being considered, South Etolin Lakes (SE-02). It includes two alpine lakes above 1,000 feet elevation on the east side of the Wilderness just above Brownson Island. Floatplanes can land in the lakes so not authorizing helicopter access into South Etolin Wilderness would not greatly restrict access to this Wilderness. This area is difficult to reach by hiking due to the steep surrounding terrain and lack of trails. This alternative would maintain existing motorized access and would not expand the seasons of use.

South Prince of Wales Wilderness

Both of the helicopter access areas identified in this Wilderness have motorized access (boat or floatplane) to them. Not authorizing helicopter access into this Wilderness would not greatly restrict access.

Stikine-LeConte Wilderness

Of the 11 helicopter access areas identified in this Wilderness, eight currently have motorized access (boat or floatplane) to them or within one-half day's walk. Not authorizing helicopter access would not greatly restrict access at the eight areas currently having motorized access. Helicopters would allow much easier access to the three areas in remote settings that cannot be reached by boats or floatplanes, however. This alternative would not provide this access.

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Tebenkof Bay Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

Tracy Arm-Fords Terror Wilderness

Six helicopter access areas are being considered in this analysis. Four of the areas are located adjacent to saltwater and are easily reached by boat or floatplane. The remaining two helicopter access areas are remote and difficult locations to reach without a helicopter. These areas include an area south of Sawyer Glacier (TA-23) and a knob north of Tracy Arm at an approximate elevation of 2200 feet above the saltwater. The No Action alternative would not allow easy access but rather would continue to require difficult treks and climbs through challenging landscapes to reach these locations.

Warren Island Wilderness

No helicopter access areas are being considered in this Wilderness. This alternative would maintain existing motorized access to this Wilderness. It would not expand the seasons of use.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered throughout this analysis in West Chichagof-Yakobi Wilderness. Both have motorized access. Goulding Lake Cabin is next to an interior lake and is easily reached by floatplane when the lake is not frozen. White Sulphur is reached by either a boat or a floatplane landing on a small lake within a ten-minute walk of the cabin. This lake is small and beginning to fill in with vegetation. Few pilots will land in this lake because of its size and condition. This alternative would maintain existing motorized access to these areas. It would not expand the seasons of use.

Alternative 2 Proposed Action

Of the 19 Tongass Wildernesses, seven would have helicopter access areas authorized within them if Alternative 2 is selected. Forty-one helicopter access areas would be authorized with up to 325 landings a year authorized.

This alternative would allow helicopter access areas well distributed throughout the Tongass Wildernesses. Motorized access would not be increased in twelve Wildernesses. Misty Fjords Wilderness access would be increased the most of any Wildernesses in this alternative with 25 helicopter access areas.

This alternative allows generally low levels of use at a relatively small number of areas. It would allow greater access during winter and shoulder seasons and may open up some of the back country as these areas could serve as "jumping off" points to get to more remote locations.

Endicott River Wilderness

Up to five landings per year would be authorized at Endicott Lake (EN-02). Some types of floatplanes can land at Endicott Lake. Up to five helicopter landings annually at one location would not substantially increase motorized access to Endicott River Wilderness.

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A remote Wilderness, Endicott River is 30 miles from Haines and 45 miles from Juneau. Cost may be the limiting factor if helicopter access is allowed at Endicott Lake.

Kootznoowoo Wilderness

This alternative would authorize six helicopter access areas in Kootznoowoo Wilderness. All are at interior lakes and next to Forest Service public recreation cabins. All are also accessible by floatplane. A maximum of 25 landings a year would be authorized at North Young Lake (KO-02), South Young Lake (KO-03) and West Florence Lake (KO-22). Landings at Lake Kathleen (KO-18), East Florence Lake (KO-23) and Jims Lake Cabin (KO-38) are limited to 5 a year.

At these locations, the opportunity for motorized access would not change under this alternative, only the mode of transportation. Helicopters may also expand the season of use as floatplanes cannot land with ice on the lakes.

Of the 25 remaining access areas where helicopter use would not be authorized, 16 have motorized access or are within a half-day's walk of motorized access. Eight areas are primarily remote, high elevation ridge tops and alpine settings. A high degree of challenge and risk is required to get to these areas and this alternative would continue that level of challenge and risk.

Misty Fjords National Monument Wilderness

This alternative would authorize up to five landings annually at 25 helicopter access areas spread throughout Misty Fjords Wilderness for a maximum of 125 landings a year. Fourteen of these areas can be reached by floatplanes and/or boats. The remaining eleven areas are remote, requiring extensive overland hikes to reach them. This alternative would make these remote helicopter access areas far easier to reach. It would also allow the possibility of winter access to public recreation cabins when icing does not permit boat or floatplane access.

This alternative allows low levels of helicopter use at each access area. Up to five groups of people a year could visit each area using helicopter access. People who do not have the time or are not physically able to reach these remote places without a helicopter would be allowed that opportunity.

Some Wilderness visitors are looking for places where they can challenge their Wilderness access and survival skills. Allowing helicopters to land at these areas would reduce challenging access. Limiting use to historical use levels of not more than five landing a year would help minimize this impact.

South Etolin Wilderness

This alternative would authorize up to 25 landings per year at South Etolin Lakes (SE-02). Several lakes near this helicopter access area have floatplane access. Hiking to this remote alpine area is difficult. Although 25 landings a year is considered low use, it would allow up to 25 groups of people a year to visit the lakes.

South Prince of Wales Wilderness

This alternative would authorize up to five landings a year at Hessa Island (S-20) in South Prince of Wales Wilderness. Hessa Island can also be reached by floatplane and boat.

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Therefore, adding helicopter access would not substantially improve access to South Prince of Wales Wilderness. Also, the distance of this helicopter access area from a community could make the cost of helicopter travel prohibitive for most people.

Stikine-LeConte Wilderness

This alternative would designate four helicopter access areas in Stikine-LeConte Wilderness. Landings would be limited to the historically reported levels of up to five landings a year at SL-09 and SL-16 and up to 25 landings a year at SL-14 and SL-15. Since access areas SL-14, 15 and 16 are high mountain tops or ice fields that are currently difficult to reach, helicopters would increase the ease of access. SL-09 is located at Mallard Slough Cabin on the Stikine River delta and can be reached by boat and floatplane at high tides. Helicopter access to this area would not greatly increase access in the Stikine-LeConte Wilderness. It would, however, allow the possibility of winter use of Mallard Slough Cabin when icing does not permit boat or floatplane access.

Although 5 or 25 landings per year is low use, it would allow up to five additional groups of people a year per area to visit two areas and 25 groups of people a year per area to visit the other two areas. People who do not have the time or are not physically able to reach these remote locations without a helicopter would be allowed that opportunity.

Some Wilderness users are looking for places where they can challenge their Wilderness access and survival skills. Access areas SL-15 (Devil's Thumb) and SL-16 (Upper LeConte Ice Field) with their majestic ice field locations and SL-14 (Horn Cliffs) with its magnificent view and alpine setting are three of these places. Allowing helicopters to land at these places would reduce challenging access in Stikine-LeConte Wilderness. Limiting use to historical levels would help minimize this impact.

Tracy Arm-Fords Terror Wilderness

Three helicopter access areas would be authorized by this alternative. TA-23 is remote, located approximately three miles south of South Sawyer Glacier. Landings would be limited to not more than 25 a year. Helicopter access to TA-23 would greatly ease access for up to 150 people annually at this area which is difficult to reach on foot. Access would be increased.

Powers Creek (TA-06) and the north end of Sumdum Island (TA-18) are accessible by boats and floatplanes. Helicopter landings at these two places would not change access opportunities, but would expand the type of motorized access to these locations. Helicopters would be authorized to land no more than five times per year at TA-18 and no more than 25 times per year at TA-06.

Chuck River, Coronation Island, Karta River, Kuiu, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under Alternative 2. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Alternative 3A

This alternative authorizes the most helicopter access areas and allows the most landings per access area and per Wilderness of any alternative. It differs from Alternative 3B

4 Environmental Consequences

because of the much larger number of landings authorized in Alternative 3A, three landings a day in Primitive areas and six landings a day in Semi-Primitive areas. Alternative 3A would increase motorized access into Wilderness more than any other alternative. Every year, up to 65,165 landings could occur throughout 12 Wildernesses. This alternative allows for high levels of motorized access at a 129 helicopter access areas. It would allow for greater access during winter and shoulder seasons and would open up more of the back country as these access areas could serve as "jumping off" points to reach more remote places.

This alternative, by providing easy access by helicopter, most diminishes the challenge and risk sought by those who do not choose motorized transportation to remote and pristine Wilderness settings.

Endicott River Wilderness

Alternative 3A would authorize five helicopter access areas (including EN-07 located within EN-09) with up to 4,050 landings a year. Because four of the places do not have easy motorized access, Alternative 3A would greatly increase the ease of reaching these places. It would allow the greatest amount of motorized access of any alternative. It may diminish the opportunity for challenging access sought by those who do not choose motorized transportation. Because Endicott River Wilderness has no trails, hiking can be extremely challenging and risky involving cross-country travel.

Karta River Wilderness

This alternative would designate six helicopter access areas in Karta River Wilderness with either three or six landings a day per access area depending upon the ROS class. Up to 4,455 landings a year would be authorized. Karta River Wilderness is very small, comprising the Karta River drainage. Currently, access is easy. Salmon and Karta lakes located in the heart of the Wilderness are a short floatplane trip from Thorne Bay or Ketchikan. From these lakes, the entire drainage can be viewed. Also, visitors can take the Alaska Marine Highway to Hollis and then a short skiff ride to the Karta River Trail. The trail crosses the heart of the Wilderness. All four recreation cabins can be reached easily by boat or floatplane.

Because of the access already available to Karta River Wilderness, the six helicopter access areas do little to improve access. They might, however, provide access to the recreation cabins when icing prevents floatplanes from landing.

Kootznoowoo Wilderness

This alternative would allow 30 helicopter access areas well distributed within Kootznoowoo Wilderness. Up to 14,340 landings a year would be authorized. Twenty-two of the areas currently have motorized access to them or within a half-day's walk. Off-season access to these 22 areas may be improved when floatplanes cannot land because of ice. The other eight areas are primarily remote, high elevation ridge tops and alpine settings. There is a high degree of challenge and risk required to get to these areas without helicopters. Alternative 3A would diminish that challenge and risk and would increase the ease of access.

Alternative 3A has the potential to most increase motorized use throughout the Wilderness since use is only limited by ROS guidelines. It allows the most motorized access with the most helicopter access areas of any alternative.

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Misty Fiords National Monument Wilderness

Alternative 3A would authorize 54 helicopter access areas spread widely throughout Misty Fiords Wilderness. It would also set a use limit of three or six landings a day per access area depending upon ROS class, totalling up to 24,025 landings a year. These access areas are on Revillagigedo Island, around Bakewell Lake and along the Unuk River. Since Misty Fiords includes some very remote, hard to reach places, this access opportunity would greatly increase the ease of visiting these remote spots.

Alternative 3A would allow people who do not have the time or are not physically able to reach these remote locations otherwise to do so in helicopters. Some Wilderness visitors are looking for places to challenge their Wilderness access and survival skills. Helicopter access to these places would substantially reduce challenging access, especially with the number of landings proposed under Alternative 3A.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize up to 250 helicopter landings a year at Petersburg Creek (PC-01) and East Salt Chuck Cabin (PC-02). Both places are accessible by boat and floatplane so allowing helicopter landings would do little to improve access to the Wilderness. However, it would improve winter access when icing precludes boat or floatplane access.

Russell Fiord Wilderness

Because this alternative would allow the most helicopter access areas and landings of any alternative, it would most increase motorized access throughout the Wilderness. Four helicopter access areas would be authorized. Up to 2,835 landings annually would be allowed with up to 405 landings a year at Cape Enchantment (RF-24) and up to 810 landings a year at each of the other three areas. These areas can be reached by floatplanes, motorboats, kayaks and hiking.

Although helicopters would do little to improve access during summer, they could improve winter access when Harlequin Lake may freeze and boat travel to Russell Fiord may be difficult because of storms.

South Baranof Wilderness

This alternative provides seven helicopter access areas that already have motorized access. All are located on interior lakes where floatplanes can land. This alternative could increase motorized access when the lakes may be frozen and inaccessible to floatplanes. Up to 250 landings a year each could occur at Lake Plotnikof Cabin (SB-06), Avoss Lake Cabin (SB-11) and Davidof Lake Cabin (SB-14). Up to 810 landings annually could occur each at the lake above Gut Bay (SB-04), Rezanof Lake (SB-07), Lake Diana (SB-08) and Mid-Plotnikof Lake (SB-15). Alternative 3A allows the most helicopter access of the alternatives with up to 3,990 landings annually in South Baranof Wilderness.

South Etolin Wilderness

This alternative would authorize up to 810 landings a year (up to six a day) at South Etolin Lakes (SE-02). Helicopters would increase the ease of access, especially for people who do not have the time or are not physically able to hike to South Etolin Lakes. Some Wilderness users are looking to challenge their Wilderness access and survival skills.

4 Environmental Consequences

South Etolin Lakes with its attractive alpine setting and lakes fairly close to saltwater is one of these places. Allowing helicopters access would negatively impact that opportunity at South Etolin Lakes, especially at the high use levels proposed in this alternative.

South Prince of Wales Wilderness

Up to 810 helicopter landings a year (with no more than 405 at each access area) would be allowed at North Klakas Lake (S-03) and Hessa Island (S-20). No more than three landings a day would occur at either location. North Klakas Lake is accessible by floatplane and Hessa Island is accessible by floatplane and boat. Helicopters would improve winter access to North Klakas Lake when icing prevents floatplane access.

These two helicopter access areas would provide little benefit to access. Adding another form of mechanized access could begin to erode this remote Wilderness setting. Adding helicopter access to these area would not, however, substantially improve access to South Prince of Wales Wilderness. Also, the distance of South Prince of Wales Wilderness from a community could make the cost of helicopter travel prohibitive for most people.

Stikine-LeConte Wilderness

Alternative 3A would designate 11 helicopter access areas in the Stikine-LeConte Wilderness. The number of landings would be limited to three a day in Primitive ROS settings and six a day in Semi-Primitive ROS settings. Annually, 6,420 landings could occur at these areas. SL-02, 04, 14, 15 and 16 are on high mountain tops or ice fields that are currently difficult to reach. Helicopters would increase access to these remote areas. SL-05, 09, 10, 11, 12 and 13 are on saltwater or the Stikine River and are accessible by boats and/or floatplane at high tides. Helicopter landings at these places would not greatly increase access to the Stikine-LeConte Wilderness.

Some Wilderness visitors are looking for places where they can challenge their Wilderness access and survival skills. SL-02 at ice berg filled LeConte Bay; LeConte Glacier (SL-04), Devil's Thumb (SL-15) and Upper LeConte Ice Field (SL-16) with their majestic ice cap settings and Horn Cliffs (SL-14) with its magnificent view and alpine setting are five of these places. Easy helicopter access diminishes the feeling of remoteness at these access areas. Opportunities for visitors who desire to challenge their Wilderness access and survival skills in a remote setting are diminished by the knowledge that helicopters may be operating in the area.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize four helicopter access areas with use limited by ROS guidelines.

TA-17 and 24 are accessible by boat and floatplane on saltwater. Helicopter landings would do little to improve access to these locations. Up to 810 helicopter landings a year could occur at each place.

TA-23 and TA-31 are remote and difficult to reach. Helicopter landings would greatly increase the ease of access. Conversely, helicopter access diminishes the challenge and risk sought in hiking to these remote settings. Up to 405 landings a year (carrying 2,430 people) could occur at each place.

Environmental Consequences **4**

West Chichagof-Yakobi Wilderness

Up to 250 landings a year (500 total in the Wilderness) could occur at Goulding Lake (WC-05) and White Sulphur (WC-07). Goulding Lake Cabin is on an interior lake and is easily reached by floatplane when the lake is not frozen. This alternative would allow year-round use of the cabin. White Sulphur is reached by boat, or more rarely, by floatplane landings on a small lake within a ten-minute walk of the cabin. Because the outside coast of Chichagof Island may be quite difficult to travel in winter, helicopters would also expand the season of use at White Sulphur.

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under Alternative 3A. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Alternative 3B

This alternative authorizes the largest number of helicopter access areas but holds the number of landings to historic levels. Alternative 3B would increase motorized access with up to 1,265 landings annually at 129 areas dispersed throughout 12 Wildernesses. It allows a low level of motorized access at a large number of areas. Alternative 3B would allow greater access in winter and shoulder seasons. It would open up more of the back country as helicopter access areas could serve as "jumping off" points for travel to more remote locations.

By providing easy access by helicopter, Alternative 3B may diminish the challenge and risk sought by those who do not use motorized transport to remote and pristine Wilderness settings. However, this effect would be less than under Alternative 3A.

Endicott River Wilderness

Alternative 3B would allow historic numbers of helicopter landings at six helicopter access areas. Since four of these places do not have easy motorized access, Alternative 3B would greatly increase the ease of reaching these places. It would allow up to 90 landings a year total for the six areas which could allow 540 people to visit using helicopters. This alternative offers dispersed helicopter access throughout the Wilderness but at low use levels.

Karta River Wilderness

This alternative would allow up to five landings a year at each of six helicopter access areas in Karta River Wilderness for a maximum of 30 landings a year. Karta River Wilderness is very small comprising the Karta River drainage. Currently, access is easy. Salmon and Karta lakes located in the heart of the Wilderness are a short floatplane trip from Thorne Bay or Ketchikan. From these lakes, the entire drainage can be viewed. Also, visitors can take the Alaska Marine Highway to Hollis and then a short skiff ride to the Karta River Trail. The trail crosses the heart of the Wilderness. All four recreation cabins can be reached easily by boat or floatplane.

Because of the access already available to Karta River Wilderness, the six helicopter access areas do little to improve access. They might, however, provide access to the recreation cabins when icing prevents floatplanes from landing.

4 Environmental Consequences

Kootznoowoo Wilderness

This alternative would allow 30 helicopter access areas that are distributed throughout Kootznoowoo Wilderness. Landings would be at historic use levels. Twenty-two of the areas currently have motorized access to them or within a half-day's walk. Off-season access to these 22 areas may be improved when floatplanes cannot land because of ice. The other eight areas are primarily remote, high elevation ridge tops and alpine settings. There is a high degree of challenge and risk required to get to these areas without helicopters.

The primary effects of Alternative 3B would be easier access to these ridge top locations and all locations when ice and snow preclude floatplane use or make mountaineering and climbing more difficult. Motorized access would be increased throughout the Wilderness but at a much lower levels than Alternative 3A. Up to 390 landings a year may occur at the 30 helicopter access areas identified. Up to 2,340 helicopter passengers annually may visit Kootznoowoo Wilderness by helicopter.

Misty Fiords National Monument Wilderness

Alternative 3B would authorize up to five helicopter landings a year at 54 access areas spread widely throughout Misty Fiords Wilderness. Up to 270 landings a year could occur. These access areas are on Revillagigedo Island, around Bakewell Lake and along the Unuk River. Since Misty Fiords includes some very remote, hard to reach places, helicopters would increase the ease of visiting these remote spots.

Alternative 3B would allow helicopter access for some people who do not have the time or are not physically able to reach these remote locations otherwise. Some Wilderness visitors are looking for places to challenge their Wilderness access and survival skills. Helicopters access to these places would reduce challenging access. The low levels of helicopter use under this alternative would help minimize these access impacts to other Wilderness users.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize up to 25 helicopter landings a year at each of two areas, Petersburg Creek (PC-01) and East Salt Chuck Cabin (PC-02). Both places are accessible by boat and floatplane, so allowing helicopter landings would do little to improve access to the Wilderness. However, it would improve winter access when icing precludes boat or floatplane access.

Russell Fiord Wilderness

Alternative 3B would allow four helicopter access areas at historic use levels of up to 100 landings a year within Russell Fiord Wilderness. As many as 600 people could visit by helicopter. Because all four helicopter access areas have motorized access, this alternative would not greatly contribute to better accessibility except in winter. Harlequin Lake (RF-02 and 03) may be frozen and winter travel to Russell Fiord by boat is difficult because of storms.

South Baranof Wilderness

Under Alternative 3B, seven helicopter access areas would be authorized. Up to five landings a year per area would be authorized; a total of 35 landings a year could occur in

Environmental Consequences **4**

South Baranof Wilderness. All seven areas are on interior lakes at higher elevations and are primarily visited by people using floatplanes. Helicopters would slightly improve motorized access to these lakes during winter when floatplanes cannot land due to ice.

South Etolin Wilderness

Up to five landings a year would be authorized at South Etolin Lakes (SE-02). Alternative 3B would provide limited access for people who do not have the time or are not physically able to reach this remote location without a helicopter.

Some Wilderness users are looking for places where they can challenge their Wilderness access and survival skills. SE-02 with its attractive alpine setting and lakes fairly close to saltwater is one of these places. Allowing limited helicopter access to this area would reduce the availability of challenging access in South Etolin Wilderness slightly. The small number of landings proposed would not greatly impact the remoteness of this area.

South Prince of Wales Wilderness

Up to five helicopter landings a year would be allowed at North Klakas Lake (S-03) and Hessa Island (S-20). North Klakas Lake is accessible by floatplane and Hessa Island is accessible by floatplane and boat. Helicopters would improve winter access to North Klakas Lake when icing prevents floatplane access. Adding helicopter access to these areas would not, however, substantially improve access to South Prince of Wales Wilderness. Also, the distance of South Prince of Wales Wilderness from a community could make the cost of helicopter travel prohibitive for most people.

These two helicopter access areas would provide little benefit to access. Adding another form of mechanized access could begin to erode this remote Wilderness setting. A maximum of 10 landings a year would not greatly impact those using non-motorized transportation.

Stikine-LeConte Wilderness

Alternative 3B would designate 11 helicopter access areas in the Stikine-LeConte Wilderness. The number of landings would be limited to historic use of either up to five landings a day or up to 25 landings a day, with a maximum of 155 landings in the entire Wilderness annually. SL-02, 04, 14, 15 and 16 are on high mountain tops or ice fields that are currently difficult to reach. Helicopters would provide access especially for people who do not have the time or physical ability to hike to these areas. SL-05, 09, 10, 11, 12 and 13 are on saltwater or the Stikine River and are accessible by boats and/or floatplane at high tides. Helicopter landings at these places would not greatly increase access to the Stikine LeConte Wilderness.

Some Wilderness visitors are looking for places where they can challenge their Wilderness access and survival skills. SL-02 at ice berg filled LeConte Bay; LeConte Glacier (SL-04), Devil's Thumb (SL-15) and Upper LeConte Ice Field (SL-16) with their majestic ice cap settings and Horn Cliffs (SL-14) with its magnificent view and alpine setting are five of these places. Helicopters would reduce the availability of challenging access in Stikine-LeConte Wilderness. The use limits of up to five or up to 25 landings a year would minimize impacts on other users in the Wilderness.

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Tracy Arm-Fords Terror Wilderness

Alternative 3B would authorize up to 100 helicopter landings a year, a maximum of 25 at each of four helicopter access areas within Tracy Arm-Fords Terror Wilderness: Fords Terror peninsula (TA-17), ice fields south of Sawyer Glacier (TA-23), Fords Terror North (TA-24) and knob north of Tracy Arm (TA-31).

TA-17 and 24 are accessible by boat and floatplane on saltwater. Helicopter landings would do little to improve access to these locations. TA-23 and TA-31 are remote and difficult to reach. Helicopter landings would greatly increase the ease of access. Conversely, helicopter access diminishes the challenge and risk sought in hiking to these remote settings.

West Chichagof-Yakobi Wilderness

Up to 5 landings a year each would be allowed at Goulding Lake Cabin (WC-05) and up to 25 a year would be allowed at White Sulphur (WC-07). Goulding Lake Cabin is on an interior lake and is easily reached by floatplane when the lake is not frozen. This alternative would allow year-round use of the cabin. White Sulphur is reached by boat, or more rarely, by floatplane landings on a small lake within a ten-minute walk of the cabin. Because the outside coast of Chichagof Island may be quite difficult to travel in winter, helicopters would also expand the season of use at White Sulphur.

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under Alternative 3B. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Alternative 4

This alternative authorizes 38 helicopter access areas in six Wildernesses at developed sites including cabins, shelters and trail heads. As many as 7,295 landings could occur annually under Alternative 4. A public recreation cabin landing requires a valid cabin permit for the cabin visited. As in other alternatives with cabin access, 250 landings a year is the maximum number of cabin site landings, although it is unlikely that this number of helicopter landings would occur at cabins. However, helicopter use could expand the season of use, especially at those access areas inaccessible by boat or floatplane during icing conditions.

Shelter and trail head landings are limited to historically reported use. Alternative 4 restricts helicopter access to areas with developments. Most of these areas already have motorized access. This alternative would allow another form of motorized access. It also would extend the season of use for many of these places. Winter conditions often make boat and/or floatplane access more difficult or impossible. Helicopters would allow year-round access.

Kootznoowoo Wilderness

This alternative would authorize 16 helicopter access areas. Twelve of these areas include public recreation cabins with floatplane access. Three are shelters on freshwater lakes and one shelter is located on saltwater in Windfall Harbor. Total number of landings within this Wilderness could be up to 3,020 annually. This alternative would increase the types of

Environmental Consequences **4**

motorized access that may be used to reach these areas. It may increase the seasons of use of since freshwater lakes are difficult to reach canoe route extremely difficult.

Misty Fiords National Monument Wilderness

This alternative would designate 12 helicopter access areas focused mainly around cabins, shelters and trail heads in Manzanita and Rudyerd bays. Up to 250 landings a year per cabin could occur. Cabin landings would require cabin permits. At the trail heads and shelters, helicopters would be limited to the historic use of up to five landings a year. Up to 1,775 helicopter landings could occur within Misty Fiords each year.

Alternative 4 would allow helicopter access for some people who do not have the time or are not physically able to reach these remote locations otherwise. Using helicopters to reach developed sites could be especially attractive in winter when ice on lakes or bays could prevent floatplane or boat access.

Some Wilderness visitors are looking for places to challenge their Wilderness access and survival skills. Helicopter access to these places would reduce challenging access. The low levels of helicopter use under this alternative would help minimize these access impacts on other Wilderness users.

Petersburg Creek-Duncan Salt Chuck Wilderness

Alternative 4 would designate Petersburg Creek (PC-01) and East Salt Chuck Cabin (PC-02). Both of these helicopter access areas include a recreation cabin within their boundaries. Up to 250 landings a year could occur at each cabin, a total of 500 landings. Cabin permits would be required. Both are accessible by boat and floatplane. Therefore, helicopter landings would do little to improve access during most of the year. Helicopters could improve access when Petersburg Lake and Duncan Salt Chuck could be frozen.

Although these helicopter access areas would provide little benefit to access, except during winter, adding another form of mechanized access in this heavily used Wilderness would negatively impact the Wilderness experience of those using non-motorized transportation.

South Baranof Wilderness

Under this alternative, three helicopter access areas would be authorized in South Baranof Wilderness: Plotnikof Lake (SB-06), Davidof Lake (SB-14) and Avoss Lake (SB-11), all of which currently have motorized access. A maximum of 250 landings per year per cabin would be allowed. This alternative could increase the type of motorized access that may be used to reach these cabins. It may increase the seasons of use as freshwater lakes are difficult to visit when ice precludes floatplane landings.

Stikine-LeConte Wilderness

This alternative would allow helicopter access to three public recreation cabins, access areas SL-05, SL-09 and SL-12. Up to 250 landings a year could occur at each cabin for a total of 750 landings annually. Cabin permits would be required. Both cabins are accessible by boat and floatplane. Therefore, helicopter landings would do little to improve access to the Wilderness except in winter when the Stikine River can freeze precluding boat or floatplane access.

4 Environmental Consequences

These helicopter access areas would provide little benefit to access, except during winter; adding another form of mechanized access in this heavily used Wilderness would negatively impact the Wilderness experience of those preferring non-motorized transportation.

West Chichagof-Yakobi Wilderness

Up to 250 landings a year each (500 total) could occur at Goulding Lake Cabin (WC-05) and White Sulphur (WC-07). Goulding Lake Cabin is on an interior lake and is easily reached by floatplane when the lake is not frozen. This alternative would allow year-round use of the cabin. White Sulphur is reached by boat, or more rarely, by floatplane landings on a small lake within a ten-minute walk of the cabin. Because the outside coast of Chichagof Island may be quite difficult to travel in winter, helicopters would also expand the season of use at White Sulphur. Alternatives 3A, 4 and 6 pose the same potential effects for West Chichagof-Yakobi Wilderness.

Chuck River, Coronation Island, Endicott River, Karta River, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Etolin, South Prince of Wales, Tebenkof Bay, Tracy Arm-Fords Terror and Warren Island Wildernesses

In these Wildernesses, no helicopter access areas would be authorized under this alternative. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Alternative 5

This alternative would authorize 31 helicopter access areas in five Wildernesses with use limited to historically reported levels (up to 435 landings total a year). This alternative would provide access to very remote Wilderness settings which have no other forms of motorized access. The only other way to reach the Wilderness surrounding these access areas is by long, arduous, overland hikes often involving several days' travel. This alternative allows people with limited time or physical ability easy access to some extremely remote Wilderness settings.

Endicott River Wilderness

Alternative 5 would allow landings at four helicopter access areas at historic use levels of up to 80 landings a year with the potential to carry 480 passengers. This alternative greatly increases the potential for motorized access into this remote, difficult-to-reach Wilderness.

Kootznoowoo Wilderness

Alternative 5 would allow eight helicopter access areas at historic use. Up to 180 helicopter landings a year would be allowed within Kootznoowoo Wilderness. Up to 25 landings a year could occur at each access area except for Central Ridges (KO-05) with up to five landings a year. This alternative increases motorized access to those areas that are most remote, primitive and difficult to reach.

Misty Fiords National Monument Wilderness

This alternative would allow up to five helicopter landings a year at 14 access areas in the very remote parts of Misty Fiords. Seventy landings a year could occur. This alternative allows low levels of helicopter use at each helicopter access area. Although five landings

Environmental Consequences 4

per year is low use, this amount of use would allow up to five groups of people a year to visit each place.

Some Wilderness visitors are looking for places where they can challenge their Wilderness access and survival skills. Allowing helicopters to land at these areas would reduce challenging access. Limiting use to historical use levels of not more than five landing a year would help minimize this impact.

Stikine-LeConte Wilderness

This alternative would designate three helicopter access areas related to the LeConte ice field. A maximum of 25 landings a year would be authorized at SL-02 and SL-04 and up to five landings a year would be authorized at SL-16. Since all are high mountain tops or ice fields that are currently difficult to reach, helicopters would increase the ease of access. Up to 55 landings a year could occur. This alternative allows low to moderate levels of helicopter use at each access area.

Some Wilderness visitors are looking for places where they can challenge their Wilderness access and survival skills. SL-02 at ice-berg-filled LeConte Bay; LeConte Glacier (SL-04) and Upper LeConte Ice Field (SL-16) with their majestic ice cap settings are three of these places. Easy helicopter access diminishes the feeling of remoteness at these access areas. Opportunities for visitors who desire to challenge their Wilderness access and survival skills in a remote setting are diminished by the knowledge that helicopters may be operating in the area. The low to moderate use limits of up to five or up to 25 landings per year would minimize impacts to others using non-motorized transportation.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize up to 25 landings a year at each of two areas: south of Sawyer Glacier (TA-23) and the knob north of Tracy Arm (TA-31). Both are remote and difficult to reach without a helicopter. TA-23 may be accessible by an airplane with skis. Ski plane use and availability have not been verified. Helicopter landings would greatly increase the ease of visiting these remote locations. Conversely, easy helicopter access diminishes the challenge and risk sought by those who would hike to these remote Wilderness settings.

Chuck River, Coronation Island, Karta River, Kuiu, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Alternative 6

This alternative authorizes helicopter access areas where either motorized access currently exists by boat or floatplane, or where a Wilderness user has a high chance of encountering motorized transportation such as under a heavily used flight seeing path or adjacent to a heavily used cruise ship route. Ninety-seven helicopter access areas are designated in 12 Wilderness areas. The ROS levels of six landings per access area a day in Semi-Primitive and three landings a day in Primitive would apply. A total of 49,775 landings a year could occur.

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Access within 1/2 mile of a public recreation cabin would require a valid cabin permit for that cabin. As in other alternatives with cabin access, 250 landings a year is the maximum number of cabin area landings analyzed. Although it is unlikely that this number of helicopter landings would occur at cabins, helicopter use could expand the season of use, especially at those access areas inaccessible by boat or floatplane during icing conditions.

Alternative 6 is intended to allow helicopter access to areas of Wilderness where motorized transportation is common. Helicopters can provide an additional form of access without a geographical expansion of areas where motorized use is common.

Endicott River Wilderness

Alternative 6 would allow helicopter landings at Endicott Lake (EN-02) and Lower Endicott River (EN-10). Up to 1,215 landings a year could occur. Alternative 6 would greatly increase access to these remote areas which currently receive low use. These areas are located on the east and west side of the Wilderness and may improve access to the entire Wilderness. They could serve as "jumping off" points for cross-country travel.

Karta River Wilderness

This alternative would designate six helicopter access areas in Karta River Wilderness with either three or six landings a day per access area depending upon the ROS class. Karta River Wilderness is very small comprising the Karta River drainage. Currently, access is easy. Salmon and Karta lakes located in the heart of the Wilderness are a short floatplane trip from Thorne Bay or Ketchikan. From these lakes, the entire drainage can be viewed. Also, visitors can take the Alaska Marine Highway to Hollis and then a short skiff ride to the Karta River Trail. The trail crosses the heart of the Wilderness. All four recreation cabins can be reached easily by boat or floatplane.

Because of the access already available to Karta River Wilderness, the six helicopter access areas do little to improve access. They might, however, provide access to the recreation cabins when icing prevents floatplanes from landing. Alternative 6 is the same as Alternative 3A for Karta River Wilderness; up to 4,455 landings a year may be allowed.

Kootznoowoo Wilderness

This alternative would authorize 19 helicopter access areas. Up to 8,670 landings a year could occur. Twelve areas include public recreation cabins with floatplane access. Cabin permits would be required to land at public recreation cabins. Helicopter access to these cabins would, in some cases, be in lieu of floatplane access. Alternative 6 would increase the type of motorized access that may be used to reach these developed sites. It may increase the seasons of cabin use since freshwater lakes are difficult to reach when ice precludes floatplane landings and makes the cross-Admiralty canoe route extremely difficult.

Misty Fjords National Monument Wilderness

Alternative 6 would allow up to 18,355 landings a year at 40 helicopter access areas in Misty Fjords Wilderness where motorized use is present. The numbers of landings per access area would be limited to three or six a day depending on ROS class. Cabin permits are required to land at public recreation cabins.

Environmental Consequences **4**

Although parts of Misty Fiords are very remote, the helicopter access areas considered in this alternative are not considered remote. Motorboat and floatplane access to, or near, these areas is possible. Therefore, helicopter landings would do little to improve access. Helicopters may assist winter visitors when icing makes floatplane access more difficult.

Misty Fiords currently has intense problems with congested motorized access along the flight paths and cruise ship routes between Ketchikan and Rudyerd Bay. The number of helicopter landings proposed could potentially have a very large impact by further concentrating mechanized access.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize up to three helicopter landings a day at Petersburg Creek (PC-01) and East Salt Chuck Cabin (PC-02). Both places are accessible by boat and floatplane, so allowing helicopter landings would do little to improve access to the Wilderness. However, it would improve winter access when icing precludes boat or floatplane access.

Access within 1/2 mile of the cabins would require cabin permits. The effects of Alternative 6 on Petersburg Creek-Duncan Salt Chuck Wilderness would be identical to those of Alternative 3A.

Russell Fiord Wilderness

Four helicopter access areas would be authorized: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24). Up to 2,835 landings annually would be allowed, up to 405 landings a year at Cape Enchantment (RF-24) and up to 810 landings a year at the other three areas. No more than three or six landings a day would be authorized.

These areas can be reached by floatplanes, motorboats, kayaks and hiking. Although helicopters would do little to improve access during summer, they could improve winter access when Harlequin Lake may freeze and boat travel to Russell Fiord may be difficult because of storms. The effects of Alternative 6 on Russell Fiord Wilderness would be identical to those of Alternative 3A.

South Baranof Wilderness

Under this alternative seven helicopter access areas would be authorized: Lake above Gut Bay (SB-04), Plotnikof Lake (SB-06), Rezanof Lake (SB-07), Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14) and Mid-Plotnikof Lake (SB-15). All are located on interior lakes where floatplanes can land. This alternative could increase motorized access when the lakes may be frozen and inaccessible to floatplanes. Like Alternative 3A, Alternative 6 also allows up to 3,990 landings annually in South Baranof Wilderness. Alternatives 3A and 6 are identical for South Baranof Wilderness.

South Etolin Wilderness

This alternative would authorize up to 810 landings a year (up to six a day) at South Etolin Lakes (SE-02). Helicopters would increase the ease of access, especially for people who do not have the time or are not physically able to hike to South Etolin Lakes. Some Wilderness users are looking to challenge their Wilderness access and survival skills. South Etolin Lakes with its attractive alpine setting and lakes fairly close to saltwater is

4 Environmental Consequences

one of these places. Allowing helicopters access negatively would impact that opportunity at South Etolin Lakes, especially at the high use levels proposed. Alternatives 3A and 6 are identical for South Etolin Wilderness.

South Prince of Wales Wilderness

Up to 810 helicopter landings a year would be allowed at North Klakas Lake (S-03) and Hessa Island (S-20) with up to 405 a year at each area (maximum of three a day). North Klakas Lake is accessible by floatplane and Hessa Island is accessible by floatplane and boat. Helicopters would improve winter access to North Klakas Lake when icing prevents floatplane access. Adding helicopter access to these areas would not, however, substantially improve access to South Prince of Wales Wilderness. Also, the distance of South Prince of Wales Wilderness from a community could make the cost of helicopter travel prohibitive for most people. Alternatives 3A and 6 are identical for South Prince of Wales Wilderness.

Stikine-LeConte Wilderness

This alternative would designate ten helicopter access areas in the Stikine-LeConte Wilderness. The number of landings would be limited to three a day in Primitive ROS settings and six a day in Semi-Primitive ROS settings. Annually, 6,015 landings could occur at these areas. SL-02, 04, 14 and 16 are on high mountain tops or ice fields that are currently difficult to reach. Helicopters would provide access especially for people who do not have the time or physical ability to hike to these areas. SL-05, 09, 10, 11, 12 and 13 are on saltwater or the Stikine River and are accessible by boats and/or floatplane at high tides. Helicopter landings at these places would not greatly increase access to the Stikine LeConte Wilderness.

Some Wilderness visitors are looking for places where they can challenge their Wilderness access and survival skills. SL-02 at ice berg filled LeConte Bay; LeConte Glacier (SL-04) and Upper LeConte Ice Field (SL-16) with their majestic ice cap settings and Horn Cliffs (SL-14) with its magnificent view and alpine setting are four of these places. Helicopters would reduce the availability of challenging access in Stikine-LeConte Wilderness. The number of landings proposed would further impact the remoteness of these helicopter access areas.

Tracy Arm-Fords Terror Wilderness

This alternative would allow helicopter landings at Fords Terror peninsula (TA-17) and Fords Terror North (TA-24). Both are accessible by boat and floatplane on saltwater. Helicopter landings would do little to improve access to these locations. Up to 810 helicopter landings a year could occur at each place.

West Chichagof-Yakobi Wilderness

Up to 250 landings a year each could occur at Goulding Lake Cabin (WC-05) and White Sulphur (WC-07). Goulding Lake Cabin is on an interior lake and is easily reached by floatplane when the lake is not frozen. This alternative would allow year-round use of the cabin. White Sulphur is reached by boat, or more rarely, by floatplane landings on a small lake within a ten-minute walk of the cabin. Because the outside coast of Chichagof Island may be quite difficult to travel in winter, helicopters would also expand the season of use at White Sulphur. Alternatives 3A, 4 and 6 are identical for West Chichagof-Yakobi Wilderness.

Environmental Consequences **4**

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Alternative 7

This alternative authorizes four helicopter access areas identified as having "special values" (see glossary) in two Wildernesses. Use would follow ROS guidelines of six landings per access area per day in Semi-Primitive and three landings per access area per day in Primitive for a total of 2,430 annual landings.

Public input has indicated a large demand for helicopter access to LeConte Glacier. Tracy Arm offers similar opportunities. This alternative would allow a relatively high level of access for these four places.

Stikine-LeConte Wilderness

This alternative designates three helicopter access areas within Stikine-LeConte Wilderness. The number of landings is limited to ROS levels of six landings a day in Semi-primitive and three a day in Primitive or six landings a day at North Shore LeConte Glacier (SL-02) and LeConte Bay (SL-04) and three landings a day at Upper LeConte Ice Field (SL-16). This would allow a maximum of 2,025 landings annually at these three access areas.

These three areas are associated with LeConte Glacier. SL-02 is located near the face of the glacier. SL-04 is located on the glacier itself two miles from the face. SL-16 is also located on the glacier, although further from the face than SL-04. LeConte Glacier is the southernmost tidewater glacier in North America. It is also within a 15 minute flight of Petersburg. This makes it an extremely popular tourist attraction. People are drawn to the glacier due to its grandeur and the easy and relatively inexpensive access. Helicopters are the only dependable way to actually land on the ice or get near the glacier's face. Floatplanes provide access, but ice in the bay may prevent landings. Boat access is also difficult. Icebergs in the bay are usually so thick that they prevent boats from getting within viewing distance of the glacier's face. Helicopter landings would provide substantially increased access to Stikine-LeConte Wilderness.

Alternative 7 allows high use. People who do not have the time or are not physically able to reach these places without helicopters would have access. Some Wilderness visitors are looking for remote locations such as these where they can challenge their Wilderness access and survival skills. Allowing helicopter landings at these places would reduce the availability of challenging access in Stikine-LeConte Wilderness. The number of landings proposed could increase impact on other users.

Tracy Arm-Fords Terror Wilderness

Only one "special place" is proposed outside Stikine-LeConte Wilderness, the knob north of Tracy Arm (TA-31). It lies approximately 14 miles up the Arm at 2,845 feet about one mile from saltwater. This alternative would allow up to 405 landings a year at this access area. As it is Primitive ROS class, a maximum of three landings a day could occur.

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Therefore, up to 2,430 people could visit this location annually by helicopter. This alternative greatly increases access to this location.

This spectacular location offers views of both arms of Sawyer Glacier, the precipitous walls of Tracy Arm and overlooks the fiord where cruise ships and pleasure boats ply these narrow waters. Access by means other than helicopter is extremely arduous, dangerous and time consuming.

Chuck River, Coronation Island, Endicott River, Karta River, Kootznoowoo, Kuiu, Maurelle Islands, Misty Fiords National Monument, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1. The existing level of motorized access to these areas would be maintained and the seasons of use would not be expanded.

Recreation

Issue

There is concern that changes in recreation use patterns may occur because of helicopter use in Wilderness. Helicopters may displace some visitors and negatively impact primitive recreation experiences sought in Wilderness. Conversely, helicopters provide access for Wilderness-dependent recreation activities for some people with physical ability or time restrictions. Helicopters transport people to remote areas, spread out use and provide access in seasons of little or no use.

Introduction

Recreation is directly tied to access on the Tongass National Forest. It is often observed that greater recreation use occurs near population centers and where access is easy. Recreation opportunities in Tongass Forest are very unique. Most of the Wilderness acreage on the Tongass is remote and has a very natural setting. Alaska is known as the "Last Frontier." Because of this, many visitors who are looking for a Wilderness experiences on the Tongass expect to have a pristine Wilderness experience. There is also name recognition in Wilderness. Many visitors perceive, whether real or not, that Wildernesses are more spectacular and would give them a more fulfilling remote recreation experience than other natural areas. Some visitors also like to be able to say they have visited a particular Wilderness. This is especially true for some of the more well-known Tongass Wildernesses such as Misty Fiords National Monument Wilderness, Kootznoowoo (Admiralty Island) Wilderness and Stikine/LeConte Wilderness.

Some of the outstanding Wilderness features are located in very remote areas requiring multiple day hikes over extremely rough terrain. Permitting helicopters to land in Wilderness would allow those visitors who do not have the physical ability or the time to hike the opportunity to visit and experience these remote areas. Helicopter access would also increase recreation opportunities in remote places where these access areas are used as "jumping off" points for activities such as hiking and skiing.

Helicopter access would also expand the traditional season of recreation use in the Wilderness and at recreation cabins. Currently, when lakes and bays freeze in the winter, boat and floatplane access becomes more difficult (impossible in some cases). Many areas

Environmental Consequences **4**

are also extremely difficult and dangerous to reach on foot in the winter due to ice fields, crevasses, snow, avalanches and thick undergrowth. Helicopter access into these remote areas and cabins would allow winter use. These places can provide some very remote, pristine recreation experiences during a time of very low Wilderness use.

Wilderness visitors who are looking for a remote Wilderness setting may be disturbed by the addition of helicopters as a motorized Wilderness access mode. An encounter with a helicopter full of visitors may be especially disturbing to a person who has hiked for several days to reach a very remote, difficult to access, Wilderness setting. Wilderness visitors who are looking for a non-motorized Wilderness recreation experience could be displaced. As the population of Southeast Alaska and the tourism industry both continue to grow, the areas remaining without motorized influence would continue to shrink. This would make opportunities for the Wilderness visitor who is looking for a non-motorized primitive Wilderness recreation experience harder to find.

Helicopters also may eliminate some of the sense of challenge and risk experienced while in a Wilderness. Some Wilderness visitors are looking to challenge their outdoor survival skills. To do this, they need to feel that they are on their own, far from assistance should there be problems. To know that a helicopter could land may diminish this sense of challenge and risk and detract from the Wilderness recreation experience.

Alternative 1 No Action

No helicopter access areas would be authorized in any Wilderness under this No Action Alternative. The settings for primitive recreation are maintained at current levels of motorized influences. The recreation experience of a Wilderness user who is looking for a primitive or pristine Wilderness experience would not be negatively impacted by authorizing another form of motorized access (and resultant increased noise and people) into the Wilderness. No displacement of Wilderness users would occur. This alternative would not provide easier access to remote, difficult-to-reach locations or increase motorized access for winter Wilderness recreation.

Alternative 2 Proposed Action

This alternative would authorize 325 landings annually at 41 access areas in seven Wildernesses across the Tongass National Forest. This alternative would limit the landings authorized to the historic levels. Historic use would provide generally low levels of use at a relatively small number of access areas. This alternative provides for a variety of types of access areas and may increase recreation use at some locations that are currently difficult to reach. It would provide easy access to seven public recreation cabins when ice on lakes may preclude the use of floatplanes. Misty Fiords National Monument Wilderness has the greatest number of access areas (25) of the seven Wildernesses so it may be most affected of any Wilderness in this Alternative.

Endicott River Wilderness

This alternative would authorize up to five landings a year at Endicott Lake (EN-02). No more than 30 people a year would be transported by helicopter to Endicott Lake. The low amount of helicopter use would not substantially change the recreation opportunities since the lake is also accessible by floatplane, but it would expand the season of use since helicopters can land when the lake is frozen. With no cabins, shelters, or other developed facilities, a very primitive winter recreation experience could be had. At other areas in this Wilderness, opportunities for primitive recreation would be maintained at current levels.

4 Environmental Consequences

Kootznoowoo Wilderness

This alternative would authorize six access areas: North and South Young Lake (KO-02 and 03), Lake Kathleen (KO-18) East and West Florence Lake (KO-22 and 23) and Jim's Lake (KO-38). All are public recreation cabins with other motorized access available (floatplanes). Use would be allowed at historic levels. Up to five landings a year would be authorized at KO-18, 23 and 38 and up to 25 landings a year may occur in the remaining access areas. Little displacement of other Wilderness visitors is expected since cabin permits would be required to land helicopters at the cabins.

This alternative would allow motorized access and winter recreation at these cabins when freezing lakes makes floatplane access impossible and non-motorized travel arduous. Traditionally, these seasons result in low use of Wilderness so there would be a low probability of disturbing visitors under flight paths or in the vicinity. Recreation use of these cabins may increase to year-round use. At other areas in this Wilderness, opportunities for primitive recreation are maintained at current levels.

Misty Fiords National Monument Wilderness

This alternative would authorize 25 helicopter access areas spread throughout Misty Fiords Wilderness with the number of landings limited to historic levels of up to five per year for all access areas. This would allow a maximum of 125 annual landings in the Wilderness.

Many of the access areas authorized under this alternative are located in remote areas such as the Unuk River. Allowing helicopters to land may cause displacement of visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. Maintaining the use limits at five per year for each access area reduces the probability of a helicopter encounter by a Wilderness visitor. Also, only authorizing 25 access areas in the entire Misty Fiords Wilderness leaves some remote areas of Misty for displaced remote Wilderness visitor use.

This alternative would allow motorized access to Big Goat Lake Cabin during winter when icing makes floatplane access impossible. This would extend the recreation season of the cabin and provide an isolated winter Wilderness experience.

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to get to a remote area in the Wilderness as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in Misty Fiords. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience the Wilderness isolation first hand.

South Etolin Wilderness

This alternative would authorize up to five landings a year at South Etolin Lakes (SE-02). Helicopters may cause displacement of visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken considerable physical exertion to reach. Allowing no more than five landings a year reduces the probability of a helicopter encounter by another Wilderness visitor. Also, only authorizing one helicopter access area in the entire South Etolin Wilderness leaves some areas for the displaced person to visit.

Environmental Consequences **4**

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to get to this remote spot as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in South Etolin Wilderness. It may also allow Wilderness visitors who would usually just view remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand. However, floatplane access is available at nearby lakes.

South Prince of Wales Wilderness

This alternative would authorize up to five landings a year at Hessa Island (S-20). Allowing helicopters to land may displace some visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken considerable physical exertion to reach. Maintaining use at up to five landings a year reduces the probability of a helicopter encounter by another Wilderness visitor. Also, only authorizing one helicopter access area in the entire South Prince of Wales Wilderness leaves a large area for use by displaced visitors.

S-20 is located in the middle of a small island. As such, it does little to improve the opportunity for a Wilderness recreation experience. The same area is easily reached by floatplane or boat, and once the area is reached, very little terrain is available for Wilderness exploration since the island is of limited size.

Stikine-LeConte Wilderness

This alternative would authorize four access areas within Stikine-LeConte Wilderness. Use levels would be up to five landings a year at SL-09 and SL-16, and up to 25 landings a year at SL-14 and SL-15. Sixty landings a year would be authorized in the Wilderness.

Devil's Thumb (SL-15) and Upper LeConte Ice Field (SL-16) are both in remote areas. Allowing helicopters to land may cause displacement of visitors looking for a remote Wilderness experience. A visitor in the middle of a remote hike may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. Maintaining the limits of no more than 25 landings a year for either area reduces the probability of a helicopter encounter by a Wilderness visitor.

This alternative would allow use of Mallard Slough Cabin during winter when icing along the Stikine River makes floatplane or boat access difficult. This would extend the recreation season of this cabin and provide an isolated winter Wilderness experience. This alternative does not, however, allow visitors winter helicopter access to the Red Slough and Twin Lakes cabins.

This alternative may allow some visitors to use a helicopter to get to a remote area in the Wilderness as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in Stikine-LeConte Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand. Also, only authorizing four helicopter access areas in the entire Stikine-LeConte Wilderness leaves some remote areas for use by displaced visitors.

4 Environmental Consequences

Tracy Arm-Fords Terror Wilderness

Three helicopter access areas would be authorized in this alternative. TA-23 is a remote area approximately three miles south of South Sawyer Glacier on a smaller glacier flowing north. Landings would be limited to 25 a year, and no more than three landings a day could occur. The maximum number of people that could reach this location annually by helicopter would be 150. Helicopter access could increase the amount of use the location receives. It may also contribute to the expansion of activities as TA-23 could serve as a "jumping off" point for further travel on the ice and glaciers. There could be some displacement of wilderness users that are seeking a location for solitude, a sense of remoteness, challenge, risk and tranquillity away from mechanized influences. The number of people whose primary activity may be viewing scenery for a short period of time may be increased.

The other two areas are TA-06, Powers Creek, and TA-18, the north end of Sumdum Island. Both are in a Semi-Primitive Motorized ROS setting and present less opportunity for experiencing solitude and sense of isolation primarily because of marine and air traffic. No more than 25 landings a year at either area would not probably increase or change primitive recreation at these two places. The total number of landings a year could reach 55 in this Wilderness.

Chuck River, Coronation Island, Karta River, Kuiu, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

Alternative 3A

This alternative authorizes the largest number of helicopter access areas and allows the maximum number of landings per access area and per Wilderness of any of the alternatives. Up to 65,165 landings could occur annually at 129 access areas dispersed throughout 12 Wildernesses. This number of landings is the **theoretical maximum** number of landings; use may fall below this amount. As this alternative most increases access into twelve Wildernesses, it has the greatest probability to increase numbers of visitors and the resulting recreation use. An increase in different types of recreation may occur with a high likelihood for increases in winter sports (i.e. heli-skiing, snowboarding, Telemark skiing), viewing wildlife and scenery, and heli-hiking. Twenty-nine areas contain public recreation cabins and this alternative may expand the season of use for these cabins into the shoulder and winter seasons. Five of the areas include primitive shelters and four areas have trail heads.

This alternative most diminishes the opportunity for challenge and risk and sense of remoteness and solitude. Helicopters may displace Wilderness visitors who are seeking those opportunities.

Endicott River Wilderness

This alternative would authorize landings at six access areas within Endicott River Wilderness. It would allow up 4,050 landings a year with a potential of 24,300 new visitors. A maximum of 405 landings a year (3 a day) would be authorized at Endicott Lake (EN-02) and Central Plateau #3 (EN-09). At Endicott River (EN-05), Central Plateau #2 (EN-07), the south end of Endicott Lake (EN-08) and Lower River-Gravel Bed (EN-10), 810 landings a year (maximum 6 per day) would be allowed.

Environmental Consequences **4**

Easy access generally correlates to increased recreation, although this Wilderness is remote and the cost of helicopter access may be prohibitive for many. Recreation may increase, but it is hard to predict demand for such a remote area. Currently this area is used primarily for big game hunting. State and federal laws do not allow the use of helicopters in support of hunting in any way. Some hunts could be disturbed by helicopter overflights. Visitors seeking a remote Wilderness experience may be displaced by helicopters as noise and the number of people and encounters in any access area increases. The large number of landings that would be authorized under this alternative could preclude the opportunity for a primitive Wilderness recreation experience.

Helicopters can provide year-round access so recreation use may be expanded to year-round use with this alternative. Helicopter access may also open up more of this remote Wilderness since the access areas may serve as "jumping off" points to visit other more remote areas. Other non-traditional recreational pursuits such as heli-hiking and heli-skiing/snowboarding could increase.

Karta River Wilderness

This alternative allows the maximum number of access areas with six landings a day in Semi-Primitive and three landings a day in Primitive ROS classes. This alternative would authorize six access areas within Karta River Wilderness: Andersen Creek (KA-02), Black Bear Lake (KA-03), Northeast Karta (KA-07), Karta Creek (KA-08), Flagstaff Creek (KA-09) and Karta Lake North (KA-13). Black Bear Lake (KA-03) would be limited to three landings a day. The other access areas have a use limit of six landings a day. This alternative would authorize a maximum of 4,455 annual landings in the Wilderness.

Karta River Wilderness is very small. It comprises one drainage. Motorized activity within the Wilderness can be heard from any point in the Wilderness. Visitors looking for a remote Wilderness experience in Karta River are currently frequently disturbed by the sounds of floatplanes flying over or landing in Karta or Salmon lakes. Authorizing six helicopter access areas in Karta River would increase the impacts on visitors seeking remote Wilderness experiences. The proposed number of landings would greatly intensify the impacts of these six helicopter access areas on these Wilderness visitors.

This alternative would allow winter motorized access to the vicinity of Salmon Lake, Salmon Bay and McGilvery recreation cabins when icing lakes and estuaries makes floatplane or boat access difficult. Alternative 3A would extend the recreation season of these three cabins for those who hike between the access areas and the cabins. It would also provide an isolated winter Wilderness experience.

Kootznoowoo Wilderness

This alternative would authorize 30 access areas within Kootznoowoo Wilderness. Up to 14,340 landings a year are considered. Twelve of these areas include public recreation cabins with floatplane access to them (KO-02, 03, 18, 22, 23, 28, 29, 32, 33, 34, 35, 38 and 46). Helicopter access to these cabins would, in some cases, be in lieu of floatplanes. Cabin permits would be required to land helicopters at a public recreation cabins. Helicopters would provide motorized access year-round so recreation use may increase greatly to include seasons when lakes are freezing or frozen. This access may diversify recreation opportunities to include winter/snow sports. Helicopters may cause displacement of other Wilderness visitors near flight paths who are looking for a primitive Wilderness setting without mechanized influences.

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The remaining access areas are primarily high elevation ridge tops and alpine settings (KO-04, 05, 13, 25, 69, 70, 71, 72, 73, 74, 75, 79 and 80) except for KO-15, King Salmon River, and KO-20 and 21 at Windfall Harbor, which are located near saltwater. The high elevation access areas offer primitive recreation in a pristine natural setting. Helicopter landings may displace Wilderness users who are seeking such a setting without the influence of mechanized transport. Helicopter access to these remote locations may also open up the pristine and remote areas of the Wilderness for people who do not have the ability to reach these areas without motorized transport. The access areas may also serve as "jumping off" points to get to more remote Wilderness back country. Other non-traditional recreational pursuits such as heli-hiking and heli-skiing/snowboarding would increase.

Helicopters could provide access year-round so recreation use may be expanded substantially with this alternative. Currently, freshwater lakes receive very low use when they are frozen. Remote, alpine areas are also more challenging and arduous to reach during winter and receive very low use.

Misty Fiords National Monument Wilderness

This alternative allows the maximum number of access areas and helicopter landings within this Wilderness, at the ROS use limits of six per day in Semi-primitive and three per day in Primitive settings. Fifty-four access areas spread widely throughout Misty Fiords Wilderness would be authorized with up to 24,025 annual landings.

Many of the access areas are in remote areas such as on the Unuk River. Helicopters landings in these areas may displace visitors seeking remote Wilderness experiences. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. Setting the use limits at ROS levels of three or six landings per day at each area greatly increases the probability of a helicopter encounter by a Wilderness visitor. Designating 54 helicopter access areas within Misty Fiords could also substantially reduce the remote areas available for displaced visitors to use.

This alternative would allow motorized access to South Wilson Lake, Humpback, West Manzanita Lake, South Manzanita Lake, Punchbowl, Big Goat Lake, Wilson Lake and Hughsmith recreation cabins/shelters during winter when frozen lakes preclude floatplane access. This would extend the recreation season of these cabins and shelters and provide an isolated winter Wilderness experience.

Alternative 3A may also allow some visitors desiring a Wilderness experience to use a helicopter to reach remote Wilderness places as "jumping off" points for hiking or skiing trips. Some new Wilderness recreation experiences in Misty Fiords Wilderness could be made available. Alternative 3A may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. Cabin permits would be required to land within 1/2 mile of either cabin. A maximum of 500 total landings was analyzed, 250 at each cabin.

Environmental Consequences **4**

Visitors seeking a remote Wilderness experience in Petersburg Creek-Duncan Salt Chuck are currently frequently disturbed by the sounds of floatplanes flying over on the main east-west flyway or landing on Petersburg Lake. Jets also fly through the Wilderness at low altitudes on clear days. Authorizing two helicopter access areas in Petersburg Creek-Duncan Salt Chuck would increase the impacts on visitors seeking a remote Wilderness experience. ROS use limits of six landings a day at each area greatly increases the probability of helicopter encounters by Wilderness visitors.

This alternative would allow motorized access to Petersburg Creek and Salt Chuck East recreation cabins in winter when icing lakes and estuaries makes floatplane access impossible. It would extend the recreation season of these cabins and provide an isolated winter Wilderness experience.

Russell Fiord Wilderness

This alternative would authorize four helicopter access areas within this wilderness: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24). This alternative would authorize up to 2,835 landings in this Wilderness. Each access area could have up to 810 landings per year (maximum of six a day) except for Cape Enchantment which could have 405 (maximum of three a day).

Helicopter access may displace two temporary outfitter-guide camps at Harlequin Lake (RF-02) and Cape Enchantment (RF-24). Cape Enchantment is also a popular camping spot. Alternative 3A has the potential to increase recreation use at all four access areas since motorized access is easier, although cost could be prohibitive for many. Motorized access is currently available at Cape Enchantment year-round but this alternative would provide that opportunity at the remaining locations year-round too.

South Baranof Wilderness

Under this alternative, seven helicopter access areas would be authorized in South Baranof Wilderness: Lake above Gut Bay (SB-04), Plotnikof Lake (SB-06), Rezanof Lake (SB-07), Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14 and Mid-Plotnikof Lake (SB-15).

At each access area, except cabins, up to 810 landings a year would be authorized. Up to 250 landings a year at cabins were considered. A total of 3,990 landings could occur annually in South Baranof Wilderness. No more than six landings a day at each access area would be approved. Three of these areas are public recreation cabins on freshwater lakes. Cabin permits would be required for landing at a cabin. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes. Helicopter would offer another form of motorized access and may expand the season of use for these cabins. Increased opportunities for primitive recreation include cross-country and Telemark skiing, snowshoeing, ice skating and snow camping.

South Etolin Wilderness

This alternative would authorize up to six landings a day at South Etolin Lakes (SE-02). Up to 810 helicopter landings a year could occur at this one place.

Helicopter access could increase the amount of use the area currently receives, although the cost of helicopter travel may be prohibitive for many. Helicopters landings may displace visitors seeking a remote Wilderness experience. A Wilderness visitor in the

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middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken considerable physical exertion to reach. The frequency and number of landings proposed would greatly increase the probability of a helicopter encounter by a Wilderness visitor. Only authorizing one helicopter access area in the entire South Etolin Wilderness would leave some areas open for displaced remote Wilderness visitors.

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to reach this remote spot as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in South Etolin Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand. Floatplane access is possible, however, at nearby lakes.

South Prince of Wales Wilderness

This alternative would authorize up to three landing a day at North Klakas Lake (S-03) and Hessa Island (S-20). Up to 810 helicopter landings a year could occur in the Wilderness. Helicopter access could increase the amount of use the areas receive, although the cost of helicopters may be prohibitive for many. The frequency and number of landings proposed would greatly increase the probability of a helicopter encounter by a Wilderness visitor. Only authorizing two helicopter access areas in the entire South Prince of Wales Wilderness leaves a large area for use by displaced remote Wilderness visitors,

S-20 is located in the middle of a small island. As such, it does little to improve opportunities for a Wilderness recreation experience. The same area is easily reached by floatplane or boat and very little terrain is available for Wilderness exploration since the island is so small.

S-03 is located in a remote area on the North Shore of Klakas Lake. Helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor near North Klakas Lake may be upset to find a helicopter landing at a place that has taken several days of physical exertion to reach. The Wilderness setting at access area S-03 is so remote that a helicopter landing at this access area could easily impact any Wilderness visitors in the area. Floatplanes can land on the lake.

Alternative 3A may also allow some visitors desiring a Wilderness experience to use a helicopter to reach a remote "jumping off" point for hiking and stream fishing. This may open up some new opportunities for Wilderness recreation experiences in South Prince of Wales Wilderness.

Stikine-LeConte Wilderness

This alternative allows the maximum number of access areas within this Wilderness, at the ROS use limits of six landings a day in Semi-Primitive and three landings a day in Primitive access areas. This alternative would authorize 11 access areas within Stikine-LeConte Wilderness. Maximum use would be six landings a day at SL-02, 04, 10, 11, 13 and 14 and three landings a day at SL-15 and 16. Access within 1/2 mile of a recreation cabin (SL-05, 09 and 12) would require a cabin permit. Also, within 1/2 mile of a cabin, the maximum number of landings annually was set at 250 per cabin for purposes of analysis.

Environmental Consequences **4**

Many of the access areas authorized under this alternative are located in remote areas like LeConte Glacier and Ice Field and Devil's Thumb. Helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. The frequency and number of landings proposed would greatly increase the probability of a helicopter encounter by a Wilderness visitor. Also, designating 11 helicopter access areas within Stikine-LeConte could somewhat reduce the remote areas left for the displaced remote Wilderness visitor.

This alternative would allow motorized access to Red Slough, Mallard Slough, and Twin Lakes recreation cabins during winter when icing in the Stikine River makes floatplane and boat access difficult. This would extend the recreation season of these cabins and provide an isolated winter Wilderness experience.

This alternative may also allow some visitors desiring a Wilderness experience helicopter access to remote places as "jumping off" points for hiking, kayaking or skiing. Alternative 3A may open up some new opportunities for Wilderness recreation experiences in Stikine-LeConte Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize four access areas in this Wilderness. Up to 2,430 landings a year for all four access areas could occur with no more than three landings a day at TA-23 and TA-31. Six landings a day could be approved at the two access areas in Fords Terror based upon the ROS class. The maximum number of people a year that could reach the Wilderness by helicopter is 14,580.

South of Sawyer Glacier (TA-23) and the knob north of Tracy Arm (TA-31) are remote locations that are difficult to reach without a helicopter. Helicopter access may increase such recreational activities as viewing scenery, mountaineering, heli-hiking and skiing and photography. Motorized access to these locations may also open up more of the back country as they serve as "jumping off" points for further back country travel.

Fords Terror peninsula (TA-17) and Fords Terror North (TA-24) are accessible by floatplane and boat and are popular destinations. People come to Fords Terror to watch the rip tides flow through the narrow channel and also to enter into Fords Terror at slack tide. Helicopter use would probably not change recreation use at this location although helicopter landings may be disruptive to other people at the area.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake (WC-05) and White Sulphur (WC-07). Both are public recreation cabins. White Sulphur is extremely popular as there is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides. Access is primarily by boat although floatplanes do land on a nearby lake or harbor occasionally. With the opportunity to reach the cabin and hot springs year-round by helicopter, recreation use may increase.

Goulding Lake Cabin can be reached by floatplane. Helicopter access would be in lieu of floatplanes. Helicopters can provide year-round access so recreation use could expand

4 Environmental Consequences

substantially with this alternative, although current demand for the cabin is moderately low. Currently, this location receives very low to no use when the lake is frozen.

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

Alternative 3B

This alternative authorizes the maximum number of helicopter access areas but at historic use levels. Up to 1,265 landings could occur in 129 access areas dispersed throughout 12 Wildernesses. Although not as great as in Alternative 3A, an increase in different types of recreation may occur with a likelihood for some increase in winter recreation sports (i.e. heli-skiing, snowboarding, Telemark skiing), viewing wildlife and scenery and heli-hiking. Twenty-nine access areas are public recreation cabins and this alternative may expand the seasons of use for these cabins. Five areas contain primitive shelters and four areas have trail heads.

This alternative provides access to a maximum number of places but at generally low levels of historic use dispersed throughout 12 Wildernesses on the Tongass National Forest.

Endicott River Wilderness

This alternative would authorize landings at six access areas within Endicott River Wilderness. It would allow landings up to 90 times a year with a potential of 540 additional visitors.

A maximum of five landings a year would be authorized at Endicott Lake (EN-02), Central Plateau #3 (EN-09) and Lower River-Gravel Bed (EN-10). At Endicott River (EN-05), Central Plateau #2 (EN-07) and the south end of Endicott Lake (EN-08), 25 landings a year would be allowed.

Easy access generally correlates to increased recreation, although this Wilderness is remote and the cost of helicopter access may be prohibitive to many. Recreation use may increase within this Wilderness, but it is hard to predict demand for such a remote area. Currently this area is used primarily for big game hunting. State and federal laws do not allow the use of helicopters in support of hunting in any way. Some hunts could be disturbed by helicopter overflights. Visitors seeking a remote Wilderness experience may be displaced by helicopters as noise and the number of people and encounters in any access area increases, although the number of landings annually would be considerably less than in Alternative 3A.

Helicopters could provide year-round access so recreation use may be expanded to year-round use with this alternative. Helicopter access to these remote locations may also open up more of this remote Wilderness since the access areas may serve as "jumping off" points to reach other areas. Other non-traditional recreational pursuits such as heli-hiking and heli-skiing/snowboarding could increase.

Karta River Wilderness

This alternative allows the maximum number of access areas within this Wilderness at historic use levels. This alternative would authorize six access areas: Andersen Creek

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(KA-02), Black Bear Lake (KA-03), Northeast Karta (KA-07), Karta Creek (KA-08), Flagstaff Creek (KA-09) and Karta Lake North (KA-13). Up to five landings a year would be authorized at all access areas, 30 landings total a year.

Karta River Wilderness is very small and contains one drainage. Motorized activity within the Wilderness can be heard from any point in the Wilderness. Visitors looking for a remote Wilderness experience in Karta River are currently frequently disturbed by the sounds of floatplanes flying over or landing in Karta or Salmon Lakes. Authorizing six helicopter access areas in Karta River would increase the impacts on visitors seeking a remote Wilderness experience. Up to five landings a year at each access area would minimize the impacts of helicopters on these Wilderness visitors, however.

This alternative would allow motorized access to the vicinity of Salmon Lake, Salmon Bay and McGilvery recreation cabins during winter when icing lakes and estuaries makes floatplane or boat access difficult. This would extend the recreation season for these three cabins for those who hike between the access areas and the cabins. It would also provide an isolated winter Wilderness experience.

Kootznoowoo Wilderness

This alternative would authorize 30 access areas within this Wilderness. Up to 430 landings a year are considered under this alternative. Twelve of these areas include public recreation cabins with floatplane access to them (KO-02, 03, 18, 22, 23, 28, 29, 32, 33, 34, 35, 38 and 46). Helicopter access to these cabins would, in some cases, be in lieu of floatplanes as an alternate form of motorized access. Cabin permits would be required to land at public recreation cabins. Helicopters can provide year-round motorized access so recreation use may increase to include seasons when lakes are freezing or frozen. This access may diversify recreation opportunities to include winter/snow sports. Helicopters may displace visitors near flight paths who are looking for a primitive Wilderness setting without mechanized influences, especially those on the Cross-Admiralty Canoe Route.

The remaining access areas are primarily high elevation ridge tops and alpine settings (KO-04, 05, 13, 25, 69, 70, 71, 72, 73, 74, 75, 79 and 80) except for KO-15, King Salmon River, and KO-20 and 21 at Windfall Harbor, which are located near saltwater. The high elevation access areas offer primitive recreation in a pristine natural setting. Helicopter landings may displace Wilderness users who are seeking such a setting without the influence of mechanized transport. Helicopter access to these remote locations may also open up the pristine and remote areas of the Wilderness to people who do not have the ability to reach these areas without motorized transport. The access areas may also serve as "jumping off" points to reach more remote Wilderness back country. Other non-traditional recreational pursuits such as heli-hiking and heli-skiing/snowboarding would increase.

Helicopters can provide year-round access so recreation use may increase with this alternative (although not as extensively as in Alternative 3A). Currently, locations on freshwater lakes receive very low use when they are frozen. Remote alpine areas are also more challenging and arduous to reach during winter and receive very low use.

Misty Fiords National Monument Wilderness

This alternative allows the maximum number of access areas within this Wilderness, but at historic use levels. This alternative would authorize up to five landings a year at 54 access areas spread widely throughout Misty Fiords Wilderness. Cabin landings requires cabin

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permits. Up to 270 landings a year could be authorized in Misty Fiords National Monument.

Many of the access areas are located in remote areas such as on the Unuk River. Helicopters may displace visitors seeking a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. The small number of landings proposed for each access area reduces the probability of a helicopter encounter by a Wilderness visitor. Designating 54 helicopter access areas within Misty Fiords could substantially reduce the remote areas left for use by displaced visitors.

Alternative 3B would allow motorized access to South Wilson Lake, Humpback, West Manzanita Lake, South Manzanita Lake, Punchbowl, Big Goat Lake, Wilson Lake and Hughsmith recreation cabins/shelters during winter when icing lakes makes floatplane access impossible. This would extend the recreation season of these cabins and shelters and provide an isolated winter Wilderness experience.

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to reach a remote area as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in Misty Fiords Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize up to 25 landings a year at two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. Cabin permits would be required within 1/2 mile of either cabin.

Visitors looking for a remote Wilderness experience in Petersburg Creek-Duncan Salt Chuck are currently frequently disturbed by the sounds of floatplanes flying over on the main east-west flyway or landing on Petersburg Lake. Jets also fly through the Wilderness at low altitudes on clear days. Authorizing two helicopter access areas in Petersburg Creek-Duncan Salt Chuck would increase the impacts on visitors seeking a remote Wilderness experience. Maintaining the use levels at up to 25 landings per year at each access area would minimize the impacts of helicopters on these Wilderness visitors, however.

This alternative would allow motorized access to Petersburg Creek and Salt Chuck East recreation cabins during the winter when ice on lakes and estuaries makes floatplane access impossible. This would extend the recreation season of these cabins and shelters and provide an isolated winter Wilderness experience.

Russell Fiord Wilderness

This alternative would authorize four access areas within this Wilderness: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24). Each access area could have up to 25 landings a year. Up to 100 landings a year would be allowed.

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Helicopter access may displace two temporary outfitter-guide camps at Harlequin Lake (RF-02) and Cape Enchantment (RF-24). Cape Enchantment is also a popular camping spot. Alternative 3B has the potential to increase recreation use at all four access areas since motorized access is easier, although cost could be prohibitive for many. Motorized access is currently available at Cape Enchantment year-round but this alternative would provide that opportunity at the remaining locations year-round too.

South Baranof Wilderness

Up to five landings a year would be authorized at: Lake above Gut Lake (SB-04), Plotnikof Lake (SB-06), Rezanof Lake (SB-07), Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14) and Mid-Plotnikof Lake (SB-15), for a total of up to 35 landings a year in this Wilderness.

All seven of these access areas are adjacent to fresh water lakes; three of the access areas have public recreation cabins. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes. A cabin permit would be required to land at a cabin. Helicopters may expand the season of use for these cabins. Helicopters would offer another form of motorized access to these locations and their use may expand the season of use for these locations. Increased opportunities for primitive recreation include cross-country and telemark skiing, snowshoeing, ice skating, and snow camping.

South Etolin Wilderness

This alternative would authorize up to five landings a year at South Etolin Lakes (SE-02). Helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike may be upset to find a helicopter landing at an area that has taken considerable physical exertion to reach. The small number of landings proposed reduces the probability of a helicopter encounter by a Wilderness visitor. Also, only authorizing one helicopter access area in the entire South Etolin Wilderness leaves some areas for use by displaced remote Wilderness visitors.

This alternative may also allow some visitors to use helicopters to reach this remote area as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in South Etolin Wilderness. Access to this area is also possible by floatplane.

South Prince of Wales Wilderness

This alternative would allow up to five helicopter landings a year each at north Klakas Lake (S-03) and Hessa Island (S-20). Allowing helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a area that has taken considerable physical exertion to reach. The small number of landings would reduce the probability of a helicopter encounter by a Wilderness visitor. Authorizing two helicopter access areas in the entire South Prince of Wales Wilderness leaves some areas for displaced remote Wilderness visitors.

S-20 is located in the middle of a small island. As such, it does little to improve opportunities for a Wilderness recreation experience. The same area is easily reached by floatplane or boat, and very little terrain is available for Wilderness exploration since the island so small. S-03 is located in a remote area on the north shore of Klakas Lake. Floatplanes can also land on Klakas Lake.

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Alternative 3B may also allow some visitors desiring a Wilderness experience to use helicopters to reach a remote spot as a "jumping off" point for hiking and stream fishing. This may open up some new opportunities for Wilderness recreation experiences in South Prince of Wales Wilderness.

Stikine-LeConte Wilderness

This alternative allows the maximum number of access areas within this Wilderness, but at a historic use levels, up to 155 landings a year. Eleven access areas would be allowed within Stikine-LeConte Wilderness. Up to 25 landings a year would be authorized at SL-02, -04, 11, 14 and 15. Access within 1/2 mile of a recreation cabin (SL-05, 09 and 12) would require a cabin permit.

Many of the access areas authorized under this alternative are located in remote areas like LeConte Glacier and Ice Field and Devil's Thumb. Allowing helicopters to land in these areas may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. The small number of landings per area proposed reduces the probability of a helicopter encounter by a Wilderness visitor. Designating 11 helicopter access areas within Stikine-LeConte could somewhat reduce the remote areas left for the displaced remote Wilderness visitor.

This alternative would allow motorized access to three recreation cabins near Red Slough, Mallard Slough, and Twin Lakes during winter when icing in the Stikine River makes floatplane and boat access difficult. This would extend the recreation season of these cabins and provide an isolated winter Wilderness experience.

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to reach a remote area as a "jumping off" point for a hiking, kayaking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in Stikine-LeConte Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize four access areas. Up to 25 landings a year at each access area would be authorized, a total of 100 landings a year. The maximum number of people a year that could access the Wilderness by helicopter is 600.

South of Sawyer Glacier (TA-23) and the knob north of Tracy Arm (TA-31) are remote and difficult to reach without a helicopter. Helicopter access may increase such recreational activities as viewing scenery, mountaineering, heli-hiking and skiing and photography. Motorized access to these locations may also open up more of the back country as they serve as "jumping off" points for further travel into the back country.

Fords Terror peninsula (TA-17) and Fords Terror North (TA-24) are accessible by floatplane and boat and are popular destinations. People come to Fords Terror to watch the rip tides flow through the narrow channel and to enter into Fords Terror at slack tide. Helicopter use would probably not change recreation at these locations although helicopter landings may be disruptive to other users at the area.

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West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake (WC-05) and White Sulphur (WC-07). Up to 5 landings a year would be authorized at Goulding Lake and up to 25 a year at White Sulphur. Both are public recreation cabins.

White Sulphur is extremely popular. There is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides. Access is primarily by boat although floatplanes do land in a nearby lake or harbor occasionally. With the opportunity to reach the cabin and hot springs year round with a helicopter, recreation use may increase although cost may be prohibitive to many.

Goulding Lake Cabin is accessible by floatplane. Helicopter access would be in lieu of floatplanes. Helicopters can provide year-round access so recreation use could expand substantially with this alternative, although current demand for the cabin is moderately low. Currently, this location receives very low to no use when the lake is frozen.

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

Alternative 4

This alternative authorizes a maximum of 7,295 landings a year at 38 access areas in six Wildernesses. They are developed sites including public recreation cabins, shelters and trail heads. Access at cabins is only allowed with a valid cabin permit for the specific cabin.

As in other alternatives with cabin access, 250 landings a year is the theoretical maximum number of cabin site landings. Access to shelters and trail heads, though, would be limited to historic use. This alternative restricts helicopter access into the Wilderness to places with developments. Most of these areas already have some form of motorized access.

The Wilderness settings at developed sites are less pristine than those of undeveloped sites. Because of this, a person visiting one of these areas may expect a less remote, wild experience with less challenge and risk. Helicopter access to these areas would have less impact to the Wilderness recreation experience than helicopter access to more remote and pristine areas. This alternative also provides the opportunity to extend the recreation season at many of these developed recreation sites by allowing helicopter access to these sites in the winter when icing conditions would prevent other motorized forms of access.

Kootznoowoo Wilderness

This alternative would authorize 16 helicopter access areas within this Wilderness. Twelve of these areas include public recreation cabins and four locations have shelters. All have floatplane access and two areas are also accessible by boat. Five of these cabins and three shelters are also important parts of the Cross-Admiralty Canoe Route and are accessible by canoe/hiking. For purposes of analysis, a maximum of 3,020 landings are considered.

Helicopter access would, in some cases, be in lieu of floatplanes if motorized access is preferred. Helicopters can provide motorized access year round so recreation use may be

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expanded substantially with this alternative to year round use at developed sites. Currently, freshwater lakes receive very low to no use when lakes are frozen.

At other areas in the Wilderness that are not authorized helicopter landings, existing opportunities for primitive recreation would remain the same. Helicopter overflights though, may displace wilderness visitors near flight paths who are looking for a primitive Wilderness recreation setting without mechanized influences.

Misty Fiords National Monument Wilderness

This alternative designates access areas at 12 public recreation cabins, shelters, and trail heads: South Wilson Lake (MF-39), Humpback Lake (MF-57), East Lake Grace (MF98), West Manzanita Lake (MF-104), Manzanita Lake (MF-105), South Manzanita Lake (MF-107), Ella Bay (MF-110), Punchbowl (MF-114), Big Goat Lake (MF-117), Wilson Lake (MF-118), Hugh Smith Cabin (MF-154) and Manzanita Bay (MF-179). A maximum of 250 landings a year at each cabin was analyzed. At the trail heads and shelters, access would be limited to the historic use number of up to five landings a year. Up to 1,775 helicopter landings could occur each year in Misty Fiords National Monument Wilderness.

Alternative 4 would allow motorized access to developed facilities in the Wilderness where on-site facilities already diminish the expectation of a remote Wilderness experience and the chance to experience challenge and risk. Also, many of these facilities already commonly are reached by boat or floatplane, making the expectation of encountering motorized forms of transportation on-site greater than at more remote locations. The diminished expectation for a remote Wilderness experience and the common encounters with motorized transportation makes helicopter access less of an impact to other visitors at these places than at more remote, pristine areas. This alternative would allow motorized access to cabins, shelters and trail heads during winter when ice on lakes makes floatplane or boat access difficult or impossible. This would extend the recreation season of these facilities and provide an isolated winter recreation Wilderness experience.

Petersburg Creek-Duncan Salt Chuck Wilderness

This alternative would authorize two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. A maximum of 500 total landings was analyzed, 250 at each cabin. Cabins permit would be required for cabin landings.

This alternative would allow motorized access to cabins where on-site developments already diminish the expectation for a remote Wilderness experience and the chance to experience challenge and risk. Also, these two cabins are already commonly reached by boat or floatplane making the expectation of encountering motorized forms of transportation on-site greater. The diminished expectation for a remote Wilderness experience and the common encounters with motorized transportation makes helicopter access less impacting on these sites. Also, this alternative would allow motorized access during winter when icing makes floatplane or boat access difficult or impossible. This would extend the recreation season of these facilities and provide an isolated winter recreation Wilderness experience.

South Baranof Wilderness

Three access areas would be authorized in South Baranof Wilderness: Plotnikof Lake (SB-06), Avoss Lake (SB-11) and Davidof Lake (SB-14). These areas provide access to public recreation cabins. Helicopter access to these cabins would, in most cases, be in lieu of

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floatplanes. Cabin permits would be required to land at a public recreation cabin. A maximum of 750 landings a year (250 at each cabin) was analyzed. Helicopters can provide year-round access so recreation use may be expanded substantially with this alternative. Currently, these freshwater lakes receive very low to no use when the lakes are frozen.

At other locations in the Wilderness that are not authorized helicopter landings, existing use patterns and opportunities for primitive recreation would remain the same. Helicopter overflights may displace Wilderness users near flight paths who are looking for a primitive Wilderness setting without mechanized influences.

Stikine-LeConte Wilderness

This alternative would authorize three access areas within Stikine-LeConte Wilderness. Cabin permits would be required. Up to 750 landings a year (250 at each cabin site) was analyzed.

This alternative would allow motorized access to these three cabins in the Wilderness where on-site developments already diminish the expectation for a remote Wilderness experience and the chance to experience challenge and risk. Also, these cabins are already commonly reached by boat or floatplane, making the expectation of encountering motorized forms of transportation greater. The diminished expectation for a remote Wilderness experience and the common encounters with motorized transportation make helicopter access less impacting on these sites. Also, this alternative would allow motorized access during winter when icing along the Stikine River makes floatplane or boat access difficult or impossible. This would extend the recreation season of these cabins and provide an isolated winter recreation Wilderness experience.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative: Goulding Lake (WC-05) and White Sulphur (WC-07). Both are public recreation cabins. Up to 5 landings a year at Goulding Lake and up to 25 at White Sulphur would be authorized.

White Sulphur is extremely popular. There is a bathhouse with hot springs approximately 50 feet from the cabin. In addition to fly-in use, the area is popular with boaters including commercial fishers, kayakers and outfitter-guides. Access is primarily by boat although floatplanes do land in a nearby lake or harbor occasionally. With the opportunity to reach the cabin and hot springs year round with a helicopter, recreation use may increase although cost may be prohibitive to many.

Goulding Lake Cabin is accessible by floatplane. Helicopter access would be in lieu of floatplanes. Helicopters can provide year-round access so recreation use could expand substantially with this alternative, although current demand for the cabin is moderately low. Currently, this location receives very low to no use when the lake is frozen.

Chuck River, Coronation Island, Endicott River, Karta River, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Etolin, South Prince of Wales, Tebenkof Bay, Tracy Arm-Fords Terror and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

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Alternative 5

This alternative would authorize 31 access areas in five Wilderness areas. These access areas are in very remote locations with use limited to historic levels for a total of 435 landings a year. This alternative would provide access to very remote Wilderness settings which have no other forms of motorized access.

By allowing helicopters into these remote Wilderness settings, this alternative could displace or negatively impact visitors looking for a remote Wilderness experience. It may, however, allow some visitors to use helicopters to reach these remote areas as starting points for Wilderness treks. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Endicott River Wilderness

This alternative would authorize landings at four access areas within this Wilderness at the reported historical levels. It would allow up to 80 landings a year (up to 25 landings at each area except Central Plateau #3, which would be limited to 5) with a potential of 480 additional Wilderness visitors.

Easy access may correlate to increased recreation, although cost may be prohibitive to many and it is hard to predict demand for such a remote area. Currently this area is used primarily for big game hunting. State and federal laws do not allow the use of helicopters in support of hunting in any way. Some hunts could be disturbed by helicopter overflights.

Helicopters can provide year-round access so recreation use may be expanded to year-round use with this alternative. Helicopter access to these remote locations may also open up more of this remote Wilderness since the access areas may serve as "jumping off" points to visit other areas.

Kootznoowoo Wilderness

This alternative would authorize eight access areas within Kootznoowoo Wilderness. Up to 180 landings a year would be allowed with up to 25 landings a year per area for all areas except Central Ridges (KO-05) with up to five landings a year.

The helicopter access areas in this alternative are all high elevation ridge tops and alpine settings (KO-05, 69, 70, 71, 72, 73, 79 and 80). Helicopter access may change the recreation use patterns of these areas and expand the types of recreation that may occur. The areas currently receive low use for hunting, wildlife viewing, hiking and exploring. This alternative allows the possibility of transporting up to 150 people to each access area or 1,080 total in Kootznoowoo Wilderness. Helicopter access to these remote locations may open up pristine, remote areas of the Wilderness to visitors who do not have the ability to get to these areas without motorized transportation. It also opens up access areas as "jumping off" points to reach more remote back country locations. Non-traditional Wilderness recreational pursuits such as heli-hiking and heli-skiing/snowboarding could increase.

Misty Fiords National Monument Wilderness

This alternative designates access areas at 14 of the most remote settings in Misty Fiords (Unuk River, MF-03; South Grant Creek, MF-07; King Creek, MF-22; First Unuk Canyon,

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MF-71; Unuk River, MF-72; Lake Creek, MF-74; King Creek, MF-89; Mount Hayford, MF-90; Walker Lake Mountain, MF-92; Upper Portage Creek, MF-96; Wilson River, MF-119; Dome Creek, MF-134; Bower Creek, MF-162 and Unuk River, MF-173) located greater than a 1/2 day walk from a lake, saltwater or boundary access point. Alternative 5 limits use to historic levels of up to five landings a year for each access area, a total of up to 70 a year for the Wilderness. A concentration of access areas is located along the Unuk River. The remaining areas are spread throughout the Wilderness.

Allowing helicopters to land in these very remote access areas may displace visitors seeking a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at a point that has taken several days of physical exertion to reach. The low number of landings proposed reduces the probability of a helicopter encounter by a Wilderness visitor. Also, only designating 14 access areas throughout the entire Misty Fiords Wilderness would help to minimize the probability of an encounter.

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to reach remote access areas as "jumping off" points for hiking or skiing trips. This may open up some new opportunities for Wilderness recreation experiences in Misty Fiords Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Stikine-LeConte Wilderness

This alternative designates three remote access areas in Stikine-LeConte Wilderness. All are more than a 1/2 day walk from a motorized access point. Use would be limited to five landings a year for Upper LeConte Ice Field and 25 a year at the other two access areas, a total of 55 landings a year in the Wilderness. The access areas are on LeConte Glacier and LeConte Ice Field.

Helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike may be upset to find a helicopter landing at a place that has taken several days of physical exertion to reach. The low number of landings proposed reduces the probability of a helicopter encounter by a Wilderness visitor. Also, only authorizing three helicopter access areas in the entire Stikine-LeConte Wilderness leaves some remote areas for remote Wilderness visitors.

This alternative may also allow some visitors desiring a Wilderness experience to use a helicopter to reach areas as "jumping off" points for hiking or skiing trips. This may open some new opportunities for Wilderness recreation experiences in Stikine-LeConte Wilderness. It may also allow Wilderness visitors who would usually just view these remote isolated parts of the Wilderness from a floatplane to actually land and experience Wilderness isolation first hand.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize South of Sawyer Glacier (TA-23) and the knob north of Tracy Arm (TA-31). Landings would be limited to the historically reported 25 landings a year at each access area.

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Both locations are remote and difficult to reach without a helicopter. Helicopters may increase such recreational activities as viewing scenery, mountaineering, heli-hiking and skiing, and photography.

For other locations in this Wilderness, this alternative would not change existing use patterns or opportunities for primitive recreation. Helicopter overflights, though, may displace wilderness visitors near flight paths who are looking for a primitive Wilderness setting without mechanized influences.

Chuck River, Coronation Island, Karta River, Kuiu, Maurelle Islands, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

Alternative 6

This alternative authorizes helicopter access areas where either motorized access currently exists by boat or floatplane, or where a Wilderness user has a high chance of encountering motorized transportation such as under a heavily used flight seeing path or adjacent to a heavily used cruise ship route. Up to 49,775 landings a year would be authorized at 97 access areas in 12 Wildernesses. The ROS levels of six landings per access area a day in Semi-Primitive and three landings a day in Primitive would apply. Access within 1/2 mile of a public recreation cabin would require a valid cabin permit for that cabin. As in other alternatives with cabin access, 250 landings a year is the theoretical maximum number of cabin site landings, although it is unlikely that that many would occur. Helicopter use could expand the season of use, however, especially at those access areas inaccessible by boat or floatplane during icing conditions.

This alternative focuses helicopter access where existing motorized use is common. In these areas, many Wilderness visitors already expect encounters with boats and/or floatplanes. The sense of remoteness, solitude, challenge and risk at these Wilderness settings is less than at the very remote areas. Allowing helicopters to land at these areas would therefore have less of an impact on the Wilderness recreation experience of the visitor.

Endicott River Wilderness

This alternative would authorize landings at Endicott Lake (EN-02) and Lower Endicott River (EN-10). It would allow up to 1,215 landings a year with a potential of 7,290 additional visitors. Although these locations currently have motorized access, they receive low use. Easier access by helicopter may correlate to increased recreation, although cost may be prohibitive to many. But it is hard to predict demand for such a remote area. Currently this area is used primarily for big game hunting. State and federal laws do not allow the use of helicopters in support of hunting in any way. Some hunts could be disturbed by helicopter overflights.

Helicopters could provide year-round access so recreation use may be expanded to year-round at these locations. Helicopters may also open up more of this remote Wilderness since the access areas may serve as "jumping off" points to reach other areas.

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For the remaining access areas that would not be authorized helicopter landings, this alternative would not change existing opportunities for primitive recreation. Helicopters may displace Wilderness users near flight paths who are looking for a primitive Wilderness recreation setting without mechanized influences.

Karta River Wilderness

This alternative allows up to 4,455 total landings a year at six access areas: Andersen Creek (KA-02), Black Bear Lake (KA-03), Northeast Karta (KA-07), Karta Creek (KA-08), Flagstaff Creek (KA-09) and Karta Lake North (KA-13). Up to three landings a day would be allowed at Black Bear Lake (KA-03), while up to six landings a day would be allowed at the remaining access areas. The effects of Alternative 6 on Karta River Wilderness are identical to those of Alternative 3A.

Karta River Wilderness is very small and contains one drainage. Motorized activity within the Wilderness can be heard from any point in the Wilderness. Visitors looking for a remote Wilderness experience in Karta River are currently frequently disturbed by the sounds of floatplanes flying over or landing in Karta or Salmon Lakes. Authorizing six helicopter access areas in Karta River would increase the impacts on visitors seeking a remote Wilderness experience. Allowing up to three or six landings a day at each area would further the impact of this alternative on these Wilderness visitors.

This alternative would allow motorized access to the vicinity of Salmon Lake, Salmon Bay and McGilvery recreation cabins during winter when icing lakes and estuaries makes floatplane or boat access difficult. This would extend the recreation season for these three cabins for those who hike between the access areas and the cabins. It would also provide an isolated winter Wilderness experience.

Kootznoowoo Wilderness

This alternative would authorize landings at 19 helicopter access areas within Kootznoowoo Wilderness. Up to 8,670 landings a year could be allowed. Twelve areas include public recreation cabins with established floatplane access. Cabin permits would be required to land at public recreation cabins. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes. Four of the areas provide access to shelters on freshwater lakes. Helicopters may expand the season of use for lake locations, as floatplanes cannot land on lakes that have skim ice or are frozen. Recreation use year round may increase.

Two access areas are primarily high elevation ridge tops and alpine settings. Helicopters may change the recreation use patterns of these areas and expand the types of recreation that may occur. Currently low use for hunting, wildlife viewing, hiking and exploring occurs. This alternative would open Kootznoowoo Wilderness to such activities as heli-hiking and heli-skiing or snowboarding. These areas may also serve as "jumping off" points to reach more remote and pristine areas in the Wilderness.

For the areas that would not be authorized helicopter landings, this alternative would not change existing opportunities for primitive recreation. Helicopter overflights may displace other wilderness visitors near flight paths who are looking for a primitive Wilderness recreation setting without mechanized influences.

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Misty Fiords National Monument Wilderness

This alternative allows up to 18,355 landings a year in 40 access areas within the Wilderness. Use would range from three to six landings a day depending on ROS class. Access within 1/2 mile of a recreation cabin would require a cabin permit for that cabin. Also, 250 landings a year per cabin access area is the theoretical maximum.

The access areas are concentrated in the eastern Revilla area, under the Rudyerd Bay flight paths and at recreation cabins. Currently, the access areas designated by this alternative have other motorized access consisting of floatplanes and/or motorboats. Access area concentrations along the Unuk River and at some of the other remote settings are eliminated in this alternative.

Today, a remote Wilderness recreation experience at these areas is frequently interrupted by the sounds of floatplanes, motorboats or cruise ships. Visitors looking for a remote Wilderness experience may frequently find that opportunity lacking at these areas. Authorizing these access areas in Misty Fiords Wilderness would cause further motorized congestion and further degrade the Wilderness recreation experience.

This alternative would allow motorized access to South Wilson Lake, Humpback, West Manzanita Lake, South Manzanita Lake, Punchbowl, Big Goat Lake, Wilson Lake, and Hugh Smith recreation cabins/shelters during winter when icing lakes makes floatplane access impossible. This would extend the recreation season of these cabins and shelters and provide an isolated winter Wilderness experience.

Petersburg Creek-Duncan Salt Chuck Wilderness

As both access areas included in this Wilderness are public recreation cabins, the effects of Alternative 6 on the Petersburg Creek-Duncan Salt Chuck Wilderness are identical to those of Alternative 3A.

This alternative would authorize two access areas within the Petersburg Creek-Duncan Salt Chuck Wilderness. Cabin permits would be required to land within 1/2 mile of either cabin. A maximum of 500 total landings was analyzed, 250 at each cabin.

Visitors looking for a remote Wilderness experience in Petersburg Creek-Duncan Salt Chuck are currently frequently disturbed by the sounds of floatplanes flying over on the main east-west flyway or landing on Petersburg Lake. Jets also fly through the Wilderness at low altitudes on clear days. Authorizing two helicopter access areas in Petersburg Creek-Duncan Salt Chuck with a total maximum of 500 landings a year would increase the impacts on visitors seeking a remote Wilderness experience.

This alternative would allow motorized access to Petersburg Creek and Salt Chuck East recreation cabins during the winter when icing lakes and estuaries makes floatplane access impossible. This could extend the recreation season of these cabins and provide an isolated winter Wilderness experience.

Russell Fiord Wilderness

This alternative would authorize four access areas within this Wilderness: Harlequin Lake (RF-02 and 03), Upper Beasley Creek (RF-05) and Cape Enchantment (RF-24). Up to 2,835 landings a year would be allowed; except at Cape Enchantment where the limit

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would be three, the maximum number of landings a day would be six. The effects of Alternative 6 on Russell Fiord Wilderness would be identical to those of Alternative 3A.

Helicopter access may displace two outfitter-guide camps at Harlequin Lake (RF-02) and Cape Enchantment (RF-24). Cape Enchantment is also a popular camping spot. Alternative 6 has the potential to increase recreation use at all four access areas since motorized access is easier, although cost could be prohibitive for many. Motorized access is currently available at Cape Enchantment year-round but this alternative would provide that opportunity at the remaining locations year-round too.

South Baranof Wilderness

Seven access areas would be authorized in South Baranof Wilderness: Lake above Gut Bay (SB-04), Plotnikof Lake (SB-06), Rezanof Lake (SB-07), Lake Diane (SB-08), Avoss Lake (SB-11), Davidof Lake (SB-14) and Mid-Plotnikof Lake (SB-15). The effects of Alternatives 6 and 3A would be the same for South Baranof Wilderness.

All seven of these access areas are adjacent to fresh water lakes; three of the access areas have public recreation cabins. Helicopter access to these cabins would, in most cases, be in lieu of floatplanes. A cabin permit would be required to land at a cabin. Helicopters may expand the season of use for these cabins. Helicopters would offer another form of motorized access to these locations and their use may expand the season of use for these locations. Increased opportunities for primitive recreation include cross-country and Telemark skiing, snowshoeing, ice skating, and snow camping.

South Etolin Wilderness

Alternatives 6 and 3A are identical for South Etolin Wilderness. They would authorize up to 810 landings a year at South Etolin Lakes (SE-02). Helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike may be upset to find a helicopter landing at an area that has taken considerable physical exertion to reach. However, only authorizing one helicopter access area in the entire South Etolin Wilderness leaves some areas for use by displaced remote Wilderness visitors.

This alternative may also allow some visitors to use helicopters to reach this remote area as a "jumping off" point for a hiking or skiing trip. This may open up some new opportunities for Wilderness recreation experiences in South Etolin Wilderness. Access to this area is also possible by floatplane.

South Prince of Wales Wilderness

Alternatives 6 and 3A are identical for South Prince of Wales Wilderness. They would allow up to 405 landings a year each at north Klakas Lake (S-03) and Hessa Island (S-20). Allowing helicopters may displace visitors looking for a remote Wilderness experience. A Wilderness visitor in the middle of a remote Wilderness hike or kayak trip may be upset to find a helicopter landing at an area that has taken considerable physical exertion to reach. The number of landings would increase the probability of a helicopter encounter by a Wilderness visitor. Authorizing two helicopter access areas in the entire South Prince of Wales Wilderness leaves some area for displaced remote Wilderness visitors.

S-20 is located in the middle of a small island. As such, it does little to improve opportunities for a Wilderness recreation experience. The same area is easily reached by

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floatplane or boat, and very little terrain is available for Wilderness exploration since the island so small. S-03 is located in a remote area on the north shore of Klakas Lake. Floatplanes can also land on Klakas Lake.

Alternative 6 may also allow some visitors desiring a Wilderness experience to use helicopters to reach a remote spot as a "jumping off" point for hiking and stream fishing. This may open up some new opportunities for Wilderness recreation experiences in South Prince of Wales Wilderness.

Stikine-LeConte Wilderness

This alternative allows up to 6,015 landings a year at 10 access areas within the Wilderness, at the ROS limit of six landings per access area per day in Semi-Primitive and three landings per access area per day in Primitive settings. Access within 1/2 mile of a recreation cabin site requires a valid cabin permit for that cabin. The theoretical maximum number of landings per cabin site is 250 a year, although that number is unlikely to be reached.

Currently, the access areas designated by this alternative have floatplane and/or motorboat access. A remote Wilderness recreation experience at these areas is currently frequently interrupted by the sounds of floatplanes or motorboats. Visitors looking for a remote Wilderness experience may frequently find that opportunity lacking at these access areas. Therefore, authorizing these helicopter access areas in Stikine-LeConte Wilderness would do little to impact remote Wilderness experiences of visitors.

This alternative would allow motorized access to recreation cabins near Red Slough, Mallard Slough and Twin Lakes during winter when icing along the Stikine River makes floatplane and boat access impossible. This would extend the recreation season of these cabins and provide an isolated winter Wilderness experience.

Tracy Arm-Fords Terror Wilderness

This alternative would authorize two helicopter access areas with up to 1,620 landings a year total.

Both areas are accessible by floatplane and boat and are popular destinations within this Wilderness. People come to Fords Terror to watch the rip tides flow through the narrow channel and also to enter into Fords Terror at slack tide. If over 1600 helicopter landings occur in the close proximity of these two access areas at the mouth of Fords Terror, some displacement of other users may occur because of noise, impacts from helicopters and increased numbers of visitors.

West Chichagof-Yakobi Wilderness

Two helicopter access areas are considered in this alternative. Both are public recreation cabins. Up to 250 landings a year at each access area would be authorized. Because of this, Alternatives 6 and 3A are identical for West Chichagof-Yakobi Wilderness.

White Sulphur (WC-07) is extremely popular. There is a bathhouse with hot springs approximately 50 feet from the cabin. The area is popular with boaters including commercial fishers, kayakers and outfitter-guides. Access is primarily by boat although floatplanes do land in a nearby lake or harbor occasionally. With the opportunity to land at

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the cabin and hot springs year round with a helicopter, recreation use may increase although cost may be prohibitive to many.

Goulding Lake (WC-05) is accessible by floatplane. Helicopter access would be in lieu of floatplanes. Helicopters can provide year-round access so recreation use could expand substantially with this alternative, although current demand for the cabin is moderately low. Currently, this location receives very low to no use when the lake is frozen.

Chuck River, Coronation Island, Kuiu, Maurelle Islands, Pleasant-Lemesurier-Inian Islands, Tebenkof Bay and Warren Island Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

Alternative 7

This alternative authorizes four helicopter access areas in two Wildernesses. Use would follow ROS guidelines of six landings per access area per day in Semi-Primitive and three landings per access area per day in Primitive for a total of 2,430 annual landings.

People want to experience outstanding Wilderness solitude, remoteness and beauty of a few spectacular places. Alternative 7 would allow a relatively high level of visitation to these areas, thereby meeting the requested demand for access to spectacular remote locations although opportunities for solitude may not be preserved.

The high levels of use at these access areas may jeopardize the very reason that people wish to recreate at these areas - the outstanding Wilderness recreational solitude, remoteness and beauty. To some, high visitation levels at these spectacular Wilderness locations would be seen as degrading the Wilderness recreation experience sought at these areas. This is especially the case when a visitor to this area has taken the time and effort to hike in - hoping for a true remote Wilderness recreation experience at one of the most spectacular settings in Alaska, only to find a helicopter landing as they arrive.

Stikine-LeConte Wilderness

This alternative designates three access areas within Stikine-LeConte Wilderness. The number of landings is limited to six landings a day at North Shore LeConte Glacier (SL-02) and LeConte Glacier near the bay (SL-04) and three landings a day at Upper LeConte Ice Field (SL-16). This would allow a maximum of 2,025 landings annually at these three access areas.

These access areas are associated with LeConte Glacier. SL-02 is located adjacent to the face of the glacier. SL-04 is located on the glacier two miles back from the face. SL-16 is also located on the glacier, although further from the face than SL-04. LeConte Glacier is the furthest south tidewater glacier in North America. It is also within a 15 minute flight of Petersburg. This makes it an extremely popular tourist attraction. People visit this glacier to experience its grandeur in a Wilderness setting. A helicopter is the only dependable way to actually reach the ice or get near the face, however. Floatplanes provide access, but ice in the bay prevent landings. Boat access is also difficult. The icebergs in the bay are usually so thick that they prevent boats from getting within viewing distance of the glacial face.

Access to these places with special values is therefore very important to many. Aside from helicopters, arduous, often dangerous, hiking on extensive ice fields and rocky cliffs with

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at least one overnight stay both ways is required to physically reach these areas. Very few people spend the time and effort to reach these remote settings other than flying over them in a floatplane. Because of this, the 2,025 possible landings annually would have a low probability of degrading the Wilderness experience of anyone already at the area.

Although the probability of disturbing another Wilderness visitor on-site at one of these remote access areas is low, the impact on that user if an encounter should occur could be very high. When a Wilderness user has decided to put a large amount of time and effort getting to these remote areas, often hiking for several days, one of the important elements of their recreation experience is the feeling of remoteness, solitude, isolation, and risk - the feeling that perhaps no one else has ever visited the spot. An encounter with a helicopter during this remote experience could be very disturbing. The ROS limits set by this alternative increase the probability of an encounter. There is already some disturbance from frequent floatplane overflights.

Tracy Arm-Fords Terror Wilderness

Only one "special place" is proposed outside Stikine-LeConte Wilderness, the knob north of Tracy Arm (TA-31). It lies approximately 14 miles up the Arm, at 2,845 feet, and about one mile from saltwater. This alternative would allow up to 405 landings a year at this access area. As it is Primitive ROS class, a maximum of three landings a day could occur. Up to 2,430 people could visit this location annually by helicopter.

This spectacular location offers views of both arms of Sawyer Glacier, the precipitous walls of Tracy Arm and overlooks the fiord where cruise ships and pleasure boats ply the narrow waters. Access by means other than helicopter is extremely arduous, dangerous and time consuming.

Helicopter access under this alternative could increase the amount of use this location receives, although the cost of helicopter travel may be prohibitive for many. It may increase such activities as viewing scenery, heli-hiking, mountaineering, and photography.

Chuck River, Coronation Island, Endicott River, Karta River, Kootznoowoo, Kuiu, Maurelle Islands, Misty Fiords National Monument, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales, Tebenkof Bay, Warren Island and West Chichagof-Yakobi Wildernesses

No helicopter access areas would be authorized in these Wildernesses under this alternative. There would be no change from the existing situation, Alternative 1.

Soils and Vegetation

Issue

Concerns were expressed about direct effects on sensitive plants.

Introduction

In Southeast Alaska, non-tidal open areas found over poorly or very poorly drained soils commonly have a ground cover high in any combination of sphagnum mosses, ericaceous shrubs or sedges. These are commonly referred to as muskegs (Stephens et al. 1970). Muskegs are generally found over soils that maintain a thick organic surface mat, high percentage of iron oxides, and are often saturated with water. These soils have a structure

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that breaks down rapidly under stress or disturbance; a condition called thixotropic or "quick" (USDA Forest Service 1991). If the living vegetation on the soil surface is destroyed, the soil readily converts to a watery muck condition. It is not unusual for a site to go from a solid footing to knee deep muck in one season of relatively light use (USDA Forest Service 1991b).

Recreation activity that results in loss of vegetation and obvious soil break-up may lead to long-term or sustained damage. This sustained damage is most likely to occur where recreation activities such as hiking and camping by many people are concentrated in alpine, muskeg or other non-forested cover types.

The amount of foot traffic that would be expected to result in vegetation damage and obvious soil break-up can range from as few as 25 one-way trips to over 600 one-way trips per year. The most sensitive vegetative types are sedge/forb muskegs found over Kina-Kogish soils or forb meadows in alpine/subalpine habitats. Shrub/mixed conifer muskegs and alpine sedge meadows are more resistant. The sedge/grass/forb muskegs can sustain a maximum of 25 to 50 one-way trips per year. After that amount of use, sustained traffic will cause rapid deterioration of the trail leading to widening of the tread surface (USDA Forest Service 1991b).

Vegetative impacts may occur in other habitats that may not lead to soil damage. Forb meadows may suffer 50 percent cover reduction from as few as 25 one-way trips (Cole and Trull 1992). In most cases, vegetation impacts increase as number of trips along a path increase (Cole and Trull 1992). Plant composition changes may also occur as more resistant types take over niches held by easily damaged types. The number of species present may decrease with site use.

Vegetation types vary greatly both in the ease with which they are damaged and in their ability to recover from damage. Generally, the most durable types are dominated by grasses or grass-like species. Shrubby understories are often resistant to damage, but they recover slowly once damaged. Broad-leaved herbaceous understories are readily damaged, but are capable of rapid recovery (Cole and Trull 1992).

The following assumptions were used to estimate impacts to soils and vegetation from recreation activities associated with helicopter access to the Wildernesses. Impacts were considered to arise from the following causes: 1) the actual helicopter landing and 2) human activities after the visitors get out of the helicopter. It was assumed that no site alterations would be made to enhance the actual landing areas.

Helicopter landings usually will not permanently damage or alter plant habitat. The effects on vegetation and soils will vary by season of use. Frozen soils are not likely to be damaged by helicopter landings or trampling by increased foot traffic. During the time the ground is not frozen, helicopter landings may result in slight soils compaction. The slight compaction which would occur is assumed to only persist until the next winter frost heaving. Vegetation that is dormant or covered by snow is unlikely to be damaged by helicopter landings.

Helicopter landings will have a short-term effect on living vegetation. Vegetation may be crushed by the skids. Helicopters with exhaust that is directed toward the ground can cause vegetation damage due to drying out or scorching of living vegetation from turbine exhaust. Because some helicopters are designed to drain a small amount of unburned fuel from the engine upon shutdown, there is a minor amount of temporary damage due to

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leaking fluids, such as fuel or hydraulic fluid (EPA 1988). Vegetation damage from these factors is considered to be short term, not lasting for longer than one growing season.

The activities associated with using a helicopter to reach the Wilderness are likely to negatively affect vegetation in the following locations: beach areas, lake shorelines, stream sides and riverbanks, meadows, muskegs, alpine and subalpine habitats. These activities would include walking, hiking, picnicking, picking vegetation, building fires, going to the bathroom, camping, moving rocks for sleeping areas and congregating at nearby photo points.

Helicopter access areas that exceed five landings a year have the potential to create sustained vegetative damage from trampling on sensitive vegetation or muskegs. (Six persons/landing x five landings = 30 round trips or 60 one-way trips per year over same trail). This trampling damage may lead to muddy conditions on the trail for a sustained period and possible erosion.

Foot traffic across alpine forb meadows and thin mineral soils would also lead to negative impacts to vegetation. As few as 24 one-way trips or 12 round trips across some broad-leaved forbs can cause long-term vegetation damage, which may be observed for longer than one year (Cole and Trull 1992).

Because of the large range of sizes of the proposed access areas (seven acres to 14,687 acres), the lack of high resolution soils mapping data and the variety of cover types within each access area, it was impossible to predict the site-specific soils effects of helicopter landings. Relative impacts to vegetation were assigned a subjective value based on best professional judgement after reviewing access area maps, aerial photos and Ranger District staff input.

To portray the relative impacts on beaches, shorelines, riparian areas, meadow, alpine and muskeg due to trampling and loss of vegetation for this study, impacts were assumed to be directly related to the number of landings in an area and the number of visitors expected.

- * Alternatives which limited use to low (up to five landings a year) historic use levels were expected to have low impacts on meadow, alpine and muskeg due to trampling and loss of vegetation.
- * Alternatives which limited use to historic use (up to 25 landings a year) were expected to have moderate impacts on meadow, alpine and muskeg due to trampling and loss of vegetation.
- * Alternatives that allowed for ROS levels of use with multiple landings per day were expected to have a high potential for negative effects on meadow, alpine and muskeg due to trampling and loss of vegetation.
- * Alternatives that allowed for ROS levels of use with multiple landings per day were expected to have a moderate potential for negative effects on other vegetation due to trampling.

Effects by Alternative

Alternative 1, No Action

This alternative is not expected to have any effects from helicopter access to Wildernesses and associated recreation activities.

Alternative 2, Proposed Action

The following Wildernesses do not have access areas proposed for this alternative and will have no effects on soils or vegetation: Karta River, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof and West Chichagof-Yakobi.

There are 21 access areas that are considered to have a moderate potential to affect vegetation: one in Endicott River, six in Kootznoowoo, eight in Misty Fiords National Monument, one in South Etolin, three in Stikine-LeConte and two in Tracy Arm-Fords Terror.

Alternative 3A

This alternative uses ROS limits as upper limits of helicopter access. Annually, up to 250 landings at each cabin access area, up to 405 landings at each access area in Primitive ROS class and up to 810 landings at each access area in Semi-Primitive ROS class could occur.

Thirty-six access areas are considered to have moderate potential to affect vegetation; including one in Endicott River, two in Karta River, 23 in Misty Fiords National Monument, two in South Prince of Wales, six in Stikine-LeConte and two in Tracy Arm-Fords Terror.

There are 82 access areas that are considered to have a high potential to affect vegetation: five in Endicott River, two in Karta River, 28 in Kootznoowoo, 28 in Misty Fiords National Monument, two in Petersburg Creek-Duncan Salt Chuck, four in Russell Fiord, six in South Baranof, one in South Etolin, four in Stikine-LeConte, one in Tracy Arm-Fords Terror and one in West Chichagof-Yakobi.

Alternative 3B

This alternative would allow landings up to historical levels. Many access areas are expected to be used five or less times per year. This low level of use in access areas with no alpine, muskeg, or meadow habitat is considered to have no effect on vegetation.

Eighty-three access areas are considered to have moderate potential to affect vegetation: five in Endicott River, three in Karta River, 28 in Kootznoowoo, 28 in Misty Fiords National Monument, two in Petersburg Creek-Duncan Salt Chuck, four in Russell Fiord, six in South Baranof, one in South Etolin, four in Stikine-LeConte, one in Tracy Arm-Fords Terror and one in West Chichagof-Yakobi.

Alternative 4

The following Wildernesses do not have access areas proposed for this alternative and will have no effects on vegetation: Endicott River, Karta River, Russell Fiord, South Etolin, South Prince of Wales and Tracy Arm-Fords Terror.

Six access areas are considered to have moderate potential to affect vegetation: four in Kootznoowoo and two in Misty Fiords National Monument.

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There are 24 access areas that are considered to have high potential to affect vegetation: 11 in Kootznoowoo, five in Misty Fiords National Monument, two in Petersburg Creek-Duncan Salt Chuck, three in South Baranof, two in Stikine-LeConte and one in West Chichagof-Yakobi.

Alternative 5

This alternative allows access at historical levels to remote areas. Many access areas are expected to be used five or less times per year. This low level of use in access areas with no alpine, muskeg or meadow habitat is considered to have no effect on vegetation.

The following Wildernesses do not have access areas proposed for this alternative and will have no effects on vegetation: Karta River, Petersburg Creek-Duncan Salt Chuck, Russell Fiord, South Baranof, South Etolin, South Prince of Wales and West Chichagof-Yakobi.

Eighteen access areas are considered to have moderate potential to affect vegetation: three in Endicott River, seven in Kootznoowoo, three in Misty Fiords National Monument, three in Stikine-LeConte and two in Tracy Arm-Fords Terror.

Alternative 6

This alternative uses ROS limits as upper limits of helicopter access. Up to 250 landings a year could occur at each cabin, up to 405 landings a year could occur at each access area in Primitive ROS class and up to 810 landings a year could occur at each access area in Semi-Primitive ROS class.

Twenty-nine access areas are considered to have moderate potential to affect vegetation: one in Endicott River, three in Karta River, three in Kootznoowoo, 12 in Misty Fiords National Monument, three in Russell Fiord, one in South Baranof, two in South Prince of Wales, three in Stikine-LeConte and one in Tracy Arm-Fords Terror.

Fifty-seven access areas are considered to have high potential to affect vegetation: one in Endicott River, three in Karta River, 14 in Kootznoowoo, 25 in Misty Fiords National Monument, two in Petersburg Creek-Duncan Salt Chuck, one in Russell Fiord, five in South Baranof, one in South Etolin, four in Stikine-LeConte and one in West Chichagof-Yakobi.

Alternative 7

The following Wildernesses do not have access areas proposed for this alternative and will have no effects on vegetation: Endicott River, Karta River, Kootznoowoo, Kuiu, Misty Fiords National Monument, Petersburg Creek-Duncan Salt Chuck, Pleasant-Lemesurier-Inian Islands, Russell Fiord, South Baranof, South Etolin, South Prince of Wales and West Chichagof-Yakobi.

Four access areas totalling 1281 acres are proposed in two Wildernesses: one in Tracy Arm (TA-31), 118 acres, and three in Stikine-LeConte totalling 1163 acres (SL-02, 04 and 16). These four access areas have a total of 225 acres of rock and 995 acres of ice fields. There are a total of 35 acres of alder and 26 acres of productive forest within the access areas. All four places were considered to have moderate potential to affect vegetation.

Summary

Table 4-2 displays moderate and high potential effects to access area vegetation by alternative and wilderness. Access areas with low or negligible potential effects are not listed.

Table 4-2. Moderate and high potential effects to vegetation on access areas from the alternatives

Alternative	Wilderness	Moderate Potential	High Potential	
Alt. 1	N/A	N/A	N/A	
Alt. 2	Endicott River	EN-02		
	Kootznoowoo	KO-02, 03, 18, 22, 23, 38		
	Misty Fiords	MF-20, 40, 91, 108, 117, 128, 136, 168		
	South Etolin	SE-02		
	Stikine-LeConte	SL-09, 14, 15		
	Tracy Arm-Fords Terror	TA-06, 23		
	Alt. 3A	Endicott River	EN-05	EN-02, 07, 08, 09, 10
Karta River		KA-08, 13	KA-07, 09	
Kootznoowoo			KO-02, 03, 04, 05, 13, 15, 18, 20, 21, 22, 23, 25, 28, 29, 32, 33, 34, 35, 36, 38, 70, 71, 72, 73, 74, 75, 79, 80	
Misty Fiords		MF-03, 22, 33, 39, 50, 71, 72, 74, 89, 90, 92, 96, 98, 107, 110, 134, 144, 146, 154, 160, 161, 167, 173	07, 20, 31, 34, 35, 38, 40, 41, 46, 56, 57, 91, 104, 105, 108, 109, 114, 116, 117, 119, 124, 125, 131, 145, 162, 166, 168, 179	
Petersburg Creek			PC-01. 02	
Russell Fiord			RF-02, 03, 05, 24	
South Baranof			SB-06, 07, 08, 11, 14, 15	
South Etolin			SE-02	
South Prince of Wales		S-03, 20		
Stikine-LeConte		SL-02, 04, 10, 12, 13, 15	SL-05, 09, 11, 14	
Tracy Arm-Fords Terror		TA-23, 31	TA-24	
West Chichagof-Yakobi			WC-07	
Alt. 3B		Endicott River	EN-02, 07, 08, 09, 10	
		Karta River	KA-02, 07, 09	
	Kootznoowoo	KO-02, 03, 04, 05, 13, 15, 18, 20, 21, 22, 23, 25, 28, 29, 32, 33, 34, 35, 36, 38, 70, 71, 72, 73, 74, 75, 79, 80		
	Misty Fiords	MF-07, 20, 31, 34, 35, 38, 40, 41, 46, 56, 57, 91, 104, 105, 108, 109, 114, 116, 117, 119, 124, 125, 131, 145, 162, 166, 168, 179		

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Alternative	Wilderness	Moderate Potential	High Potential
	Petersburg Creek	PC-01, 02	
	Russell Fiord	RF-02, 03, 05, 24	
	South Baranof	SB-06, 07, 08, 11, 14, 15	
	South Etolin	SE-02	
	Stikine-LeConte	SL-05, 09, 11, 14	
	Tracy Arm-Fords Terror	TA-24	
	West Chichagof-Yakobi	WC-07	
Alt. 4	Kootznoowoo	KO-20, 25, 34, 36	KO-02, 03, 18, 22, 23, 28, 29, 32, 33, 35, 38
	Misty Fiords	MF-105, 179	MF-57, 104, 114, 117, 118
	Petersburg Creek		PC-01, 02
	South Baranof		SB-06, 11, 14
	Stikine-LeConte		SL-05, 09
	West Chichagof-Yakobi		WC-07
Alt. 5	Endicott	EN-07, 08, 09	
	Kootznoowoo	KO-05, 70, 71, 72, 73, 74, 75	
	Misty Fiords	MF-07, 119, 162	
	Stikine-LeConte	SL-02, 04, 16	
	Tracy Arm-Fords Terror	TA-23, 31	
Alt. 6	Endicott River	EN-10	EN-02
	Karta River	KA-03, 08, 13	KA-02, 07, 09
	Kootznoowoo	KO-20, 32, 35	KO-02, 03, 15, 18, 21, 22, 23, 25, 28, 29, 33, 34, 36, 38
	Misty Fiords	MF-33, 39, 50, 98, 107, 110, 144, 146, 154, 160, 161, 167	MF-20, 31, 34, 35, 38, 40, 41, 46, 56, 57, 91, 104, 105, 108, 109, 114, 116, 117, 124, 125, 131, 145, 166, 168, 179
	Petersburg Creek		PC-01, 02
	Russell Fiord	RF-02, 05, 24	RF-03
	South Baranof	SB-06	SB-07, 08, 11, 14, 15
	South Etolin		SE-02
	South Prince of Wales	S-03, 20	
	Stikine-LeConte	SL-10, 12, 13	SL-05, 09, 11, 14
	Tracy Arm-Fords Terror	TA-24	
	West Chichagof-Yakobi		WC-07
Alt. 7	Stikine-LeConte	SL-02, 04, 16	
	Tracy Arm-Fords Terror	TA-31	

Cumulative Effects

Logging, mining, forest fires and other human activities have changed vegetation in parts of some Wildernesses. Some of these activities such as logging and most of the mining occurred prior to Wilderness designations. Vegetative impacts have been recovering but are still evident. There are ongoing and planned activities in alpine, muskeg and forested portions of the Wildernesses. Forest Service administrative activities include soils and plant inventories, geologic surveys and wildlife surveys. These are done infrequently, usually involve limited numbers of landings and are conducted with small numbers of people. Prior to these administrative uses, a biological evaluation is conducted.

Threatened, Endangered or Sensitive Plants

Surveys for sensitive plants were done in Karta River, Misty Fiords National Monument, South Prince of Wales and Stikine-LeConte during 1995. Details of the results of these field studies are documented in the biological evaluation for plants in the planning record. Field surveys in other Wildernesses were recommended but not conducted for the sensitive plants suspected to occur within those Wildernesses. A risk assessment and recommendations to avoid possible adverse consequences were developed.

Risk Assessment

A risk assessment which considered the direct, indirect and cumulative effects of this project on sensitive plants and their habitats was developed for areas where field surveys were not completed.

This risk assessment (analysis of impacts of the project on sensitive plant species or their habitat) considers the following factors: 1) the consequence of adverse effects on the population and 2) the likelihood or probability that these effects will occur.

The following assumptions were used in developing the analysis for consequences of adverse effects on sensitive species populations. Access areas that did not have sensitive plant habitat were assigned a low risk of harm rating to sensitive plant habitat or populations. Access areas which had lakeshore, beach, meadow, muskeg or alpine habitat were assigned a moderate or high potential for adverse effects on habitat or localized populations of sensitive plants. These particular habitats were thought to be at higher risk because of the potential for long-term negative effects to sensitive plant habitat from concentrated human activities such as hiking, camping and picnicking. The risk is due to these habitats being sensitive to trampling and disturbance to vegetation and soils.

Alternatives which limited use to historic use levels (up to 25 landings a year) were expected to have moderate impacts to soils and vegetation due to foot traffic. Alternatives that allowed for ROS levels (250 to 810 landings per year) of use with multiple landings (three or six) per day were considered to have a high potential for negative effects on alpine and muskeg access areas due to trampling and loss of vegetation. More people visiting each area would lead to more trampling, wider trails and eventually a determination regarding limits of acceptable change. Because the potential negative effects would be long term or permanent, this is considered to be a high potential impact on the pristine and untrammled Wilderness vegetation.

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The following matrix depicts the risk assessment values for sensitive species.

Number of landings a year	Habitat present	Habitat not present
Low (up to 5)	Moderate	Low
Moderate (up to 25)	Moderate	Moderate
High (ROS)	High	Moderate

Wildlife

Issue

Helicopter landings in Wilderness may impact wildlife. Direct, indirect and cumulative effects of this impact on wildlife, especially threatened, endangered and sensitive species (including Steller sea lions, goshawks and bald eagles) and species of special interest (including waterfowl, mountain goats and brown bears) were of concern. Concerns regarding the effects of additional people, noise and timing of flights, flight routes and the potential for harassment of wildlife were also mentioned.

Introduction

This section discusses the effects of helicopter landings and associated recreational activities on wildlife within the project area. It is organized to provide a summary of the literature regarding the effects of overflights on wildlife, a discussion of criteria used to subjectively portray the consequences of the various alternatives, the assumptions that were used for the analysis and access area specific impacts by species. Species effects are then summarized for each Wilderness for each alternative. It closes with a discussion of cumulative effects on wildlife.

In general, wild animals do respond to low-altitude (300-800 feet) aircraft overflights (USDI 1994). The manner in which they do so depends on life-history characteristics of the species, characteristics of the aircraft and flight activities and a variety of other factors such as habitat type and previous exposure to aircraft. The potential for overflights to disturb wildlife and the resulting consequences have drawn considerable attention from State and Federal wildlife managers, conservation organizations and the scientific community (USDI 1994).

The primary concern expressed is that low level flights over wild animals, especially mountain goats and brown bears (ADF&G 1995), may cause physiological and/or behavioral responses that reduce the animals' fitness or ability to survive. Some researchers believe that low-altitude overflights can cause excessive arousal and alertness, or stress (see Fletcher 1980, 1990, Mancini et al. 1988 for review). If chronic, stress can compromise the general health of animals. Also, the way in which animals behave in response to overflights could interfere with raising young, habitat use and physiological energy budgets. Physiological and behavioral responses have been repeatedly documented that suggest some of these consequences occur. While the behavioral responses by animals to overflights have been well-documented for several species, few studies have addressed the indirect consequences. Such consequences may or may not occur and may be detectable only through long-term studies (USDI 1994).

Additional research will be required to fully address the significance of such population impacts. However, waiting for and relying on future research results for current policy

decisions is not possible. Therefore, it is necessary to make informed decisions recognizing that all of the consequences of disturbance will not be completely understood.

The scientific community's current understanding of the effects of aircraft overflights on wildlife is found in the literature. Such studies identify collision with aircraft (Burger 1985, Dolbeer et al. 1993); flushing of birds from nests or feeding areas (Owens 1977, Kushlan 1979, Burger 1981, Anderson and Rongstad 1989, Belanger and Berad 1989, Cook and Anderson 1990); alteration in movement and activity patterns of mountain sheep (Bleich et al. 1990); decreased foraging efficiency of desert big horn sheep (Stockwell and Bateman 1991); panic running by barren ground caribou (Calef et al. 1976); decreased calf survival of woodland caribou (Harrington and Veitch 1992); increased heart rate in elk, antelope and rocky mountain big horn sheep (Bunch and Workman 1993) and adrenal hypertrophy in feral house mice (Chesser et al. 1975). Over 200 published and unpublished reports can be found on the subject. These reports range in scientific validity from well designed, rigorous studies to professional natural resource manager and pilot reports.

Stockwell et al. (1991) conducted time budget studies of bighorn sheep at Grand Canyon National Park where helicopter traffic ranges from 15,000 to 42,000 flights per year. This study and others (Aftman 1958, Berger et al. 1983, Drausman and Hervert 1983, Knight and Knight 1984, Miller and Smith 1985 and Krausmann et al. 1986) indicated that the degree of disturbance was a function of the proximity of the aircraft. Heart rates of Rocky Mountain bighorn sheep did not change in response to high flying aircraft (over 1,300 feet) but sheep did respond to low flying aircraft (300 to 800 feet) by running, which increased heart rates by three to five times (MacArthur et al. 1979, 1982). Helicopters at low altitude caused a notable reduction in foraging efficiency in the Grand Canyon study (Stockwell et al. 1991).

Another study (Bleich et al. 1994) warned scientists to be concerned about the effects of helicopter activity on the condition and reproductive success of large mammals. Nutritionally stressed individuals may be especially susceptible to disturbance from helicopters which causes them to depart from prime habitats for extended periods. Data presented by Krausmann and Hervert (1983) also support this. The effects of such disturbance would be exacerbated for mountain goats living in environments where critical resources are limited and widely distributed (Bleich et al. 1994). Mountain goat movements resulting from disturbance also have the potential to make them vulnerable to predation.

Management recommendations resulting from the Stockwell et al. (1991) study include minimizing impacts by restricting the number of flights and by regulating the flight altitudes of helicopters. Flight altitudes of at least 1300 to 1600 feet were recommended to minimize impacts. Fox et al. (1989) recommended that helicopter use be avoided near cliff areas used by female goats for kidding and early neo-natal periods.

The studies cited above provide the basis for the proposed mitigation of all the action alternatives. The specific actions that cause and factors that affect impacts follow:

- * Human activity, numbers, noise and movement from access areas when passengers are at the access area.
- * Helicopter fly by or over
- * Helicopter landings and take-offs (including the take-off sequence)
- * Approach and take-off patterns (to and from landings)
- * Hovering

4 Environmental Consequences

- * Sitting with engine operating on the ground
- * Varying levels and types of sounds created by blade pitch
- * Different noise levels associated with cruising, landing, and flying in head and tail winds
- * Elevation and distance of helicopters from the organism reacting to it

Impact Criteria

Studies have verified that physiological and behavioral responses by wildlife to low-flying aircraft do occur. The nature of these responses suggests that at least some animals suffer other consequences. The studies by Stockwell et al. (1991) and Belanger and Bedard (1989a, b) provide compelling evidence that energy losses and habitat avoidance are occurring in individuals and small groups of animals in response to overflights. These studies cannot be used to infer damages in other species or from other overflight regimes. Only a handful of the many species that inhabit national forests have been studied for responses to overflights. It is very likely that there are forest species that are susceptible to disturbance that have never been studied. There is also little information suggesting how flight patterns, frequencies and altitudes affect any species, other than the broad generalizations described earlier.

What level of impact to what percent of the population should be considered significant? Studies of effects of human intrusions and habitat destruction on animals often find profound impacts from human activity. It is thus commonly assumed that aircraft overflights are equally damaging. The literature suggests that animals respond differently to aircraft overflights. Aircraft overflights are startling; however, many species and individuals within a species are able to adapt to them under most circumstances. Long-term effects of overflights (if any) are subtle because animals can adapt to them by habituating behaviorally and physiologically to them (USDA 1992).

Population responses to helicopter overflight are difficult to study. Individuals within the population may respond differently to the overflights, with a wide range of effects noted. Data to support the occurrence of damage to a population of a species in a variety of situations would require many years of extensive and costly research.

Long-term population effects are also difficult to detect because the events that cause them may occur so infrequently. Also, most studies are short-term, making documentation of infrequent events unlikely. With the exception of an eight-year study of white pelicans (Bunnell et al. 1981), little time has been spent assessing long-term effects (USDI 1994).

There is no consensus in public or scientific communities regarding impact definition. For this study, the following criteria are used to categorize impacts to wildlife from helicopter access and associated recreational activities

These criteria are found in a 1994 Report to Congress, Report on effects of aircraft overflights on the National Park System (USDI 1994). According to the National Park Service, these criteria are meant to help agencies in determining the severity of impacts. In these definitions, "species of concern" include Federally- or State-listed threatened, endangered and candidate species, species of local economic importance, or species of particular concern to conservation or other interest groups. This definition can be expanded to include any species that is known to be susceptible to disturbance. "Habitat" refers to the physical landscape and its ecosystem components that are subjected to overflights. The criteria are summarized below.

- * **Negligible effects**
 - * No species of concern are present, no/minor impacts expected
 - * Minor impacts that do occur have no secondary (long-term or population) effects

- * **Low Impacts**
 - * Non-breeders of concern present in low numbers
 - * Habitat is not critical for survival; not limited to the area targeted for overflights, etc.
 - * No serious concerns expressed by State or Federal fish and wildlife officials

- * **Moderate Impacts**
 - * Breeding animals of concern are present/present for critical life stages
 - * Mortality/interference with activities necessary for survival likely to occur occasionally.
 - * Mortality/interference are not expected to threaten the continued existence of species in the area
 - * State and Federal officials express some concern

- * **High Impacts**
 - * Breeding animals present in high numbers and/or during critical life stages
 - * Overflight areas have history of use during critical life stages during critical periods
 - * Habitat is limited and animals cannot relocate to avoid impacts
 - * Mortality or other effects (injury, physiological stress, effects on reproduction and young raising) are expected on a regular basis; these effects threaten the continued survival of the species
 - * State or federal officials express serious concern

Using this evaluation process relies on the professional opinions and best judgements of wildlife managers and researchers. In determining differences in wildlife impacts due to helicopter access to the Wilderness, the Forest Service must rely on less than complete information (ADF&G 1995).

The levels of impact listed here will be used to "trigger" actions to eliminate or reduce such impacts. In general, the Forest Service would regard situations consistent with "low impacts" to warrant monitoring, while situations that represent "moderate impacts" or "high impacts" would require some type of mitigation. For example, if there is increased mortality to brown bears which results from the increased human-bear encounters, this would be considered a moderate impact.

The following Management Indicator Species (MIS) were used to determine wildlife impacts. These are species of concern or species of interest: black bear, moose, brown bear, mountain goat, Vancouver Canada goose, bald eagle, northern goshawk, marbled murrelet, osprey, Peales peregrine falcon, trumpeter swan, osprey and wolf.

Habitat capability modeling to determine habitat capabilities for the MIS was not used for this analysis. The habitat capability models are intended to portray the changes in habitat capability from management actions which result in major changes in vegetation, primarily forested overstory. There are no changes in overstory conditions expected as a result of this project. Where changes in habitat capability due to human disturbances are a factor, these changes are portrayed in the species narrative.

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Wildlife Effects

This section displays information about the MIS and lists those access areas where these could potentially be affected. The Wildlife Effects by Alternative section beginning on page 4-106 describes the effects of each alternative.

Black Bear (*Ursus americanus*)

Black Bears are the most abundant and widely distributed of the three species of bears in America. In Alaska, blacks reside throughout most of the forested area of the State. Concentrations are highest on Prince of Wales Island, a coastal island in the Alexander Archipelago. The black bear is the smallest of the North American bears.

Habitat

Black Bears are most often associated with forests, but depending on the season of the year, they may be found from sea level to alpine areas. Cubs are born in February-March while mothers are in their dens. Upon emerging from the den in May the mothers and cubs will feed on freshly sprouted green vegetation. As summer progresses feeding shifts to salmon streams. Bears will supplement their diet with berries, especially blueberries, an important late summer-fall food item.

General Effects of Disturbance

Black bear responses to aircraft disturbance have not been studied. For this analysis it is assumed that they respond similarly to brown bears. It is also recognized that black bears may be more tolerant of human presence and that they may adapt to disturbances by helicopter flights and activity more readily than brown bears. Studies of brown bears in Alaska indicate that aircraft disturbance may be a significant problem, particularly in areas where helicopters are used (Aune and Stivers 1980). Helicopter landings in wetlands, estuaries and along fish streams where bears are feeding disturb bears. This stress may cause bears to make temporal or spacial adjustments in their activity patterns, become more aggressive, develop secretive habits and develop physiological problems (McArthur 1979).

Project Effects

Misty Fiords National Monument and Petersburg Creek-Duncan Salt Chuck each have an access area where black bears occur in high density: MF-96 and PC-1. Black bears habituate quickly to human activity and landing in these areas will not result in negative effects to the black bear population within the Wildernesses and therefore, the impacts are considered to be negligible. No mitigation would be required.

Moose (*Alces alces gigas*)

The moose is the largest member of the deer family in the world and the Alaska race is the largest of all the moose. They are generally associated with northern forests in North America. In Alaska, they occur in suitable habitat from Misty Fiords in Southeast Alaska to the Colville River on the Arctic Slope. Moose are relatively recent immigrants to Southeast Alaska. With the exception of two transplants, one on the Chickamin River within the Wilderness, all the populations are now well-established after immigrating independently from Canada primarily during this century.

Habitat

Except for small numbers of moose on islands in central Southeast, moose are found chiefly on the mainland coast which is characterized by steep, glaciated mountains and ice fields interrupted by fiords and narrow, isolated river valleys. Moose habitat is quite limited in the region. Habitat in Southeast is associated with riparian and post-glacial early successional vegetation types. As a consequence, moose are confined to the valleys around the large trans-montane rivers and to areas recently exposed by receding glaciers or timber harvest.

During fall and winter, moose consume large quantities of willow, birch and aspen. Spring is the time of grazing, as well as browsing, and moose use a variety of foodstuffs, particularly sedges, equisetum (horsetail), pond weeds and grasses. During summer moose feed on vegetation in shallow ponds, forbs and leaves of willow, cottonwood and blueberry, often in the lower elevation river bottom land such as the Dangerous, Endicott, Stikine, Unuk and Chickamin rivers.

Most moose migrate to calving, rutting and wintering areas, often using canyons. Some migrations are only a few miles, while others can be up to 60 miles. Moose breed in the fall, with the peak of "rut" activities coming in late September and early October. Calves are born from mid May to early June. A cow moose defends her newborn calf vigorously. Calves begin taking solid food a few days after birth and are weaned in the fall, at the time the mother is breeding again. The maternal bond is not broken until calves are 12 months old, when the mother aggressively chases offspring from her immediate area just before giving birth. By late October adult males have finished breeding and once again begin feeding.

General Effects of Disturbance

Little is known about the effects of disturbance on moose populations. Infrequent helicopter landing on calving sites and during calving would be unlikely and would not be detrimental. Frequent helicopter landings on river bottom lands in summer may cause spatial and temporal alterations of habitat use. Moose were introduced to the Chickamin River and the populations are relatively small and isolated. Thus, a conservative approach to activities that may effect the population is important.

Project Effects

The following access areas in Endicott River and Misty Fiords National Monument have moose habitat: EN-02, MF-3, MF-17, MF-71, MF-72, MF-74, MF-173, SL095, SL-11 and SL-12. Helicopter landings on sand bars may temporarily displace moose. This displacement is not threatening to the overall Tongass moose population and this project is considered to have a negligible effect on moose.

Brown Bear (*Ursus arctos*)

Ursus arctos are found at northern latitudes around the world. Wide local variation occurs in size, skull and color (Craighead and Mitchell 1982). This local variability previously led to a wide array of descriptions especially among Alaska's coastal islands (Merriam 1918).

U. a. horribilis includes all brown/grizzly bears of North America, including Southeast Alaska. Brown bears have the lowest reproductive rates among all land mammals in North America.

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Habitat

Brown bear habitat studies in northern Alexander Archipelago by Schoen and Beier have divided habitat use into four seasonal categories: spring (emergence to May 15), early summer (May 16 to July 15), late summer (July 16 to September 15) and fall (September 16 to denning). After emergence from dens in April and May, many bears travel to and use lowland old-growth forests and coastal sedge meadows (Schoen and Beier 1990). From mid-June through mid-July most bears use forested slopes and subalpine and alpine meadows, where freshly emergent vegetation is available and where adult bears mate. During summer, bears use low elevation habitats coinciding with the period of fishing for salmon. Habitat requirements of brown bears are generally so diverse that more than one vegetation type is used during any season, and bears are consistently observed in areas of the greatest vegetation diversity.

General Effects of Disturbance

From a conservation standpoint, it is important to note that bears have low reproductive rates, are long-lived and that a significant portion of the adult population is older than 10 years. These demographic data stress the importance of careful management inasmuch as the consequences of an error will be high (Miller 1990a).

While little information is available about direct effects of air traffic on brown bears, studies of brown bears in Alaska indicate that aircraft disturbance may be a significant problem, particularly in areas where helicopters are used (Aune and Stivers 1980). Heavy helicopter traffic may disturb bears particularly during the denning season (Schoen et al. in press).

Although direct impacts such as uncontrolled hunting and habitat loss are often a problem, more subtle disturbances can also play a role. Human activities such as helicopter landings in certain grass flats and estuaries during early spring and summer when bears are feeding on emergent vegetation can be stressful. Schoen and Beier (1990) found that 43 percent of their northern Admiralty Island radio-telemetry locations in the spring (late March to 15 May) were at elevations below 1000 feet. Responses by brown bears in open grass flat and estuarine habitats to helicopter traffic is obvious; they depart the open habitat to cover (ADF&G 1992).

This stress may be compounded by aerial flight seeing, hiking, camping, photography and other non-consumptive activities. This stress may cause bears to make temporal or spatial adjustments in their activity patterns, become more aggressive, develop secretive habits and develop physiological problems (McArthur 1979). Alternatively, a bear can adapt to disturbance. This is facilitated if the disturbance is predictable. According to Alaska Department of Fish and Game biologists, if the intrusions are infrequent and unpredictable, the impacts would be minimal and non-measurable excepting for the immediate behavioral response. However, if the helicopter landed at a locale periodically over the spring (April to May) there seems little doubt that many of the brown bears frequenting the area would move to another area or change their temporal habits (ADF&G 1992).

Many brown bears move to and use alpine habitats during the early summer. Titus and Beier found this habitat type to be the most commonly used habitat during June on Chichagof Island (Titus and Beier 1994). This also coincides with periods of good weather, long daylight and therefore the best helicopter access to alpine habitats. Scientists from the Alaska Department of Fish and Game believe that helicopter activities in alpine habitats, if more than infrequent, will impact brown bears' use of specific locations. Their first concern is that if the helicopter activity were frequent, most bears would likely move

away from a locale. Most bears flee approaching helicopters in a full run. Brown bear "escape distance" would likely be greater than that in lowland habitat because of the open habitat.

Their second concern centers on the direct human intrusion into brown bear habitat when helicopters are used to transport hikers or for on-the-ground sightseeing activities. The reaction of some brown bears to humans in the alpine may differ from that of lowland habitats. Not all bears flee from a helicopter. A few brown bears charge the helicopters. Recreational hikers would likely use bear trails if they hiked alpine habitats because they are the easiest routes. If recreational activities were frequent, human/bear encounters would occur and some of these would be confrontational.

Project Effects

Kootznoowoo, Misty Fiords National Monument, South Baranof and Stikine-LeConte Wildernesses have 63 access areas which contain brown bear habitat. Twenty-one of these were identified as likely to have interactions between people and brown bears. Areas within alpine brown bear habitat are: KO-04, KO-05, KO-13, KO-69, KO-70, KO-71, KO-72, KO-73, KO-74 and KO-75. Areas with both spring and summer brown bear concentrations are: KO-20, KO-21, MF-71, MF-72 and MF-173. Areas with only summer brown bear concentrations are: KO-02, KO-03, SB-06, SL-09, SL-11 and SL-13.

Mountain Goat (*Oreamnos americanus*)

The mountain goat occurs in the Cascade Range and Rocky Mountains of western North America. In Southeast Alaska, goats are endemic to the mainland and were introduced to Baranof Island in 1954 and Revilla Island in 1983. One-third of the Alaskan mountain goat population is in Southeast Alaska. All are characterized by relatively short horns and a fondness for living in rugged terrain.

Habitat

There are about 3.1 million acres (excluding permanent ice fields and lakes) within occupied mountain goat habitat on the Tongass National Forest and 99 percent (3.0 million acres) are classified as roadless. Mountain goats are both grazing and browsing animals, depending on the particular habitat and season of the year. Goats have demonstrated a preference for shrub communities associated with south-facing avalanche slopes in the early spring (Schoen and Kirchoff 1982). As snow melts during the summer, goats move to higher elevation subalpine and alpine areas to feed on plants emerging from melting snow banks (Schoen and Kirchoff 1982).

During winter, use shifts to old growth forests but also includes subalpine forests. Behavioral strategies of goats to avoid predators dictates habitat use. Steep, broken terrain characterized by cliffs and escape terrain is often used. The need for escape terrain to be in close proximity to food resources is a critical factor in habitat selection by mountain goats.

Mountain goats are typically herd animals except during the kidding season, from mid-May through mid-June. During kidding season, pregnant females seek out isolated and secure pockets of good habitat to have their kids. Kidding areas are frequently found in the alpine and sub-alpine habitat. The female stays isolated for about two to four weeks after birth while the new-born becomes stronger. Disturbance during the kidding season is considered to be potentially harmful to kid survival.

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The quantity and quality of winter habitat is the most limiting factor for mountain goats in Southeast Alaska (Suring et al. 1988). Important environmental factors affecting habitat suitability and capability are described by Suring, et al. (1988) and are summarized as follows:

Cliffs. Cliffs must be present for an area to be used by mountain goats. Cliffs are defined as slopes greater than 50 degrees. The area within 1/4 mile of cliffs has the highest value to goats. Habitat value is lower from 1/4 to 1/2 mile from cliffs.

Location in Southeast Alaska. Habitat use by mountain goats differs between southern and northern Southeast Alaska. The dividing line between southern and northern is Frederick Sound. Non-forested alpine habitats in the northern part of the Forest have higher value than in the southern part because northern alpine habitats are blown free of snow and are available for use.

Aspect. South aspects have the highest value, north aspects the lowest value and east and west aspects intermediate values as habitat. Snow is deeper and persists longer on northern exposures. Southern aspects receive the highest amount of radiation from the sun, have the lowest snow depths and the shortest time covered by snow.

General Effects of Disturbance

Mountain goats are more sensitive to habitat change and hunting pressure than any other big game animal (Chadwick 1983). Studies throughout their range in North America have reported significant declines in populations of mountain goats following modifications of habitats and disturbance from human activities (Chadwick 1973, Quaedulieg et al. 1973, Kuck 1977, Phelps et al. 1983). Because goats select high, steep and broken terrain, they are very susceptible to disturbance by aircraft year-round. The Alaska Department of Fish and Game is recommending a 1500 foot stand-off distance to minimize disturbance.

Suring et al. (1988) estimated the effects of human development and access on winter habitats and populations (Table 4-3). They estimate that habitat capability is reduced with increasing human access and development. Reductions range from 10 to 40 percent depending on the type of development and the amount of human access.

Table 4-3. Effects of human disturbance on the habitat capability for Mountain Goats in Southeast Alaska.

Type of human access or development	Percent Habitat Capability Reduction
Public cabin, developed campground, seasonal camp within one mile of occupied habitat	10
Permanent camp/residence/float camp within one mile of occupied habitat	40
Permanent camp/residence/float camp within five miles of occupied habitat	10
Access point (airstrip, dock, floatplane lake) within one mile of occupied habitat	10
Road accessible to vehicles within two miles of occupied habitat	20

Type of human access or development	Percent Habitat Capability Reduction
Transportation link (ferry access/town) within two miles of occupied habitat	40
Trail or road access limited to hiking	10

Source: Suring et al. 1988

Project Effects

Access areas in Endicott River, Misty Fiords National Monument, South Baranof, Stikine-LeConte and Tracy Arm-Fords Terror wildernesses contain or are within one mile of goat habitat. Areas where mountain goats have been observed or that are within or very near prime goat habitat: EN-02, MF-31, SL-02, SL-04, SL-09, SL-11, SL-14, TA-23, TA-24 and TA-31.

Areas where mountain goat habitat is within one mile: MF-20, MF-89, MF-91, MF-92, MF-96, MF-98, MF-117, MF-162, SB-11, SB-14, SL-02, SL-05, SL-10, SL-11, SL-12, SL-13, SL-15 and SL-16.

Vancouver Canada Goose (*Branta canadensis fulva*)

The Vancouver Canada goose is a large subspecies of the Pacific Flyway group of Canada geese. The word *fulva* means rufous or tawny, describing the dark brown plumage of this bird. The breeding range of the goose extends from Cross Sound south to northern British Columbia. These geese are found in Southeast Alaska and most remain year-round.

Habitat

The islands of the Alexander Archipelago are the primary breeding ground for this species. Migration studies indicate that Vancouver geese are largely sedentary and remain near the breeding grounds throughout the year. The muskeg habitat of coastal Alaska supports breeding geese as does the low volume old growth in association with poorly drained soils, small wetlands and riparian areas. Nests are often made of sedges and grasses collected from the estuary. Nests have been found on Annette Island beneath lodgepole pines in muskegs, next to ponds, in unprotected sedge hummocks in an open muskeg and on small islands in beaver ponds. Meadow and marsh habitat associated with inland lakes is very attractive to geese for nesting and molting. Estuarine habitat is extremely important for geese providing resting and feeding opportunities of grasses, sedges and aquatic vegetation. Forests bordering beach fronts and grass flats in bays and inlets are also used by geese. Vancouver goose parents and young remain together on the wintering grounds and often return to nesting grounds together in spring. Prior to nesting, large winter flocks disperse out along the coast in small family groups.

General Effects of Disturbance

Evidence suggests that Vancouver Canada geese are often sensitive to disturbance (Doyle et al. 1988). Disturbance can affect productivity in a number of ways including nest abandonment, egg mortality due to exposure, increased predation of eggs and hatchlings, depressed feeding rates on wintering and staging grounds and avoidance of otherwise suitable habitats.

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Project Effects

The mouth of Endicott River (Lynn Canal), the flats associated with Sanford Cove (Endicott Arm), the estuary associated with St. James Bay, the tidal flats at the mouth of Chuck River, the head of Fords Terror and the Stikine River delta are areas of waterfowl and shorebird concentrations during spring and fall migrations. Travel to the Wilderness access areas will probably require passage over these areas. Migrating birds are often in a stressed condition and avoidance behaviors associated with aircraft harassment could result in a reduction of a bird's fitness, reducing its odds of surviving the migration or producing young that season.

Areas with high concentrations of waterfowl or other migratory birds during migrations include: KO-15, KO-20, KO-21, MF-31, MF-128, PC-01, PC-02, RF-03, SB-06, SB-14, SL-09 and SL-14. Areas with concentrations of Vancouver Canada Geese during summer molting are KO-15, KO-20 and KO-21. Areas with year-round concentrations of foraging Vancouver Canada Geese or other waterfowl are MF-31, MF-125 and MF-128.

Bald Eagle (*Haliaeetus leucocephalus*)

Found only in North America, bald eagles are more abundant in Alaska than anywhere else in the United States, making it a common resident along coastal Southeast Alaska. In British Columbia and Alaska, areas of extremely high density, there may be as many as 50,000 eagles. The eagle is one of state's most magnificent birds of prey.

Habitat

Bald eagles breed in the coniferous rain forest of coastal Southeast. Although nests may be inland, they are generally located within 200 yards of the shoreline. Breeding pairs prefer inlets, broken shorelines and broad channels. Prominent points and small offshore islands are favored. Eagles feed mainly on fish sighted from their perches throughout the year. Beaches and shorelines provide a variety of perching and nest sites.

Old-growth is important nesting habitat, providing large limbs to secure nests of enormous proportion. Trees having these features are most often live-topped, old Sitka spruce. Hodges and Robards (1981) reported average age and diameter of nest trees were 400 years and 3.6 feet respectively. A small percentage of eagle nests are located along major river drainages on the mainland of Southeast, usually in cottonwood trees. Nesting in Southeast begins in early April and young are normally fledged by September. Winter and early spring activities are not well known. However, a majority of the birds remain in Southeast and migrate to areas of where food is available.

General Effects of Disturbance

Human disturbance factors can seriously impact both nesting and wintering bald eagle populations. Tolerance of disturbance may vary between individual birds or groups of birds from one area to the other. Birds in areas with little historical disturbance and birds of older age seem to be most affected by human activities. Human activity near nest sites may result in reproductive failure by bald eagles. Disturbances are most critical during the egg-laying and incubation stages of nesting. Eagles which incubate eggs without disruption are likely to produce more young than birds that are disturbed (Fraser 1981). Eagles that are disturbed and leave their nests may inadvertently break eggs or injure the young, and their prolonged absence could result in chilling of the egg or young.

Tenacity to a nest site is weakest in late winter or early spring when a pair first establishes a territory. Disturbance of even limited duration at that time may cause desertion of the site. Nest abandonment can occur at any time as the result of frequent and persistent disturbance (Fyfe and Olendorff 1976). Because disturbance can be cumulative in nature, the effects of helicopter landings, coupled with other human activities, have the potential for adverse impacts to bald eagles. Eagles vary considerably in their responses to human activity. Some pairs will tolerate constant activity near the nest territory; others are not as tolerant and will abandon. Wintering bald eagles also may be adversely affected by human activity (Knight 1981, Russell 1980, Servheen 1975, Skagen 1980, Stalmaster and Newman 1978). Stalmaster found that eagles in northwest Washington avoided areas of high human activity and their feeding behavior was disrupted by human presence.

Project Effects

RF-24 and TA-24 have not been completely surveyed for eagle nests and are in preferred nesting habitat.

Northern Goshawk (*Accipiter gentilis*)

The northern goshawk is a medium to large forest dwelling hawk. Three subspecies breed in North America. Information to date suggests that the Queen Charlotte subspecies is distinct in the Queen Charlotte Islands and southern Southeast Alaska. Owing to its restricted distribution and low natural densities, its population was never great. The northern goshawk is essentially nonmigratory and a rare resident in Southeast Alaska.

The U.S. Fish and Wildlife Service (1995) has designated the northern goshawk (including all three subspecies) as a species of concern in the United States. In the spring of 1991, the Ketchikan Area of the Tongass National Forest and the Alaska Department of Fish and Game initiated a cooperative project to study raptors, with emphasis on the northern goshawk.

Habitat

Literature is relatively uniform in regards to the patterns of habitat use of the northern goshawk. The goshawk has long been recognized as dependent upon extensive forests and large stands of "heavy" timber (Bent 1937:127-128). Preferred habitat during the breeding season is older, tall forests where goshawks can maneuver in and below the canopy while foraging and where they can find large trees in which to nest (Reynolds 1989:97). Goshawks generally select forest stands with large trees on gentle slopes at lower elevations for nesting and foraging. Breeding records have been recently documented for the Ketchikan Area. Home ranges for these birds are thought to be large and may include a mosaic of habitat types that are used opportunistically (Reynolds 1989). Pairs usually have home ranges between 4,000 acres and 10,000 acres (Interagency report, 1992). It is thought that home range is strongly dependent upon the quality of the foraging habitat and prey availability (Kenward 1982).

General Effects of Disturbance

Goshawks defend an area of approximately 20 to 25 acres around each of their nests against humans (Reynolds 1983). They are very sensitive to human disturbance. Both short and long term effects of human disturbance on birds of prey have been studied. Changes in density and species composition (Craighead and Mindell 1982) and in population size and nesting distribution (Swenson 1979) have all been attributed to

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increased human activity. Nesting failures (Boeker and Ray 1971), lowered nesting success (Wiley 1975) and impacts on wintering distribution and behavior (Stalmaster and Newman 1978) have also occurred as a result of increased human activity.

Project Effects

Access areas MF-7 and MF-125 are locations of goshawk sightings and potential nest sites. Access areas MF-89 and MF-131 are locations of historical sightings or possible nest sites of the northern goshawk.

Marbled Murrelet (*Brachyramphus marmoratus*)

The murrelet is a robin-sized seabird that belongs to the family Alcida. It is found throughout the North Pacific, with two subspecies: the Asiatic and North American. The North American ranges from the Aleutian Islands, Kodiak Island and Kenai south to central California. The species typically feeds in ocean waters within one mile of shore (Marshall 1988). They nest from Southeast Alaska to central California in old-growth and mixed stands of mature coniferous forests within 50 miles of ocean waters (Carter and Sealy 1986). The species was listed as threatened in Oregon, Washington and California on September 28, 1992. It is also threatened in British Columbia and is considered to be a species of concern throughout its range in Alaska (USDI 1995).

Habitat

Marbled murrelets have been shown to be closely associated with older-aged coniferous forests of the coastal temperate rain forest. Unlike most members of the seabird family, murrelets nest in trees. Only 26 tree nests have been located in the world. Data gathered over the past 10 years shows murrelets nest in old-growth and mature coniferous forests in most of their range. A tree nest was located on Prince of Wales Island, in July, 1992. Except for the fall period when they are molting, flightless and stay on the ocean, birds have been known to fly to tree stands during every month of the year and have been found 25-50 miles inland. Foraging activities take place on the water, dependent upon the availability of food. Murrelets are observed in sheltered bays, fiords, estuaries, lakes and ocean environments throughout the year.

General Effects of Disturbance

Murrelets are believed to be sensitive to disturbance during nest initiation and incubation. Alcids initiate egg laying at the beginning of April and lay eggs as late as July. Incubation lasts for 30 days. Preventing disturbance at this time will minimize effects on murrelet productivity (Ralph et al. 1995) by preventing nest abandonment, egg mortality due to exposure, increased predation of eggs and hatchlings, depressed feeding rates and avoidance of habitats.

Though nest sites are in forested areas, murrelets fly to coastal waters, to forage and feed their nestlings. Disturbance at feeding sites could affect murrelet productivity. Cumulative impacts from cruise and recreational boat traffic, floatplane landings, helicopter landings and incidental accidental loss in commercial fishing gear could be significant.

Project Effects

Access area MF-36 is a known location of high densities of marbled murrelets. Landings at this location may disturb the nesting murrelets. However, this disturbance is not likely to cause any a significant effect on the murrelet population on the Tongass. Project effects on marbled murrelets are considered to be low.

Osprey (*Pandion haliaetus*)

The osprey are members of a highly specialized group of fish-eating hawks. They are found throughout the world and occasionally in Alaska along lakes, rivers and coastlines south of the Brooks Range. Ospreys are neotropical migrants, breeding in North America and wintering in Central and South America. They are a rare migrant in southern Southeast Alaska and a rare breeder along the coastal and mainland ecosystem.

Habitat

Ospreys occur chiefly near lakes, rivers, sloughs and protected coastal waters including lagoons, bays and inlets. On the coast, the first spring migrants may be seen in late February, but most arrive during April. In autumn, the southward movement begins in September and by mid-October most have departed. Breeding records have been documented by Canterbury for Lava Lake, Unuk River and birds have been seen in summer on Orchard Lake on Revilla Island. Breeding habitat is near lakes, in trees along the shore, or on wooded islands.

General Effects of Disturbance

Ospreys are highly specialized birds, sensitive to environmental degradation. They are similarly susceptible to disturbances which keep adults from their nests. Disturbance can affect productivity in a number of ways including nest abandonment, egg mortality due to exposure, increased predation of eggs and hatchlings, depressed feeding rates on breeding grounds and avoidance of otherwise suitable habitats. The Proposed Revised Forest Plan (USDA Forest Service 1991a) established a nest zone of 330 feet and would regulate Forest Service activities with 1/2 mile of nests from April 15 to September 1.

Project Effects

MF-34 and PC-02 are areas where ospreys have been sighted historically during the summer, suggesting breeding territories.

Peale's peregrine falcon (*Falco peregrinus pealei*)

The Peale's peregrine falcon is a crow sized falcon which breeds on the humid islands off Alaska and British Columbia. The peregrine is the fastest and fiercest of the birds of prey. As extremely fast-flying birds, peregrines, not surprisingly, have very large home ranges and territories and a consequent low population density throughout their range.

Habitat

The peregrine breeds along the outer and inner coast; populations are localized in the vicinity of colonial nesting seabirds. In Alaska, Murie found peregrines feeding on seabirds and gulls. The most common habitat characteristic of this species is the presence of tall cliffs which serve both as nesting and perching sites. The nest site component

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requires the presence of ledges, potholes, or small caves that are relatively inaccessible to mammalian predators and provide protection from rain and excessive heat and cold. A source of water (river, coast, lake, marsh) is almost always close to the nest site, probably in conjunction with an adequate prey base. Other nest sites have been found on benches of rocky bluffs and abandoned nests of pelagic cormorants, bald eagles and ravens.

General Effects of Disturbance

Human activities can affect both raptor behavior and breeding success. Raptors can be affected during the nesting cycle, or outside the season in areas important for feeding and roosting. Recreational activities have affected hawks (Wiley, 1973), accipiters (Hennessy 1978, Lee 1981, Hall 1984), prairie falcons (Boyce 1977, 1988), gyrfalcons (Platt 1977) and ospreys (Swenson 1979).

Raptors can react in one of three ways to disturbance: no behavioral response; secretive behavior or avoiding the nest to prevent detection of reproductive effort or perceiving the disturbance as a threat to their reproductive effort and showing a defensive behavioral response. The reaction to disturbance may be related to the strength of the stimulus or its perception which may change over the course of the nesting cycle (Montgomerie and Weatherhead 1988). Falcons disturbed by human activities may be flushed more frequently and relocate more often than those not exposed to such activities. The effects of relocation on reproductive success is unclear, but disturbance activities may put the falcon on alert, resulting in reduced parental care and lower quality offspring. Nesting raptors spend much time perched in their nesting territories. Falcons disturbed by human activities may avoid the nesting territory for fear of exposing the nest. Thus, the birds would spend less time perched in the nest territory.

These disturbance factors cannot be examined alone. Helicopter landings coupled with recreational boating, commercial fishing on the outside islands, logging activities and increased human activities in southern Southeast may pose a significant cumulative impact. These factors again coupled with low population density require careful examination of activities that effect the peregrine falcon.

Project Effects

MF-173 is an area with historical summer sightings which may suggest a breeding territory nearby.

Trumpeter Swan (*Cygnus buccinator*)

The trumpeter swan is the world's largest member of the waterfowl family. Formerly, the trumpeter occupied a breeding range over much of northern North America. By 1932, 69 trumpeters were known in the wild. In 1980, the U.S. Fish and Wildlife Service counted 7,696 birds in Alaska's boreal forest region from Yakutat to the Yukon River. The Pacific Coast population of trumpeter swans breeds in the interior and coastal south central Alaska and winters along the coast from Alaska south to Oregon. On the coast of Southeast Alaska the swan is a common to locally abundant winter visitor. The first large number of wintering trumpeters was reported by Gabrielson (1946), who found over 300 birds on Prince of Wales Island and the Cleveland Peninsula on March 10, 1944.

Habitat

On the coast in winter, swan habitat includes estuaries, sloughs, bays and lakes. Movements between habitats are common. Swans arrive along the coast as early as September and begin to leave coastal areas in late February and early March, the main exodus over in early April. A few non-breeding birds are scattered along the coast in summer. Breeding records have been documented by Gabrielson for southern Southeast Alaska on the Cleveland Peninsula and Naha, Revilla Island. Breeding habitat is forested and includes large and small, shallow, fresh water lakes with emergent vegetation and occasionally marshes along rivers. Summer trumpeter swan surveys have identified swans on Manzanita Lake, Revilla Island. These may be non-breeding birds which scatter along the coast in summer or they may be breeding swans.

General Effects of Disturbance

Trumpeter Swans are believed to be very sensitive to a variety of human activities. Intrusions by humans at nesting grounds have caused temporary and permanent nest abandonment as well as movements from breeding or staging areas (Banko 1960, Hansen et al. 1971, Page 1976, Shea 1979, Bangs et al. 1982). Disturbance can affect productivity in a number of ways including nest abandonment, egg mortality due to exposure, increased predation of eggs and hatchlings, depressed feeding rates on wintering and staging grounds and avoidance of otherwise suitable habitats. The Draft Proposed Forest Plan (USDA Forest Service 1991a) recommends avoiding disturbance to trumpeter swans during nesting, brood-rearing and winter periods. It requests a separation of 1/2 mile between nest sites, wintering swans and human activities, taking all practicable measures to minimize disturbance.

Project Effects

Access areas MF-31, MF-36, MF-41, MF-104, MF-107, PC-01 and PC-02 are traditional wintering areas for Trumpeter Swans. MF-107 is a possible breeding site.

Wolf (*Canis lupus*)

Wolves were at one time widely distributed in the northern hemisphere. Within Alaska, the Alexander Archipelago wolf (*C. l. ligoni*) is considered a separate subspecies (Pedersen 1982). Its range includes the islands south of Frederick Sound and the narrow mainland strip of land lying west of the Coast Mountains and extending from Dixon Entrance north to Yakutat (Hall 1981). The total population is about 680 (Morgan 1990). These wolves probably represent remnant populations of a type that once populated the coastal rain forests of southwestern British Columbia, Oregon and Washington. Wolves are most abundant in southern Southeast including Prince of Wales Island, Revilla Island and Cleveland Peninsula.

Habitat

In Southeast Alaska, wolves make use of a variety of habitats. Deer are the primary prey on most of the islands and selected mainland areas, whereas on the mainland the primary prey are goat, beaver and moose. Research on the ecology and habitat requirements of Alexander Archipelago wolves is limited. Because of the highly dissected, discontinuous nature of its island habitat, pack sizes, territories and movement patterns are probably smaller than those of mainland wolves.

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General Effects of Disturbance

Little is known about the effects of disturbance on wolves. Because of their curious nature, there have been documented accounts of wolves watching planes land and boats arrive on the beach, without incident. Continuous use of a site for landings would most likely lead to abandonment of the site by wolves. Infrequent landings may or may not have that effect.

Project Effects

MF-125 is an access area with documented sightings in 1991 and 1992.

Harbor Seals and Sea Lions

Haulouts are necessary to critical annual life cycles of the harbor seal beginning in May with birthing followed by suckling, weaning, mating and molting through August. Harbor seals are considered by the National Marine Fisheries Service to be susceptible to disturbance when hauled out. Effects of these disturbances may include separation of mothers and pups, decreased nursing, disturbance of mating and inhibition of the molt. Seals and sea lions are found within Kootznoowoo, Misty Fiords National Monument, Russell Fiord, South Prince of Wales, Stikine-LeConte and Tracy Arm-Fords Terror Wildernesses. No access areas are proposed within 1,000 feet of any harbor seal or sea lion haulout.

Project Effects

No access areas are proposed within 1,000 feet of any harbor seal or sea lion haulout.

Overflight Impacts on Threatened, Endangered or Sensitive Species

Wildlife managers have cited concern for threatened, endangered or sensitive species regarding impacts from flights over humpback whales, harbor seals, Steller sea lions, marbled murrelets, peregrine falcons and least terns (USDI 1993). The impacts on threatened, endangered or sensitive species from overflights is largely unknown. The sea lion, harbor seal and peregrine falcon have been studied regarding their responses to aircraft overflights. None of these species have been studied enough to differentiate between aircraft activities that do and do not cause harm (USDI 1994). However, observations do indicate that some species are susceptible to disturbance and subsequent harm. The harbor seal, for example, has been noted to panic and flee haulout areas from overflights (Johnson 1976).

Wildlife Effects by Alternative

Alternative 1, No Action

There would be no additional impact to all species beyond those described in Chapter 3.

Alternative 2, Proposed Action

Brown Bear: Four access areas have potential to affect brown bear; including two in Kootznoowoo, one in Misty Fiords National Monument and one in Stikine-LeConte. This alternative is considered to have low impacts for brown bear.

Mountain Goat: Thirteen access areas occur within occupied mountain goat habitat: one in Endicott River, eight in Misty Fiords National Monument, four in Stikine-LeConte and one in Tracy Arm-Fords Terror. No landings will be allowed from May 15 to June 15 at

these access areas to minimize disturbance during mountain goat kidding. There would be negligible impacts to mountain goats.

No impacts on other species of wildlife are likely under Alternative 2.

Alternatives 3A and 3B

Access areas that could affect wildlife are same for both alternatives. Differences between these alternatives are due to the number of landings and associated human use of the access areas. Alternative 3A has a total of 65,165 proposed landings; 4,050 landings in Endicott, 4,455 landings in Karta River, 14,340 landings in Kootznoowoo, 24,025 landings in Misty Fiords National Monument, 500 landings in Petersburg Creek-Duncan Salt Chuck, 2,835 in Russell Fiord, 3,990 landings in South Baranof, 810 landings in South Etolin, 810 landings in South Prince of Wales, 6,420 landings in Stikine-LeConte, 2,430 landings in Tracy Arm-Fords Terror and 500 landings in West Chichagof-Yakobi. There could be multiple landings nearly every day under this alternative. There could be as many as 36 or more people visiting a site in a single day.

Alternative 3B would likely have infrequent landings because the number of landings is limited to historical use, a maximum of 25 landings per access area a year. Alternative 3B has a total of 1325 proposed landings; 90 landings in Endicott, 30 landings in Karta River, 430 landings in Kootznoowoo, 270 landings in Misty Fiords National Monument, 50 landings in Petersburg Creek-Duncan Salt Chuck, 100 in Russell Fiord, 35 landings in South Baranof, five landings in South Etolin, 10 landings in South Prince of Wales, 155 landings in Stikine-LeConte, 100 landings in Tracy Arm-Fords Terror and 50 landings in West Chichagof-Yakobi.

Brown Bear: Twenty-one access areas have potential to affect brown bear; including 14 in Kootznoowoo, three in Misty Fiords National Monument, one in South Baranof and three in Stikine-LeConte.

Because of frequency of use and numbers of visits, Alternative 3A has the most potential to increase the number of brown bears killed in defense of life and property. The moderate to high use that would occur nearly every day would cause bears to shift their spatial and/or temporal patterns. Some bears would move away from the access areas and there would be short-term shifts in their use of alpine habitats (ADF&G 1992). Because of the numbers of visits and related activities such as hiking, overnight camping, etc. bear-human encounters are likely to increase proportionally. An unknown number of bears may have to be shot in defense of life and property. Because of the shifts in uses of alpine and grass flat areas and the potential for increases animals killed in defense of life and property, this alternative would be is considered to have moderate impact.

Alternative 3B is likely to be infrequent use which will occur throughout most the entire year. Because of the limited amount of use, there would be fewer landings in critical habitat or during important seasonal use periods. This alternative would have low impact to brown bears.

Mountain Goat: Twenty-six access areas have the potential to affect mountain goats in five Wildernesses: one in Endicott River, nine in Misty Fiords National Monument, two in South Baranof, 11 in Stikine-LeConte and three in Tracy Arm-Fords Terror.

Alternative 3A would have the highest likelihood of disturbing or displacing mountain goats because of the potential for multiple daily landings and the potential of up to 810

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landings annually. No landings are allowed at these access areas between May 15 and June 15 annually, which coincides with the kidding period for mountain goats. This alternative is considered to have a low impact with the seasonal limitations recommended.

Alternative 3B limits the number of landings to historical levels. With fewer than twenty-five landings occurring throughout the year, the likelihood of disturbance or displacement is reduced proportionally. No landings are allowed in these access areas between May 15 and June 15 annually which coincides with the kidding period for mountain goats. This alternative is considered to have a low impact with seasonal limitations.

Vancouver Canada Goose: Twelve access areas in six Wildernesses have the potential to affect Vancouver Canada geese: three in Kootznoowoo, two in Misty Fiords National Monument, two in Petersburg Creek-Duncan Salt Chuck, one in Russell Fiord, two in South Baranof and two in Stikine-LeConte. It is recommended that no landings in these access areas be allowed from March 1 to May 31 and from September 1 to October 15. Both Alternatives 3A and 3B are considered to have low impact to Vancouver Canada geese with seasonal limitations.

Bald Eagle: Two access areas were proposed where there were no eagle nest inventories. Until an inventory is conducted and it is determined that there are no active nests present, no landings would be authorized between April 1 and September 15. Both alternatives 3A and 3B are considered to have negligible impacts on bald eagles.

Alternative 4

Alternative 4 proposes helicopter access to developed sites. In most instances, the use of helicopters to reach the Wilderness cabin sites and other developed sites would occur instead of using a floatplane.

Brown Bear: Five access areas have potential to affect brown bear, including three in Kootznoowoo, one in South Baranof and one in Stikine-LeConte. Alternative 4 has a low potential to increase the number of bears killed in defense of life and property because it involves access to the same place by a different mode of access. This alternative is considered to have a low impact on brown bears.

Mountain Goat: Seven access areas have the potential to affect mountain goat: two in Misty Fiords National Monument, two in South Baranof and three in Stikine-LeConte. It is recommended that there be no landings these access areas between May 15 and June 15 annually, which coincides with the kidding period for mountain goats. Alternative 4 would have a high likelihood of disturbing or displacing mountain goats because of the potential for multiple daily landings and the potential for up to 810 landings annually at some access areas. This alternative is considered to have a low impact for mountain goats with the seasonal limitations recommended.

No other impacts to wildlife are anticipated from Alternative 4.

Alternative 5

Alternative 5 would likely have infrequent landings because the number of landings is limited to historical use, a maximum of 25 landings an access area per year. Alternative 5 has a total of 435 proposed landings: 80 in Endicott, 180 in Kootznoowoo, 70 in Misty Fiords National Monument, 55 in Stikine-LeConte and 50 in Tracy Arm-Fords Terror.

Brown Bear: Eleven access areas have potential to affect brown bear including eight in Kootznoowoo and three in Misty Fiords National Monument. Because of infrequent use and numbers of visits, Alternative 5 has a low potential to increase the number of bears killed in defense of life and property. This alternative would be considered to have a low impact on brown bears.

Mountain Goat: Nine access areas have the potential to affect mountain goats: four in Misty Fiords National Monument, three in Stikine-LeConte and two in Tracy Arm-Fords Terror. Alternative 5 limits the number of landings to historical levels. With fewer than 25 landings occurring throughout the year, the likelihood of disturbance or displacement is reduced proportionally. It is recommended that there be no landings in these access areas between May 15 and June 15 annually which coincides with the kidding period for mountain goats. This alternative is considered to have low impact with seasonal limitations.

No other impacts to wildlife are anticipated from Alternative 5.

Alternative 6

Alternative 6 has a total of 49,775 proposed landings: 1,215 in Endicott, 4,455 in Karta River, 8,670 in Kootznoowoo, 18,355 in Misty Fiords National Monument, 500 in Petersburg Creek-Duncan Salt Chuck, 2,835 in Russell Fiord, 3,990 in South Baranof, 810 in South Etolin, 810 in South Prince of Wales, 6,015 in Stikine-LeConte, 1,620 in Tracy Arm-Fords Terror and 500 in West Chichagof.

Brown Bear: Eight access areas have potential to affect brown bear including four in Kootznoowoo, one in South Baranof and three in Stikine-LeConte.

Because of frequency of use and numbers of visits, Alternative 6 has a high potential to increase the number of bears killed in defense of life and property. The moderate to high use that would occur nearly every day would cause bears to shift their spatial and/or temporal patterns. Some bears would move away from access areas and there would be short-term shifts in their use of alpine habitats (ADF&G 1992). Because of the numbers of visits and related activities such as hiking, overnight camping, etc. bear-human encounters are likely to increase proportionally. An unknown number of bears may have to be shot in defense of life and property. Because of the shifts in uses of alpine and grass flat areas and the potential for increases in kills in defense of life and property, this alternative is considered to have moderate impact.

Mountain Goat: Nineteen access areas have the potential to affect mountain goats in five different Wildernesses: one in Endicott River, five in Misty Fiords National Monument, two in South Baranof, ten in Stikine-LeConte and one in Tracy Arm-Fords Terror. Alternative 6 would have a high likelihood of disturbing or displacing mountain goats because of the potential for multiple daily landings and the potential for from 405 to 810 landings annually. It is recommended that there be no landings in these access areas between May 15 and June 15 annually, which coincides with the kidding period for mountain goats. This alternative is considered to have a low impact with the seasonal limitations recommended.

Vancouver Canada Geese: Twelve access areas in six Wildernesses have the potential to affect Vancouver Canada geese: three in Kootznoowoo, two in Misty Fiords National Monument, two in Petersburg Creek-Duncan Salt Chuck, one in Russell Fiord, two in South Baranof and two in Stikine-LeConte. Seasonal restrictions from landing in these

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access areas are recommended from March 1 to May 31 and from September 1 to October 15. Further site-specific restrictions may be necessary to implement the Forest-wide standards and guides proposed in TLMP. Alternative 6 is considered to have a low impact to Vancouver Canada geese with seasonal limitations.

Bald Eagle: Two access areas were proposed where there were no eagle nest inventories. A seasonal landing restriction for these areas is recommended until an inventory is conducted and it is determined that there are no active nests present. Alternative 6 is considered to have negligible impacts.

No other wildlife species are likely to be affected by Alternative 6.

Alternative 7

Four access areas have the potential to affect mountain goats in two different Wildernesses: three in Stikine-LeConte and one in Tracy Arm-Fords Terror. Alternative 7 would have a low likelihood of disturbing or displacing mountain goats during the kidding season. This alternative is considered to have a low impact for mountain goats without seasonal limitations for landings.

Summary of Wildlife Effects

Effects on brown bears are expected to be low under three alternatives (alternatives 2, 4 and 5) and moderate under three (alternatives 3A, 3B and 6). No effects to brown bears are expected under alternatives 1 or 7. Effects on mountain goats would be negligible to low with mitigation in all action alternatives. In three alternatives (alternatives 3A, 3B and 6), effects to Vancouver Canada geese would be low with mitigation; no effects are expected in the other alternatives. Negligible impacts to other species are expected under any alternative.

There would be no significant changes to wildlife **habitat** as a direct result of helicopter landings. Indirect effects to **wildlife** would result as a consequence of increased human presence. The most significant effect is likely to be an increase in human-bear encounters.

Cultural Resources

Issue

Helicopter access and increased visitation in Wilderness could adversely affect the integrity of cultural resources eligible for the National Register of Historic Places. Helicopter access and increased visitation may affect yet undiscovered cultural resources. There may also be opportunities to enhance public understanding of cultural resources. Potential direct effects (physical, auditory, visual, spiritual) and indirect effects (looting, vandalism, unintentional damage) were concerns.

Cultural Resource Effects

The Wilderness Act defines Wilderness as areas "untrammelled by man," with the "imprint of man's work substantially unnoticeable." People have been living in these areas for thousands of years before their designation as Wilderness. The "imprint," perhaps unnoticeable to some, is quite visible to others. Cultural resources within Southeast Alaska and Tongass National Forest Wildernesses may reveal important information on past environmental conditions and human lifestyles, including information related to the first entry of people along the north Pacific Rim. These resources are fragile and easily damaged. They are also nonrenewable. Direct or primary impacts to cultural resources include alteration to the settings of sites; alteration of above ground objects, features and structures and the spatial relationships among them; and disturbance or destruction of

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subsurface cultural deposits. Indirect or secondary impacts include a higher frequency of site looting and vandalism due to increased human access to otherwise remote areas.

Federal laws and regulations require processes for considering the impacts of Federal projects or projects permitted by Federal agencies on significant cultural resources. Major legislation related to these processes includes the National Historic Preservation Act, as amended; the Archaeological Resources Protection Act, as amended; the American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act. Section 106 of the National Historic Preservation Act (and the regulations in 36 CFR 800) outlines a process for evaluating the effects Federal projects may have on cultural resources. It involves inventorying cultural resources, determining which are significant or eligible for the National Register of Historic Places (National Register), evaluating project effects and designing and implementing measures to negate any adverse effects that projects may have upon significant cultural resources. This process is undertaken in consultation with the Alaska State Historic Preservation Officer and sometimes with the Advisory Council on Historic Preservation, an independent Federal Agency.

Potential impacts from helicopter access can originate from helicopters themselves and from people transported by them. Helicopter landings may lead to damage of the ground and subsurface from compaction, soil erosion, burned vegetation and fuel spills. These possible impacts may occur more frequently at access areas that experience high levels of use. Impacts may also occur more frequently in access areas that are relatively small, where landings will be concentrated in the same spot. Repeated landings may lead to soil compaction that could affect the integrity of buried cultural deposits. Repeated landings may also cause or exacerbate existing soil erosion resulting in loss of important artifacts and other scientific data. Accidental fuel spills, although not likely to occur, could be absorbed into the soil and later cause faulty radiocarbon or aspartic acid dating determinations of buried cultural material. Effects on the soil may range from short-term to long-term duration. The effects of helicopter landings will probably increase over time unless impacts are sporadic and time is available for impacts to reverse. The potential for impacts from helicopters is probably very low and definitely less than from people.

Noise and visual impacts from helicopters may adversely affect the sacred nature of certain heritage sites, although these impacts may be of a short term, perhaps seasonal duration. Wildernesses can offer visitors a visual and audible environment similar to that before historic development and the use of mechanized power. Audible helicopter sounds might affect the feeling and association of cultural resources, qualities that make a site eligible for listing in the National Register. The sound of aircraft (both fixed wing and helicopters) can affect the solemnity and natural quiet of sacred cultural sites. The natural quiet of many coastal Wildernesses is already affected by aircraft and motorboat noise.

Southeast Alaska's indigenous people have traditionally used many sites that are now within Wilderness boundaries for sacred or subsistence purposes. It is difficult, if possible, to separate sacred and subsistence sites since subsistence activities often occur in a religious or spiritual context. Introduction of non-indigenous sights and sounds may affect the success of traditional cultural practitioners while performing certain ceremonies or activities at those sites. Researchers (e.g., Greider 1993) have documented disruption of Native American traditional practices by aircraft overflights. The degree to which Alaska Natives may feel disruption is speculative at this point, but at least one comment received during public scoping suggests a concern.

Potential for adverse effects increases with the number of landings at any given access area. Those alternatives that maintain historic use levels pose less potential for impacts

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than those that use ROS guidelines. A comparison of Alternative 3A and Alternative 3B illustrates the potential differences in use levels. Alternative 3B, which maintains historic levels, allows a maximum potential of 25 landings per year at some access areas. Alternative 3A, which uses ROS guidelines, allows a maximum potential of 810 landings per year at the same access areas. Using the assumption of six people per landing, the difference in number of people landing in these areas ranges from a maximum potential of 150 people per year in Alternative 3B to a maximum potential of 4,860 people per year in the same access areas under Alternative 3A. Use of ROS guidelines to set maximum use levels presents a greater potential impact for ground disturbance than historic use levels.

Helicopters increase opportunities for people to visit areas that otherwise may be difficult to reach. Increased Wilderness use may enhance understanding of cultural resources if interpretation and education are provided. On-site interpretation is generally discouraged in Wildernesses. Off-site interpretation and education, especially with outfitter-guides, could reduce potential adverse impacts and lead to increased reporting of newly discovered sites.

The type of activity that will occur on or near an access area affects the potential for adverse impacts. For example, people fishing at a remote salmon stream for short periods will generally have less potential impact to cultural resources than people camping and beach combing. Camping could lead to ground disturbance such as campfire construction and excavation of pits for human waste disposal. Low-impact camping techniques would probably lessen ground disturbance and potential site impacts. Human impacts may not be limited to the immediate access areas. Impacts could potentially spread out past the access area's periphery. Increased pedestrian traffic over a fragile archaeological site can lead to irreparable damage, either by soil compaction or erosion.

Increased visitation may lead to destruction of significant cultural resources either inadvertently--such as through compaction and erosion or intentionally by vandalism and looting. Intentional vandalism may include defacing ancient rock art, application of modern graffiti to above ground historic structures and intentional damage to or destruction of other cultural features. The difference between this type of vandalism and others is that the damage is generally irreversible. Valuable scientific information and a piece of our national heritage are lost forever. Site looting might include removal of items for personal and/or financial gain. Studies suggest that looting most often occurs in isolated areas, such as Wildernesses, where law enforcement presence is minimal and the likelihood of witnesses and discovery is low (Christensen et al. 1992).

The cultural resource analysis began by reviewing the existing cultural resources site inventory that includes both recorded and reported sites. Presence or absence of cultural resources listed in or considered eligible for the National Register was then used as an analysis criterion. Archaeologists then evaluated all the access areas to determine their placement in a model used to predict the probability of cultural resources.

The high probability zone means all areas between mean low water and 100 feet in elevation. The high probability zone also includes mineralized areas; river and lake systems that provide passage to larger land masses; streams and lakes with anadromous fish runs; fossil marine, river and lake terrace systems; karst landforms; areas associated with traditional cultural myths and legends and raw material sources such as cedar stands and obsidian deposits. Everything not defined as high probability is considered in the low probability zone.

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Archaeologists conducted cultural resource field surveys of 61 helicopter access areas, either because of this or previous projects. They targeted for field survey those helicopter access areas that are within the high probability zone. Archaeologists surveyed access areas that appeared to have the highest site potential. The surveys were limited to areas within the larger access area that were likely helicopter landing spots. Some access areas are in places that were previously surveyed for cultural resources. Table 4-4 lists those access areas that have had a cultural resource field survey and in which alternative(s) they are being considered. The table includes access areas that archaeologists surveyed for this or a previous project. The table does not include those access areas that operators proposed but were later dropped due to the field discovery of sites potentially eligible for the National Register.

Table 4-4. Access areas surveyed for cultural resources by alternative.

Access Area	Alt. 2	Alt. 3A/B	Alt. 4	Alt. 5	Alt. 6	Alt. 7
EN-05 Endicott River		X		X		
EN-10 Lower River Gravel		X			X	
KA-03 Black Bear Lake		X			X	
KA-08 Karta Creek		X			X	
KA-09 Flagstaff Creek		X			X	
KA-13 Karta Lake North		X			X	
KO-15 King Salmon River		X	X		X	
KO-20 Windfall Harbor		X			X	
KO-21 Windfall Harbor		X			X	
KO-25 Thayer Lake		X	X		X	
KO-28 Hasselborg Lake		X	X		X	
KO-29 Hasselborg Lake		X	X		X	
KO-33 Distin Lake		X	X		X	
KO-34 Davidson Lake		X	X		X	
KO-36 Lake Alexander		X	X		X	
KO-46 Gambier Bay		X	X		X	
MF-20 Orchard Creek	X	X			X	
MF-31 Lake Grace		X			X	
MF-33 North Mirror Lake	X	X			X	
MF-35 South Mirror Lake		X				
MF-36 Ella Lake		X			X	
MF-38 Big Goat Lake		X			X	
MF-39 South Wilson Lake		X	X		X	
MF-40 Steep Point	X	X			X	
MF-41 Winstanley Lake		X			X	
MF-46 Bakewell Lake		X			X	
MF-50 Bass Point	X	X			X	
MF-56 Humpback Lake		X			X	
MF-57 Humpback		X	X		X	
MF-98 East Lake Grace	X	X	X		X	
MF-104 W. Manzanita Lk.		X	X		X	
MF-105 Manzanita Lake		X	X		X	
MF-107 S. Manzanita Lake		X	X		X	
MF-108 E. Manzanita L.	X	X			X	

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Access Area	Alt. 2	Alt. 3A/B	Alt. 6	Alt. 5	Alt. 6	Alt. 7
MF-109 Mirror Lake		X			X	
MF-110 Ella Bay		X	X		X	
MF-117 Big Goat Lake	X	X	X		X	
MF-124 Wasp Cove	X	X			X	
MF-125 Third Lake		X			X	
MF-131 Mesa Lake		X			X	
MF-133 Tombstone Bay	X					
MF-134 Dome Creek	X	X		X		
MF-148 Mid Reef Lake		X	X		X	
MF-154 Hugh Smith Cabin		X	X		X	
MF-166 Mid Humpback C.		X			X	
MF-167 Billy Goat		X			X	
MF-168 Peninsula Lake	X	X			X	
PC-01 Petersburg Creek		X	X		X	
PC-02 E. Salt Chuck Cabin		X	X		X	
RF-24 Cape Enchantment		X			X	
S-03 North Klakas Lake		X			X	
S-20 Hessa Inlet	X	X			X	
SL-05 Red Slough		X	X		X	
SL-09 Mallard S. Cabin	X	X	X		X	
SL-10 Jap Creek		X			X	
SL-11 Andrews Slough		X			X	
SL-12 Twin Lakes Cabin		X	X		X	
SL-13 North Arm Creek		X			X	
TA-17 Fords Terror		X			X	
TA-24 Fords Terror North		X			X	
WC-07 White Sulphur		X	X		X	

The team also considered the provisions of the American Indian Religious Freedom Act and the Native American Graves Protection and Repatriation Act in the analysis. The former establishes a Federal policy of protection for traditional American Indian religious freedoms. Allowing helicopter landings in Wilderness may or may not affect areas of traditional religious practice. The Native American Graves Protection and Repatriation Act directs Federal agencies to anticipate the potential for intentional removal and unintentional discovery of human skeletons and associated cultural objects. Given the absence of known cultural resources within the access areas and the low potential for undiscovered sites, the potential for affecting human remains or traditional religious sites is probably low.

This draft EIS will be used to solicit views of Alaska Natives and other interested persons who may have information about cultural resources within or near the considered access areas. This draft EIS summarizes existing knowledge of cultural resources within the areas of potential effect. It is possible that the public is aware of cultural resources the team has not considered in the analysis. This may especially be true for a type of site known as a traditional cultural property that may have little or no physical expression.

Analysis of Alternatives

With the exception of Alternative 2, there will be no effect to sites listed in or considered eligible for listing in the National Register, since the Forest Service expects to protect them in all the action alternatives. The team eliminated access areas from the action alternatives when they conflicted with sites eligible for the National Register. The exception is Alternative 2 which includes access areas MF-133, TA-06 and TA-18. These access areas conflict with archaeological sites potentially eligible for the National Register. The team did not eliminate the three access areas from Alternative 2 since it is the Proposed Action presented in public scoping. There are no known sites within any of the other helicopter access areas.

There is a possibility that undiscovered sites are present within some helicopter access areas since the field surveys did not cover the entire access area. Field surveys were generally confined to likely helicopter landing spots. Generally, those alternatives that propose higher numbers of helicopter landings pose a greater potential effect to significant undiscovered cultural resources. This is especially true for those alternatives that have access areas in the high probability zone for cultural resources. The potential for effects will generally increase over time, especially for those access areas with potential high levels of use. However, the potential of any of the action alternatives to affect cultural resources is low except at the three access areas discovered to have cultural resources eligible for the National Register (MF-133, TA-06 and TA-18). Additional field survey may be necessary if commercial activities are proposed since surveys have been limited in scope.

Alternative 1- No Action

Alternative 1 poses the least potential effect to undiscovered cultural resources. Potential cultural resource impacts are not expected to increase or decrease with this alternative. Impacts from natural decay, erosion and human impacts could continue to sites within Tongass Wildernesses.

Alternative 2 - Proposed Action

There are cultural resources eligible for the National Register at three of the access areas in this alternative (MF-133, TA-06 and TA-18). Alternative 2 proposes 41 access areas distributed across seven of the 19 Tongass Wildernesses (Endicott River, Kootznoowoo, Misty Fiords National Monument, South Etolin, South Prince of Wales, Stikine-LeConte and Tracy Arm-Fords Terror). This alternative neither increases nor decreases potential cultural resource impacts in the other 12 Tongass Wildernesses. Archaeologists field surveyed 14 of the 41 access areas in this alternative (Table 4-4). Implementation of this alternative could pose an adverse effect to the cultural resource sites discovered at three of the access areas. Eliminating MF-133, TA-06 and TA-18 from this alternative would negate the adverse effect to cultural resources. If these three access areas were authorized, it would be necessary to consult with the Alaska State Historic Preservation Officer and develop a strategy to negate the adverse effects.

The potential to affect undiscovered cultural resources is low. Only six access areas (MF-50, MF-133, MF-136, TA-06, TA-18 and SL-09) are on or near the coast where cultural resource potential is relatively high. Archaeologists did not discover cultural resources eligible for the National Register during field surveys of two of those six access areas (MF-50 and SL-09). No survey was conducted of one coastal access area, MF-136. The remaining three access areas along the coast (MF-133, TA-06 and TA-18) all appear to conflict with cultural resources eligible for the National Register. The remaining 35 access areas in Alternative 2 are inland, many at considerable distance from the coast and at high

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elevations. Archaeologists surveyed 11 of these inland access areas (Table 4-4) that exhibited the highest potential. Archaeologists did not discover any cultural resources. Maintaining historic use levels should minimize potential effects.

Alternative 3A

No cultural resources eligible for the National Register are known at any of the access areas in this alternative. This alternative includes 129 access areas distributed across 12 Tongass Wildernesses. This alternative neither increases nor decreases potential impacts to cultural resources in the other seven Tongass Wildernesses (Chuck River, Coronation Island, Kuiu, Maurelle Island, Pleasant-Lemesurier-Inian Islands, South Etolin and Tebenkof Bay). There are no known cultural resources at any of the 129 access areas in this alternative. This alternative poses potential risk of adverse effect to undiscovered cultural resources since it allows the highest number of helicopter landings of all the action alternatives. Alternative 3A limits the number of landings per access area to ROS levels, potentially resulting in high use of certain areas. Archaeologists field surveyed 59 of the 129 access areas in this alternative (Table 4-4).

Fifteen access areas in this alternative are along the coast where cultural resource potential is high. Archaeologists surveyed 14 of these (KO-15, KO-20, KO-21, KO-46, MF-50, MF-110, PC-01, PC-02, RF-24, SL-09, SL-10, TA-17, TA-24 and WC-07) and they did not discover cultural resources. The other access area along the coast (SL-02) is next to LeConte Glacier where cultural resource potential is low. The remaining 114 access areas in this alternative are inland, many at high elevations, where cultural resource potential is generally low. Archaeologists surveyed 45 of the inland access areas (Table 4-4) that exhibit the highest cultural resource potential.

There are 11 alpine ridge access areas within Kootznoowoo Wilderness (KO-04, KO-05, KO-69 through KO-75, KO-79 and KO-80) that may be areas of sacred geography or traditional cultural properties for the Tlingit people of Angoon. Additional evaluation will be required to decide if that association exists. The Forest Service has requested information from Angoon residents about cultural significance of these areas.

Alternative 3B

There are no known cultural resources eligible at access areas in this alternative. This alternative has less potential to affect undiscovered cultural resources than Alternative 3A. Alternative 3B limits the number of landings to historic levels (25 or fewer landings per year at each access area) which is less than the ROS levels. The need to further evaluate the 11 Admiralty Island access areas found in Alternative 3A also applies to this alternative. Archaeologists field surveyed 59 of the 129 access areas in this alternative (Table 4-4).

Alternative 4

No cultural resources eligible for the National Register are known at any of the access areas in this alternative. This alternative offers a low potential risk of adverse affect to undiscovered cultural resources. Alternative 4 proposes access areas in six Tongass Wildernesses (Kootznoowoo, Misty Fiords National Monument, Petersburg Creek-Duncan Salt Chuck, South Baranof, Stikine-LeConte and West Chichagof-Yakobi). This alternative neither increases nor decreases potential impacts to cultural resources in the other 13 Tongass Wildernesses. Archaeologists field surveyed 23 of 38 access areas in this alternative (Table 4-4).

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All access areas proposed in this alternative are at developed sites (cabins, shelters or trail heads) that may have already been affected to some extent. Conversely, a recognized pattern on the Tongass National Forest is for recreation sites to correspond to the distribution of cultural resources. In other words, if people like to go there today they probably have gone there for hundreds if not thousands of years. There is a relatively high likelihood of undiscovered cultural resources primarily at those access areas along the coast or along major waterways. Eight of the 38 access areas included in this alternative are along the coast or major waterways (KO-46, MF-110, PC-01, PC-02, SL-05, SL-09, SL-12 and WC-07). Archaeologists did not discover cultural resources at any of these eight access areas during field surveys.

Alternative 5

No cultural resources eligible for the National Register are known at any of the access areas in this alternative. This alternative poses a very low potential risk of adverse effects to undiscovered cultural resources. This alternative includes 31 access areas distributed across five Tongass Wildernesses (Endicott River, Kootznoowoo, Misty Fiords National Monument, Stikine-LeConte and Tracy Arm-Fords Terror). Alternative 5 neither increases nor decreases potential impacts to cultural resources in the other 14 Tongass Wildernesses. Archaeologists conducted field surveys at two of the 31 access areas in this alternative (Table 4-4).

Alternative 5 offers access to some of the most remote locations within the Wildernesses, areas where the expectation for cultural resources is very low. Only two of the access areas in this alternative (EN-05, MF-134) are within the cultural resource high probability zone. Field survey of those access areas failed to yield evidence of cultural resources. The 14 Misty Fiords National Monument access areas in this alternative are along creeks and rivers where undiscovered cultural resources could be present, although that potential is low given their distance from the coast. All the Misty Fiords National Monument access areas are limited to five or fewer landings per year, minimizing potential impacts. Four access areas (SL-02, SL-04, SL-16 and TA-23) are on or near glaciers where archaeologists do not expect cultural resources. There are eight alpine access areas in the Kootznoowoo Wilderness that may be traditional cultural properties. The remaining four access areas (EN-07, EN-08, EN-09, TA-31) are at elevations that place them clearly within the low probability zone for cultural resources.

Alternative 6

No cultural resources eligible for the National Register are known at any of the access areas in this alternative. This alternative poses a moderate potential risk of adverse effects to undiscovered cultural resources due to the relatively high number of access areas and potential for high use. Alternative 6 uses the ROS guidelines to set maximum potential use levels. This alternative proposes 97 access areas distributed across 12 Tongass Wildernesses. Alternative 6 neither increases nor decreases potential impacts to cultural resources in the other seven Wildernesses (Chuck River, Coronation Island, Kuiu, Maurelle Island, Pleasant-Lemesurier-Inian Island, South Etolin and Tebenkof). Archaeologists field surveyed 57 of the 97 access areas in this alternative (Table 4-4).

This alternative concentrates access in areas that currently experience motorized traffic. Fourteen of the access areas in this alternative (KO-15, KO-20, KO-21, KO-46, MF-50, MF-110, PC-01, PC-02, RF-24, SL-09, SL-10, TA-17, TA-24 and WC-07) are along the coast where cultural resource potential is relatively high. Archaeologists surveyed these and did not discover any cultural resources. Field survey of the four access areas (SL-05,

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SL-11, SL-12, SL-13) along the Stikine River failed to yield evidence of cultural resources. The remaining 79 access areas are inland, many at high elevations, where cultural resource potential is low. Field surveys of 39 of these inland access areas failed to reveal the presence of cultural resources.

Alternative 7

There are no known cultural resources at any of the access areas in this alternative. This alternative poses a very low potential effect to undiscovered cultural resources. The four access areas are either on active glacier surfaces or on ground near active glaciers where cultural resources are not expected. Only two of the 19 Tongass Wildernesses (Stikine-LeConte and Tracy Arm-Fords Terror) are affected by this alternative. Alternative 7 neither increases nor decreases potential impacts to cultural resources in the other 17 Tongass Wildernesses. Archaeologists did not field survey any of the four access areas in this alternative as they are within the low probability zone for cultural resources.

Cumulative Effects

The degree that cultural resources have previously been affected is uncertain. Limited monitoring suggests some of the more visible cultural sites, like abandoned villages, have been looted. The vast majority of the sites, however, are probably in pristine condition. Impacts from decay, neglect and natural landscape changes will continue to pose a threat to preservation of significant cultural resources. These impacts could occur despite helicopter access. Increased administrative and recreational activities in the Wildernesses could result in accelerated loss of cultural resources, primarily from indirect human causes. Helicopter access may increase potential for impacts occurring to cultural resources. Increased access to cultural resource sites and possible looting and vandalism pose a potential threat. Continued floatplane and boat access to Wildernesses also poses a potential threat to cultural resources.

Subsistence

Issue

Concerns were expressed about the effects of helicopter access on subsistence activities and resources.

Introduction

Chapter 3 described current and historical subsistence uses of Tongass Wildernesses. This section of the draft EIS evaluates how the various project alternatives could affect subsistence uses by the above communities in Tongass Wildernesses. Subsistence resources to be evaluated are wildlife, fish and other foods.

Section 810 Subsistence Evaluation Process

Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA) requires a Federal agency having jurisdiction over lands in Alaska to evaluate the potential effects of proposed land-use activities on subsistence uses and needs. Section 810 of ANILCA states:

In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the agency having primary disposition over such lands or his designee shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease,

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permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such federal agency:

1. gives notice to the appropriate state agency and appropriate local committees and regional councils established pursuant to ANILCA Section 805;
2. gives notice of, and holds, a hearing in the vicinity of the area involved; and
3. determines that (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the use of the public lands; (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition; and (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources from such action."

The evaluation determines whether subsistence uses within the analysis area or portions of the area would be significantly restricted by any of the action alternatives. To determine this, the evaluation: (1) considers the availability of subsistence resources in the surrounding areas; (2) considers the cumulative impacts of past and foreseeable future activities on subsistence users and resources; (3) looks at potential cultural and socioeconomic implications affecting subsistence users and (4) focuses on the mapped subsistence use areas by communities with documented subsistence use within Tongass Wildernesses.

The evaluation relies heavily upon the use of wildlife habitat capability models (see Sections K and L of the Appendix (Volume 1) to the 1991 Supplement to the Draft EIS for the Tongass Land Management Plan).

Criteria used to assess the effects of the alternatives are: (1) changes in access to subsistence resources, (2) changes in competition from non-subsistence users for subsistence resources and (3) changes in abundance or distribution of those resources.

Access

Over half of the communities under study are accessible only by air or water transportation. A majority are served by the Alaska Marine Highway system. Section 811(a-b) of ANILCA, addresses access. The law specifically "permits on 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." It does not specifically allow helicopter access.

Furthermore, the Alaska Land Use Council (1985), "Guidelines for Compliance with ANILCA Section 810", is helpful in assessing potential impacts to the subsistence resource. The Council recommends, "at a minimum, that an evaluation address whether there is likely to be a reduction in access due to limitations on the access to harvestable resources, such as **physical or legal barriers** (emphasis added)."

Potential Impacts on Access. State of Alaska and Federal Subsistence Management regulations prohibit helicopter use for hunting or transporting hunters, hunting gear, game meat, trophies or any equipment used to pursue or retrieve game. Helicopter use may be allowed to rescue hunters, gear or game in a life threatening situation.

Access Finding. Historical through present subsistence use and users will not be impacted by any of the proposed alternatives.

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Competition

Southeast Alaska is a region of abundant natural resources. However, these resources are not uniformly distributed. Ever increasing competition with non-rural residents may prompt limited restrictions at some point in the future.

Potential Impacts due to Competition. Competition for future subsistence resources is difficult to predict. The number of rural and urban hunters has steadily increased over the past twenty years, and their numbers are projected to continue to increase into the foreseeable future. As stated above, helicopter use is not allowed for either sport or subsistence use or access. There have been no substantiated claims of traditional and customary subsistence use of helicopters during this analysis.

Competition Finding. Competition for subsistence resources is not expected to be affected by any of the alternatives presented.

Abundance or Distribution

Wildlife. Populations of deer, moose, mountain goat, black and brown bear, furbearers and small game animals range widely throughout the region. Trends in population for all species range from stable to increasing (USDA 1991). For more information about wildlife affected by this project see the Wildlife section of this document. Sitka black tailed deer are one of the most important sources of sustenance for Southeast Alaska's rural subsistence users. Over one-third of the rural households harvested at least one deer. Deer harvests vary dramatically by community (see Table 3-17). Harvest of mammals other than deer accounted for about 4 percent of the total harvest of subsistence resources.

Wildlife Finding. Based on project analysis there could be limited and short term impacts to wildlife because of some alternatives. However, the projected impacts are not foreseen to be long lasting or significant.

Fish. Fish made up 51 percent of the region's total harvest of subsistence resources. The harvest of five species of salmon made up 27 percent of the region's total harvest of subsistence resources. At least 1.2 million pounds of salmon were reportedly harvested during 1987. More than half of the rural residents reported harvesting at least one salmon. Finfish other than salmon, such as halibut, cod, rock fish, herring, steelhead, Dolly Varden char, accounted for 24 percent of the total subsistence harvest. A little over half of the region's rural residents harvest at least some finfish (Kruse and Frazier 1988).

Fish Finding. No changes to salmon and other finfish habitat capability are projected. The project effects analysis shows there will not be a potentially significant restriction to subsistence fisheries.

Other Foods. At least half of all Southeast Alaska's rural residents consume or use plants. Plants make up 3 percent of the total subsistence harvest. Berries make up most of the subsistence use of other foods.

Other Foods Finding. No significant changes or declines in habitat capability are expected for other foods because of implementation of any of the proposed alternatives.

Potential Impacts on Abundance or Distribution. Of the species discussed, mountain goats may be the most sensitive species to helicopter and human disturbance. Reportedly, mountain goats temporarily abandon habitat because of road building, and others have been found to use less of their range due to construction noise and human disturbance (Chadwick 1973, Singer 1975).

A potential conflict may exist between helicopter users and subsistence harvesters of wildlife during August and September. The potential conflict may exist for subsistence harvesting of deer, black and brown bear, moose and mountain goat. Primary concerns include, but are not limited to: the number of helicopter overflights; disturbance of wildlife due to proximity of helicopters; low altitude flights and temporary abandonment of portions of the animals' home range because of these activities.

Conclusions and Finding

This Draft EIS includes separate determinations concerning possible project, as well as past, present and reasonably foreseeable actions upon subsistence resources and users. The summary draft determination and finding are made below.

The potential project alternatives in the draft EIS do not present a significant possibility of a significant restriction of subsistence use of wildlife, fish or other foods.

The potential foreseeable direct, indirect and cumulative effects from all alternatives in this draft EIS do not present a significant possibility of a significant restriction of subsistence uses of wildlife, fish or other foods.

Economic Effects

This section describes the effects of implementing the alternatives on the economy of Southeast Alaska. Helicopter charters are expensive. For example, Temsco charges an hourly rate of \$640 (including fuel) and requires a minimum of 1/2 hour payment regardless of actual flight time. As a consequence, the extent to which landings will occur at a given location is in part dependent on the associated flight time from the heliports located in Juneau, Ketchikan, Petersburg, Wrangell, and Sitka. Additionally, for the majority of visitors, i.e. cruise ship passengers, current use patterns indicate that helicopter use will be limited to the short group tours of glaciers and similar unique attractions for which the helicopter companies can offer a seat-fare arrangement with the major cruise ship lines. Seat fares allow passengers to pay for the seat they occupy rather than paying the per-hour cost of chartering the helicopter and finding others to share the cost.

The economic benefit to the helicopter companies of allowing access to Wilderness will largely be a function of 1) the cruise ship passenger traffic in areas in close proximity to glaciated Wilderness settings, i.e. Stikine-LeConte, and 2) the degree to which independent travelers desire, and are willing to pay for access to rugged and remote Wilderness sites that can only be reached quickly by helicopter. Table 4-5 characterizes the relative probability of using a helicopter for access based on the availability of alternative means of access and distance from primary helicopter base locations in Southeast Alaska.

The potential for helicopter landings to disrupt other commercial users is greatest for access areas already heavily used by outfitter/guides and where helicopter use can also be expected to be high. Table 4-5 shows that the potential for conflict is highest where there is no alternative means of motorized access and either a pre-arranged seat fare is charged or the flight-time is in the range of 1/2 hour.

The degree to which potentially high helicopter use will affect other commercial users of the forest depends on 1) the relative importance of the site to the viability of individual outfitter/guide operations, and 2) the extent to which helicopter use reaches the level allowed in the alternative.

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Table 4-5. Probability of using a helicopter for access based on flight time or the availability of a seat fare.

Alternative Access Available?	Helicopter Flight Time/Seat Fare Availability			
	Seat Fare is available*	More than 1/2 hour flight time	1/2 hour flight time	Less than 1/2 hour flight time
Yes	low	medium to low	low	medium to low
No	high	medium to low	medium to high	medium to low

* unlikely that seat fares would be available to remote access areas

Effects of Alternatives

Alternative 1 - No Action

No measurable economic effects can be identified for the short-term under this alternative. Because Wilderness access by helicopter is currently prohibited, continuing to deny such access cannot be expected to affect the current level of operations within the helicopter industry. Other commercial users of the forest will not be disrupted by the No Action alternative.

The longer range effect is difficult to determine because it necessarily relies on projections of the increase in use that would have occurred under various action alternatives. Although the No Action alternative would prevent the helicopter industry from providing access to Wilderness it would not prevent fly-over sightseeing or landings in non-Wilderness. The degree to which future clientele would consider these activities to be acceptable substitutes to Wilderness access is unknown.

Alternative 2 - Proposed Action

This alternative provides opportunities for minimal increases in revenues to helicopter operators. Under this alternative, helicopter access is allowed to 12 remote wilderness sites that are inaccessible by other motorized methods. Helicopter use in these areas can be expected to reach historical levels. The other 29 areas included in this alternative can be expected to receive only incidental helicopter activity.

Alternatives 3A and 3B

The two variations of Alternative 3 differ greatly in the maximum number of landings permitted each year. Alternative 3A allows up to 81 times the level of activity permitted under Alternative 3B and would provide the greatest potential among all alternatives for industry expansion and revenue enhancement.

Alternative 4

This alternative provides opportunities for minimal increases in revenues to helicopter operators. Because other types of motorized access are available for all of the access areas and none are potential draws for cruise ship passengers, the areas included in this alternative are likely to receive only incidental use. However, it could expand the season of use for public recreation cabins on freshwater lakes.

Alternative 5

This alternative provides opportunities for moderate increases in revenue to helicopter operators. Although the access areas in this alternative are located a considerable distance from existing heliports, they are also in areas where no other form of motorized access is available. Use levels will be tempered by the high cost of helicopter charter and will be limited to the occasional backpacker or photographer willing to pay for the access to the most primitive regions of the forest.

Alternative 6

This alternative allows helicopter access to wilderness areas that are already accessible by lower cost motorized methods. Because it is unlikely that many people would be willing to charter a helicopter when a less expensive means of transport is available, this alternative provides the opportunities for only minimal increases in revenues to helicopter operators.

Alternative 7

This alternative includes an access area at Tracy Arm that is not located near any existing heliports and is likely to receive a very low level of use. Other access areas included in this alternative are located near the heliport in Petersburg and are likely to receive a higher level of use. A "seat-fare" could be arranged for passengers on the smaller cruise ships to allow landings on LeConte glacier in a manner similar to that already occurring on the Juneau ice fields. As a result, this alternative provides opportunities for moderate increases in revenues to helicopter operators.

Other Environmental Considerations

Cumulative Effects

When considering adding helicopter access to Wilderness, the motorized use already occurring must be considered in order to determine the magnitude of impact which may result from increasing motorized use. Estimates of this existing use are as follows:

Existing Helicopter Use

Currently there are helicopters being used in Tongass Wildernesses by the Forest Service and other agencies for research and management purposes. Helicopters are used infrequently and generally only when other access or management alternatives will create greater impacts to the Wilderness than the presence of a helicopter. For example, the relocation of a cabin within the Wilderness could be done by dismantling the cabin, packing it to another location, and reconstructing it. It has been determined through environmental analysis that this method usually has a much greater physical and managerial impact on Wilderness than using a helicopter for one day during the off season to fly the cabin to a new location.

Other agencies such as the U.S. Fish and Wildlife Service, Bureau of Mines, Alaska Department of Fish and Game and U.S. Geological Survey all use helicopters to varying degrees within the Tongass Wildernesses for research projects. There have also been some private helicopters flying over Wilderness, although presently they are not authorized to land in Wilderness.

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Forest Service and other agency helicopter use varies considerably both by Wilderness and by year. Total agency use of helicopters is generally light, however. Many Wildernesses receive no helicopter use while a large busy Wilderness like Misty Fiords may receive up to 30 landings per year. Table 4-6 displays administrative use of helicopters in Tongass Wildernesses in 1994 and 1995.

Table 4- 6. Examples of administrative uses occurring in various Wildernesses:

Wilderness and agency using helicopters	1994 days used	1995 days used
Chuck River	0	0
Coronation Island	0	0
Endicott River	0	0
Karta River - Forest Service	0	1
Kootznouwo - Forest Service	7	12
Kuiu	0	0
Maurelle Islands	0	0
Misty Fiords - Forest Service	13	8
Alaska Department of Fish & Game	4	18
Petersburg Creek-Duncan Salt Chuck	0	0
Pleasant-Lemesurier-Inian - Forest Service	0	3
Russell Fiord - Forest Service	3	1
U.S. Geological Survey	1	1
University of Alaska		1
South Baranof - U.S. Geological Survey	13	0
Bureau of Mines	4	2
South Etolin	0	0
South Prince of Wales	0	0
Stikine-LeConte - Forest Service	0	9
Petersburg High School Glacier Research	2	2
Alaska Department of Fish and Game	2	2
Tebenkof Bay	0	0
Tracy Arm-Fords Terror	0	0
Warren Island	0	0
West Chichagof-Yakobi - Bureau of Mines	16	19

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Potential Additional Wilderness Helicopter Use by the Forest Service

Currently the Forest Service is performing environmental studies to determine the impacts of using helicopters in Wilderness to implement three separate inventories. If approved, these inventories would mean additional use of helicopters by the Forest Service within Tongass Wildernesses. The studies are as follows:

Integrated Resource Inventory (IRI) Grid - This inventory consists of 750 points in Tongass Wildernesses. Each point would receive one to two landings every 10-15 years.

Thematic Mapper - Landsat Imagery - This study would include random sample points across Alaska's national forests - Wilderness included. Currently, there is no prediction of the number of helicopter landings which would occur in Wilderness. This would be a one time project and would be completed in the summer of 1996.

Admiralty Ecological Units Inventory - This project would last for two to five years. It would consist of high intensity sampling using many access methods to reach the sample points, including helicopter. Many landings would be required, but the exact total is not yet known. This project would only affect Kootznoowoo Wilderness.

Existing Floatplane and Motorboat Use

Currently the Alaska National Interest Lands Conservation Act (ANILCA) allows the use of both floatplanes and motorboats in Tongass Wildernesses. This has resulted in the current high levels of motorized use within some of the Tongass Wildernesses.

Also, most Wildernesses have miles of ocean shoreline. Although the Wilderness boundary is set at mean high tide, the Wilderness and many of its users are affected by sounds and activities from frequent float plane and helicopter landings, private boat and cruise ship traffic - all occurring below mean high tide, hence outside of the Wilderness.

Many floatplanes and helicopters currently fly over Wilderness. In some Wildernesses, flight seeing makes the noise from these flights very frequent. For example, in the Rudyerd Bay area of Misty Fiords, flight seeing has a heavy impact to the visual and auditory quality of the Wilderness. During 1995, approximately 2,800 floatplanes flew over Rudyerd Bay on flight seeing trips. In addition, some Wildernesses are affected by regularly scheduled passenger and mail floatplane flights along corridors over Wildernesses. In other more remote Wildernesses, interruptions from floatplane and helicopter fly-overs occur at a lower frequency resulting from flight transportation routes, or an occasional flight seeing trip.

Irreversible Commitments of Resources

Irreversible commitments are decisions affecting nonrenewable resources such as soils, wetlands, unroaded areas and cultural resources. Such commitments 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 because the resource has been destroyed or removed.

Loss of cultural resource sites resulting from accidental damage or vandalism would be an irreversible commitment of resources. The standards and guidelines, survey methodology prior to activities and mitigation measures specified in this document provide reasonable

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assurances that there would be no irreversible loss of cultural resources. Cultural resources are discussed in the Cultural section of this chapter.

Irretrievable Commitments

Irretrievable commitment of natural resources means loss of production or use of resources because of management decisions. This represents opportunities forgone for the period of time that resources cannot be used.

Actions presented in this analysis may result in the reduction of places where persons may experience outstanding opportunities for solitude or a primitive and unconfined type of recreation in Wilderness. The degree to which the Wilderness character is affected is discussed in the Wilderness section of this chapter.

Short-term Uses and Long-Term Productivity

Short-term uses vary between alternatives; however, the long-term productivity would remain under all alternatives.

Possible Conflicts with Plans and Policies of Other Jurisdictions

The regulations for implementing the National Environmental Policy Act require a determination of possible conflicts between the proposed action and the objectives of Federal, State, and local land-use plans, policies, and controls for the area. Major land-use regulations of concern are the Coastal Zone Management Act (CZMA), Sections 810 of ANILCA and the Wild and Scenic Rivers Act.

Coastal Zone Management Act of 1976 (CZMA)

The CZMA was passed by Congress in 1976 and amended in 1990. This law requires Federal agencies conducting activities or undertaking development affecting the coastal zone to ensure that the activities or developments are consistent with approved state coastal management programs to the maximum extent practicable. The State of Alaska passed the Alaska Coastal Management Act in 1977 to establish a program that meets the requirements of the CZMA. It contains the standards and criteria for a determination of consistency for activities within the coastal zone.

The State of Alaska Office of Governmental Coordination will do a consistency review of the proposed activities. Evaluation of the proposed activities against enforceable policies for activities within the coastal zone results in a finding that these activities are consistent with the Alaska Coastal Management Program to the maximum extent practicable. Standards against which the consistency evaluation will take place are: Water, Air, Energy, and Environmental conservation.

Alaska National Interest Lands Conservation Act of 1980 (ANILCA)

Under Section 810 of ANILCA, agencies are required to evaluate the effects of proposed actions on subsistence uses of Federal land and to determine if the proposed action may significantly restrict subsistence opportunities. Subsistence impacts are discussed further in the Subsistence section of this chapter.

Wild and Scenic Rivers Act

Section 5(d)(1) instructs Federal agencies to consider and discuss any effects to rivers considered eligible for designation under the Wild and Scenic Rivers Act. Wild and Scenic Rivers are discussed in the Wild and Scenic Rivers section of Chapter 3 (pages 3-15

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to 3-17). The alternatives would have no effects on Wild, Scenic or Recreational river eligibility of any river within Tongass Wildernesses.

Energy Requirements and Conservation Potential of Alternatives

The implementation of the action alternatives as described in Chapter 2 will require the expenditure of energy (consumption of fuel). The amount of energy that may be used varies by alternative based upon the location of helicopter access areas and their proximity to available equipment. The best estimate for use is discussed in the economics section of this chapter.

Natural or Depletable Resource Requirements and Conservation Potential of Alternatives

All alternatives considered in detail are designed to conform to applicable laws and regulations pertaining to natural or depletable resources, including minerals and energy resources. Regulation of mineral and energy activities on national forests is shared with the Bureau of Land Management. Access to national forest system lands considered in this analysis for the purpose of mineral and energy exploration and development is covered under other authorities in the Wilderness Act and ANILCA and is not a part of this analysis or likely to be affected by the alternatives.

Urban Quality, Historic and Cultural Resources, and the Design of the Built Environment

This analysis contains no urban areas. Therefore, the only applicable concern under this topic is historic and cultural resources. The goal of the Forest Service's Heritage Management Program is to preserve significant cultural resources in their field setting and ensure they remain available in the future for research, social/cultural purposes, recreation, and education. The direct, indirect, and cumulative effects of the alternatives on cultural resource have been evaluated. The evaluation determines that there are adequate standards, guidelines and procedures to protect cultural resources and to meet the goals of the Heritage Management Program. Cultural resources are discussed further in the Cultural Resources section of this chapter.

Effects of Alternatives on Consumers, Civil Rights, Minorities, and Women

There will be no effects on the civil rights of individuals or groups, including minorities and women. The effect of the alternatives on consumers is reflected in the discussion of the various goods and services supplied as a result of the proposed actions.

Effects of Alternatives on Prime Farmland, Rangeland, and Forest Land

There are no prime farmlands, rangelands or forest lands within Tongass Wildernesses. There would be no effects to lands from any of the alternatives.

Chapter 5

List of Preparers

5 List of Preparers

Jeff Foss

NEPA Specialist

Contributions made

NEPA

Education

B.S. Range Resource Management; University of Idaho, 1980
M.S. Forestry; Michigan State University, 1985

Forest Service: 17 years

Regional NEPA Specialist Alaska Region, 4 years
Information Planner Alaska Region, 2 years
Asst. Forest Planner Sawtooth National Forest, 3 years
Interdisciplinary Team Leader Intermountain Region, 2 years
Range Conservationist Fishlake National Forest, 4 years

Ron Freeman

Recreation Planner, Alaska Regional Office

Contributions made

General project support
Policy interpretations

Education

B.S., Outdoor Recreation, University of Washington, 1976

Forest Service: 17 years

Regional Recreation Planner - 2 years
Forest Planning Staff - 2 years
Recreation Staff, Stikine Area, Tongass NF - 2 years
Resources Forester, Randle Ranger District, Gifford Pinchot NF - 9 years
Forestry Technician, Oakridge Ranger District, Willamette NF - 2 years

Details to: Wenatchee NF (White Pass Ski Area EIS), Mount St. Helens National Volcanic Monument (Rec. Staff), Hells Canyon NRA (Recreation Planning)

Other relevant employment

Seasonal employment with National Park Service and Forest Service

Lynn Humphrey

Recreation Planner

Contributions Made:

Chatham Area team member, 1992-1993
Wilderness
Recreation

Education:

B.S. Forest Biology, Colorado State University, 1979

5 List of Preparers

Forest Service: 16 years

Recreation Planner, Tongass Land Management Plan Revision Team, 1993-present
Recreation Planner, Chatham Area, Tongass NF, 1992-1993
Lands, Minerals, and Timber Staff, Juneau Ranger District, Tongass NF, 1989-1991
Lands, Minerals Specialist, Juneau Ranger District, Tongass NF, 1986-1989
Computer Programmer Analyst, Alaska Regional Office, 1984-1986
Computer Programmer, Southern Forest Experiment Station, 1981-1984
Inventory Forester, Southern Forest Experiment Station, 1979-1981

Marti M. Marshall

Chatham Area Recreation and Wilderness Specialist

Contributions made

Wilderness
Recreation

Education

B.A. Multidisciplinary Social Sciences, Michigan State University, 1976

Forest Service: 16 years

Recreation/Wilderness Specialist, Tongass National Forest, Chatham Area - 7 years
Recreation Technician, Tongass National Forest, Juneau Ranger District - 2 years
Recreation Technician, Mt. Hood National Forest, Columbia Gorge District - 7 years
Details to Tongass National Forest, Sitka District - 4 months

Other Relevant Employment and Experience

Region 10 National Wilderness Advisory Group Representative - 1+ year
Forest Service Recreation Short Course, Clemson University, 1989
Seasonal Employment, Forestry Technician, Fishlake National Forest (firefighter - 1 season), Mt. Hood National Forest (backcountry ranger, 4 seasons)

W. Mark McCallum

Archaeologist

Contributions made

Cultural Resources

Education

B.A. Anthropology/Sociology, James Madison University, 1978

Forest Service: 7 years

Area Archaeologist, Stikine Area - Tongass National Forest, 1989-Present
Archaeologist, Stikine Area - Tongass National Forest, 1988-1989

Other relevant employment: 10 years

Archaeologist, Bureau of Indian Affairs, Anchorage, 1987-1988
Archaeology Contractor, High Plains Associates, Inc., Laramie, Wyoming, 1983-1987
Archaeologist, High Plains Consultants, Laramie, Wyoming, 1982-1983
Archaeologist/Office Manager, Archaeological Services, Inc., Laramie & Rawlins, Wyoming, 1980-1982
Archaeologist/Branch Manager, Iroquois Research Institute, Fairfax, Virginia & Memphis, Tennessee, 1978-1980

5 List of Preparers

Grady McMahan

Recreation and Wilderness Specialist

Contributions made

- Ketchikan Area Team Member, 1994 - present
- Wilderness
- Recreation

Education

- B.S. Forest Management, Utah State University, 1981
- National Forest Recreation, Wilderness, and Lands Correspondence Courses, Colorado State University
- Outdoor Recreation Short Course, Clemson University, 1987

Forest Service: 16 years

- Recreation/Wilderness Specialist, Tongass NF, Ketchikan Area, 1992 - Present
- Recreation Assistant, Pikes Peak Ranger District, Pike NF, 1990 - 1992
- Developed Rec. & Lands Forester, Salida Ranger District, San Isabel NF, 1986 - 1990
- Recreation & Lands Forester, Petersburg Ranger District, Tongass NF, 1983 - 1985
- Presale Timber Forester, Petersburg Ranger District, Tongass NF, 1981 - 1983
- Presale Forester - Coop Trainee, Petersburg Ranger District, Tongass NF, 1979 - 1981

Other relevant employment

- Seasonal employment with Forest Service - Vernal Ranger District, Ashley NF

Larry D. Roberts

Subsistence Coordinator

Contributions made

- Subsistence analysis and drafting.

Education

- B.A. Degree, Anthropology, CSC-Stanislaus
- ABT, Anthropology, CSU-Chico

Forest Service: 15 years

- Stikine Area Subsistence Coordinator and Social Scientist, 1992-Present.
- Tongass N.F. Subsistence Coordinator, 1988-1992.
- Stikine Area Archaeologist, 1980-1988.

Bill Tremblay

Recreation Planner

Contributions made

- Team Leader
- Public participation and coordination
- Preparation of the Environmental Impact Statement and other associated documents
- Consistency with NFMA and NEPA and other applicable laws and regulations.

Education

- B.S. Forest Resource Management, Humboldt State University, Arcata, CA, 1982
- National Forest Recreation Management correspondence course, Colorado State University, Fort Collins, CO, 1989
- Outdoor Recreation Shortcourse, Utah State University, Logan, UT, 1991

5 List of Preparers

Forest Service: 15 years

Recreation Planner, Stikine Area, Petersburg, 4 years
Forester, Priest Lake RD, Idaho Panhandle NF, 4 years
Forester, Craig RD, Ketchikan Area, 7 years

Theron E. Schenck II

Wildlife Biologist

Contributions made

Wildlife Resource Analysis
Threatened, Endangered, and Sensitive Species Analysis
Soils and Vegetation Analysis
Data Base Management

Education

B.S., Wildlife Management, South Dakota State University, 1968
M.S., Wildlife Biology, South Dakota State University, 1971

Forest Service: 8 years

Wildlife Biologist, Chatham Area, Tongass NF - 5 years
Wildlife Biologist, Pike and San Isabel NF - 2 years
Wildlife Biologist, Black Hills NF - 1 year

Other relevant employment

Forest Wildlife Biologist, Interagency Agreement, Black Hills NF/SD Game, Fish and Parks - 3 years
Assistant Regional Supervisor, Game Management, SD Game, Fish and Parks - 9 years
Assistant Regional Supervisor, Land Management, SD Game, Fish and Parks - 2 years
Conservation Officer, SD Game, Fish and Parks - 2 years
Instructor, Plattsburg State College, State University of New York - 1 year
Teaching Assistant, Botany-Biology Dept., SD State University - 2 years
Research Associate, Cooperative Wildlife Research Unit, SD State University - 2 years

Other Contributors

Albrecht, Arn - Program Leader, Recreation, Wilderness, Special Areas Mgmt., and Trails
Appleman, Keith - Recreation Technician, Wrangell Ranger District
Autrey, John - Area Archaeologist, Ketchikan Area
Blatt, Steve - Wildlife Biologist, Petersburg Ranger District
Bowen, Pat - Archaeologist, Chatham Area
Brown, Kathy - Archaeologist, Chatham Area
Canterbury, Jackie - Wildlife Biologist, Misty Fiords N.M.
Carey, John - Recreation Group Leader, Ketchikan Area Office
Cebula, Jake - Resource Assistant, Thorne Bay Ranger District
DeAngelis, Aloy - Outdoor Recreation Planner, Juneau Ranger District
DeGayner, Gene - Regional Wildlife Ecologist, Stikine Area
Falk, Judi - Wildlife Biologist, Juneau Ranger District
Favro, John - Recreation and Lands Staff Officer, Juneau Ranger District
Fisher, Duane - IRM Coordinator, Ketchikan Area Office
Granger, Geneen - Regional Social Science Coordinator, Regional Office
Griffin, Peter - Environmental Coordinator, Ketchikan Area Office
Harke, Vince - Wildlife Biologist, Yakutat Ranger District
Haug, John - Recreation Staff Officer, Yakutat Ranger District
Hewitt, Tattie - Botanical Assistant, Ketchikan Area Office

5 List of Preparers

Holliday, Cindy - Lands Forester, Craig Ranger District
Hummel, Mark - Environmental Coordinator, Stikine Area
Iwamoto, Karen - Area Archaeologist, Chatham Area
Kennemore, Doug - Botanist, Ketchikan Area Office
Killinger, Greg - Fisheries Biologist, Sitka Ranger District
Kluwe, Joan - Recreation Planner, Craig Ranger District
Krosse, Patti - Ecologist, Ketchikan Area Office
Kuharich, Melinda - Recreation GIS Coordinator, Ketchikan Area Office
Lemke, Gerald - GIS Analyst, Ketchikan Area Office
Lively, Ralph - Archaeologist, Misty Fiords N.M.
Martin, Don - Fisheries Biologist, Juneau Ranger District
Morgan, Gary - Helicopter Program Manager
Morse, Kathleen - Regional Economist
Moulton, Bill - Helicopter Manager, Stikine Area
Myron, Rachel - Archaeologist, Chatham Area
Neary, John - Outdoor Recreation Planner, Admiralty National Monument
Nourse, Rebecca - Fish/Wildlife Program Manager, Misty Fiords N.M.
Rutledge, Kris - Wildlife Biologist - Hoonah Ranger District
Sanders, Terry - Wilderness Technician, Sitka Ranger District
Schaefer, Paul - Recreation and Wilderness Assistant, Admiralty National Monument
Skrien, Sandy - Outdoor Recreation Planner, Hoonah Ranger District
Smith, Bryce - Botanist, Ketchikan Area Office
Stanley, Barbara - Resource Assistant, Craig Ranger District
Stensvold, Mary - Regional Botanist, Recreation and Lands - Sitka Ranger District
vonRekowski, Hans - Recreation Staff Officer, Sitka Ranger District
Walters, Dorin - Wildlife Biologist, Yakutat Ranger District
Woods, Cat - Recreation Planner, Thorne Bay Ranger District

Chapter 6

**List of Agencies,
Organizations and
Persons to Whom
Copies of this
Statement Were Sent**

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List of Agencies,
Organizations and
Persons to Whom
Copies of This
Statement Were Sent

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List of Agencies, Organizations and Persons to Whom Copies of this Statement Were Sent

Individuals Sent Summary of Draft EIS

Aergerter, Henry	Angerman, Richard
Bashelier, Holly	Berland, Nancy
Bigsby, Gregg	Blake, Bruce
Bowen, Paul	Brakel, Judy
Branson, Peter	Churchill, Emil
Dadourian, Laurie	Davis, Paul
Drexler, Brooke	Enright, A.P.
Farnell, Dick	Gleason, John
Greenough, Kathrin W.	Hastings, Kim
Henry, J. and D.	Johnstone, Chuck and Alice
Kaelke, Michelle	Kensinger, David and Mona Christian
Kinsey, Matthew	Klose, Dieter
Nelson, Richard	Nikodym, T.J.
Post, Paul	Riemer, Doug
Ross, Don	Sallee, Mike
Simpson, Ronald	Taro, Jim
Waterman, Nancy	

Agencies and Organizations Sent Summary of Draft EIS

Alaska Aquaculture, Inc., Attn: Todd Jones
Alaska Marine Advisory Program, Attn: Brian Paust
Alaska Scenic Waterways, Attn: Jerry Bensiermacher
Alaskan Star Charters, Attn: Ken Wyrick
C&I Helicopters, Attn: Andrew MacRitchie

List of Agencies, Organizations and Persons to Whom Copies of this Statement Were Sent

City of Wrangell, Attn: Carol Rushmore
Cultural Heritage Committee, Kinnie Kalkins, President
Cultural Heritage Committee, Dawn Hutchinson, Secretary
ERA Helicopters, Attn: Bill Zeman, Juneau Manager
National Outdoor Leadership School, Attn: Eleanor Huffines
Ketchikan Pulp Corporation, Attn: Jill Bennett
Leslie Cutting, Inc., Attn: Jim Leslie
Lynn Canal Conservation, Attn: Eric Holle
Pelican Coastal Coordinator, Attn: Ginnie Porter
Raven Charters
Resource Development Council
Ritchie Transportation
Spirit Walker Expeditions, Attn: Nathan Borson
Temsco Helicopters, Attn: Bob Engelbrecht
U.S. Fish and Wildlife Service, Refuge Planning
Water Ouzel Outings, Attn: Bob Zorich
The Wilderness Society, Alaska Regional Director
Wrangell Resource Council

Individuals Sent Volume I of Draft EIS

Davis, Paul	Dixon, Michael
Erickson, Susan Killer	Gordon, Richard J.
Schmidt, Lee	Schrader, Susan

Agencies and Organizations Sent Volume I of Draft EIS

Association of Forest Service Employees for Environmental Ethics
Alaska Visitors Association
Juneau Convention and Visitors Bureau, Attn: Kari Westlund
Katmai National Park, Attn: Rick Potts/Susan Savage
Southeast Exposure, Attn: Betsey Burdett
Leo Barlow, CEO, Sealaska Corporation
Dennis Demmert, President, Sealaska Heritage Foundation
Edward Thomas, President, Central Council Tlingit & Haida Indian Tribes of Alaska
Robert Willard, Jr., Southeast Alaska ANCSA Land Acquisition Coalition
Robert Major, President, Cape Fox Corporation
Joe Beedle, President/CEO, Goldbelt, Incorporated
Arlene Dilts, President, Haida Corporation
George Cooper, CEO, Huna Totem Corporation
Gordon Jackson, President, Kake Tribal Corporation
Louis Thompson, President/CEO, KAVILCO, Inc.
Donald Marvin, Chairman, Klawock Heenya Corporation
Donald Argetsinger, President/CEO, Klukwan, Incorporated
Bob Manning, CEO, Kootznoowoo Incorporated
Paul Lingley, President, Shaan Seet, Incorporated
James Senna, President/CEO, Shee Atika, Incorporated
Donald Bremmer, President, Yak-Tat Kwaan, Incorporated
Wally Frank, President, Angoon Community Association

List of Agencies, Organizations and Persons to Whom Copies of this Statement Were Sent

Joe Hotch, President, Chilkat Indian Village
Paul Wilson, President, Chilkoot Indian Association
Jeff Sheakley, President, Craig Community Association
Amos Wallace, President, Douglas Indian Association
Johanna Dybdahl, Administrator, Hoonah Indian Association
Charles Natkong, Sr., President, Hydaburg Cooperative Association
Albert Aspen, President, Juneau T&H Community Council
Casimero Aceveda, President, Organized Village of Kake
Ronald Leighton, President, Organized Village of Kasaan
Gerald Hope, President, Ketchikan Indian Corporation
Leonard Kato, President, Klawock Cooperative Association
James Phillips, President, Pelican T&H Community Council
Leilani Kito, President, Petersburg Indian Association
Joe Williams, President, Organized Village of Saxman
Lawrence Widmark, Jr., Chairman, Sitka Tribe of Alaska
Minnie Stevens, President, Skagua Traditional Council
Walter Soboleff, Liaison, Tenakee Springs Indian Community
John Martin, President, Wrangell Cooperative Association
Bert Adams, Sr., President, Yakutat Tlingit Tribe

Individuals Sent Complete Copy of Draft EIS

Benitz, Karl	Brady, Jim
Chatham, Chat and Jo	Connelly, Steve
Darnell, Joan	Freedman, Barny
Geddie, John	Gregory, Charles
Hall, John L.	Hammer, Clay and Heidi
Hanson, Joel and Alice	Ilaban, Gwen
Lewis, Steve	Merrell, Ted
Neal, Pat	Roundtree, Dane
Sautner, Don	Sprague, Richard and Sharon
Taggert, Pat	Van Epps, Charles P.
Welsh, Ron	Wilson, Dick

Agencies and Organizations Sent Complete Copy of Draft EIS

ADEC/A&WQ, Attn: Jim Ferguson, Juneau
Alaska Dept. of Fish and Game, Attn: Jack Gustafson, Ketchikan
ADF&G, Div. of Subsistence, Attn: Mike Turek
ADF&G - Wildlife, Attn: Tom Paul
ADF&G - Sport Fish, Attn: Glen Freeman
ADF&G, Div. of Subsistence, Douglas
ADNR, Div. of Forestry, Attn: Jim McAllister
ADNR - Land, Attn: Regional Manager, Juneau
AK Div. of Governmental Coordination, Attn: Karen Essary, Juneau
Alaska Forest Association, Attn: Executive Director
Alaska Lumberman's Association
Alaska Pulp Corporation, Attn: George Woodbury
Alaska State Library, Attn: Government Publications

List of Agencies, Organizations and Persons to Whom Copies of this Statement Were Sent

Alaska Wilderness Recreation & Tourism Association
Alaskans for Responsible Resources Management
City and Borough of Sitka, Attn: Marlene Campbell
Greenpeace, Attn: Larry Edwards
Kadin Corporation
Ketchikan Air Service, Attn: Michael Salazar
Ketchikan Pulp Company, Attn: Owen Graham
Ketchikan Pulp Company, Attn: T.C. Hicks
Ketchikan Pulp Company, Attn: Troy Reinhart
Lynn Canal Conservation, Inc.
Narrows Conservation, Attn: Dave Beebe
Narrows Conservation Coalition, Attn: Rebecca Knight
Organized Village of Kake, Attn: Mike Jackson
Sierra Club, Juneau Group
Sierra Club Legal Defense, Juneau
Sitka Conservation Society
TH Charters, Attn: Todd Harding
U.S. Dept. of Commerce, NOAA, Ecology and Preservation
U.S. Dept. of Commerce, NOAA, NMFS, Attn: Steven Zimmerman
U.S. EPA, Region 10 EIS Review Coordinator
U.S. Federal Agency Liaison Div.
USDA National Agriculture Library, Head, Acquisitions and Serials
USDI Office of Environmental Affairs
USDI Fish and Wildlife Service, Attn: Susan Walker, Juneau
USDI Fish and Wildlife Service, Attn: Carol Hale, Juneau
USDI Fish and Wildlife Service, Attn: Helen Clough, Juneau
USDI National Park Service, Attn: Joan Darnell, Anchorage
USDI National Park Service, Attn: Jim Brady, Gustavus
USDI National Park Service, Attn: Clay Alderson
USDA, Forest Service, Director of Environmental Coordination
USDA, Forest Service, Tongass NF, Attn: Mark Hummel

Chapter 7

Literature Cited

Literature Cited

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Literature Cited

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- Anderson, C. M. et al. 1988. New evidence of a peregrine migration on the west coast of North America. In T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds. *Peregrine falcon populations. The Peregrine Fund.* Boise, Idaho.

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Alaska Heritage Resource Survey (AHRs)	The official list of cultural resources in the State of Alaska, maintained by the Office of History and Archaeology, Alaska Division of Parks and Outdoor Recreation.
Alternative	One of several options proposed for decision making.
ANILCA	The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551.
Biological diversity	The distribution and abundance of different plant and animal communities and species within the Tongass National Forest.
CFR	Code of Federal Regulations.
Cultural 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. Cultural resources are non-renewable aspects of the national heritage.
Cumulative effects	Results of collective past, present and reasonably foreseeable future actions.
Developed recreation	The type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation in a defined area.
Direct effect	Results of an action occurring when and where the action takes place.
Dispersed recreation	That type of recreation use that requires few, if any, improvements and may occur over a wide area.
Diversity	The distribution and abundance of different plant and animal communities and species within an area.
Draft Environmental Impact Statement (DEIS)	The version of the statement of environmental effects required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA) and released to the public and other agencies for review and comment. It is a formal document which must follow the requirements of NEPA, the Council on Environmental Quality Guidelines, and directives of the agency responsible for the project proposal. (See also Environmental Impact Statement.)
Endangered species	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 by the Secretary of Interior as endangered in accordance with the 1978 Endangered Species Act.

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Environmental Impact Statement (EIS)	A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. 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 final form. An impact statements 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 action, (4) the relationship 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.
Executive Order	An order or regulation issued by the President or some administrative authority under the president's direction.
Floodplain	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.
FSM	Forest Service Manual
Habitat	The sum total of environmental conditions of a specific place occupied by a wildlife or plant species or a population of each species.
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 property includes artifacts, records and remains that are related to and located within such properties.
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.
Indirect effect	Result 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.
Irretrievable commitments	Applies to losses of production or use of renewable natural resources for a period of time.
Irreversible commitments	Decisions causing changes which cannot be reversed.
Issue	A point, matter or section of public discussion or interest to be addressed or decided.
Land Use Designation (LUD)	(As used in the 1979 Tongass Land Management Plan:) General management direction applied to a geographically defined area of the Tongass National Forest.
LUD 1	Forest Service recommended Wilderness areas, most of which became Wilderness through the Alaska National Interest Lands Conservation Act. In general, these undeveloped areas are managed for solitude and primitive types of recreation, and contain unaltered habitats for plants and animal species. These areas are managed as directed in the 1964 Wilderness Act, as amended.
LUD 2	Lands under this designation are managed in a roadless state to retain their wildland character. Primitive recreational facilities can be built and habitat improvements for fish and wildlife are permitted. Timber harvest on these lands is limited to salvage operations to protect other resources.

LUD 3	These lands are managed for a variety of uses. The emphasis is on managing for both amenity and commodity oriented uses in a compatible manner to provide the greatest combination of benefits. These areas usually have high amenity values in conjunction with high commodity values. Allowances calculated in potential timber yield have been made to meet multiple-use objectives.
LUD 4	These lands are managed to provide opportunities for intensive development of resources. Emphasis is primarily on commodity, or market resources and their use. Amenity values are also provided for. When conflicts over competing resource uses arise, conflicts would most often be resolved in favor of commodity values. Allowances in calculated potential timber yield have been made to provide for protection of physical and biological productivity.
Management indicator species (MIS)	Species selected in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish, including those that are socially or economically important.
Mitigate	To lessen or make minimal the severity.
Muskeg	A muskeg in Southeast Alaska is a type of bog that has developed over thousands of years in depressions, flat areas or 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 have shrubs and stunted trees.
National Environmental Policy Act of 1969 (NEPA)	An act declaring a National policy to encourage productive 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 Register of Historic Places	A register of cultural resources of national, state or local significance maintained by the Department of 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.
No action alternative (Alternative A)	The most likely condition expected to exist in the future if current management direction were to continue unchanged.
Organic soils	Soils which contain a high percentage (greater than 15 percent) of organic matter throughout the soil depth.
Population viability	Ability of a population to sustain itself.
Recreation Opportunity Spectrum (ROS)	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 six classes are:

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Primitive	An essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use is generally not permitted.
Semi-Primitive Non-Motorized	A natural or naturally-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed to minimize on-site controls and restrictions.
Semi-Primitive Motorized	A natural or naturally-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed to minimize on-site controls and restrictions.
Roaded Natural	A natural-appearing environment with moderate evidence of the sights and sounds of humans. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high with evidence of other users prevalent. Motorized use is allowed.
Roaded Modified	A natural environment that has been substantially modified particularly by vegetative manipulation. There is strong evidence of roads and/or highways. Frequency of contact is low to moderate.
Rural	A natural environment that has been substantially modified by development of structures and vegetative manipulation. Structures are readily apparent and may range from scattered to small dominant clusters. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high.
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.
Research Natural Area (RNA)	An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated animal, soil, geologic and water features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and education purposes; commercial and most public uses are generally not allowed.
Scoping	Determination of the significant issues to be addressed in an environmental impact statement.
Sensitive species	Plant or animal species which are susceptible or vulnerable to activity impacts or habitat alternations. Species that have appeared in the Federal Register as proposed for classification and are under official consideration for listing as endangered or threatened species, that are on an official state list or that are recognized by the Regional Forester as needing to assure viable populations and to prevent their being placed on Federal or state lists.
Special places	"Special" places are those helicopter access areas deemed <u>locally</u> (and possibly regionally) <u>unique</u> with a <u>drawing power</u> demonstrated by <u>high</u> past use and/or currently considered of <u>high importance</u> . These are often "one of a kind" locations with special geological or physical (more permanent) attributes (rather than vegetation or wildlife). <u>Proximity</u> to population centers may be a consideration.

State Historic Preservation Officer (SHPO)	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.
Subsistence	Section 803 of the Alaska National Interest Lands Conservation Act of 1980 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."
Thixotropic	Conditions also referred to as "quick" - the soils structure breaks down rapidly under stress or disturbance.
Threatened species	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of Interior as a threatened species.
Tongass Resource Use Cooperative Survey (TRUCS)	A study done to gather information on subsistence uses of the Tongass National Forest.
Viable population	The number of individuals of a species required to ensure the long-term existence of the species in natural, self-sustaining populations adequately distributed throughout their region.
Wetlands	Areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or other aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include 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, as wild, scenic or recreational by an act of the Legislature of the state or states through which they flow. 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.

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