

Chapter 1: Purpose and Need

Introduction

The Chugach National Forest (CNF) has received an application from Chugach Powder Guides (CPG) requesting the issuance of a five-year special-use permit authorizing them to continue to conduct guided helicopter skiing operations on National Forest System (NFS) lands on the Kenai Peninsula and adjacent to Girdwood, Alaska (hereafter referred to as the Kenai Peninsula geographic area). This document assesses and discloses the potential environmental effects of issuing this permit.

Chugach Powder Guides has operated under annual U.S. Department of Agriculture (USDA); Forest Service special-use permits since 1997. These annual permits varied from 111,200 to 159,000 acres, with 800 to 1,200 client days. CPG is seeking to expand their operations to 338,200 acres with 2,400 client days with the five-year application. The permit area is used by increasing numbers of winter recreationists, including backcountry skiers and snowmachine users. The area provides habitat to a wide variety of wildlife species. These concerns have emerged as a consideration in deciding whether, and under what conditions to issue the multi-year permit to CPG.

The objectives for this project are to:

1. Provide helicopter skiing recreation opportunities on the Kenai Peninsula geographic area consistent with direction in the Revised Land and Resource Management Plan, Chugach National Forest.
2. Provide viable opportunities for businesses that in turn supply safe, high quality recreational offerings for the public.

The Proposed Action

The proposed action requested by CPG and being considered by the Forest Service is issuance of a five-year special use permit allowing guided heli-skiing operations on portions of the Glacier and Seward Ranger Districts, CNF.

The following areas would be used:

Core Units: Glacier-Winner, West Twentymile, North Twentymile, East Twentymile, Placer-Skookum, West Bench Peak, North Bench Peak, East Bench Peak, and Grandview

Exploratory Units: West Seattle Creek, Mid Seattle Creek, East Seattle Creek, East Moose Creek, West Moose Creek, East Ptarmigan, West Ptarmigan, Snow River; and Mount Ascension

The proposed level of use is 2,400 client days (1,800 for the core unit and 600 for the exploratory unit). The core units are areas historically authorized for commercially guided helicopter skiing operations as they provide suitable terrain to meet user demand. Exploratory units are areas in which CPG would explore options for commercial activity. These units have not been historically authorized for guided heli-skiing, except in the case of the Moose Creek Unit, which was authorized for temporary use in 1997 and 1998. Throughout the life of the permit, the core and exploratory units would remain as distinct units and would not be combined.

Helicopters would support 12 groups of four people with a maximum limit of 30 takeoffs/landings per staging area each day. Two of the proposed staging areas on NFS land are at the Mile 33.2 Gravel Pit and Mile 62 Gravel Pit on the Seward Highway. Additional staging areas located on non-NFS lands include Girdwood Airstrip, Kern Creek, Big Game Alaska, Ingram Creek, and Mile 12.4. (see Map 2-2)

The project area is bordered on the west by the Hope Highway, Seward Highway, and the National Forest (NF) boundary near Resurrection River; on the north by the NF boundary; on the east by the divide between the Kenai Peninsula and Prince William Sound, and non-NF lands; and on the south by the NF boundary and non-NF lands. (see Map 1-1)

Map 1-1

Back of map 1-1

Purpose and Need

The Forest Service is mandated to provide a range of diverse, quality, recreational opportunities on the lands under its administration (Revised Forest Plan p. 3-8). These opportunities are to be made available to the public. Many areas on the Kenai Peninsula geographic area have excellent terrain and snow conditions for helicopter skiing. The role of outfitter and guide operations in helping the agency to fulfill this mandate is to assure that recreational opportunities are accessible to people without the specialized knowledge, skill, and equipment to take advantage of them on their own (USDA-Forest Service 1997). Several factors make guided heli-skiing a unique experience and an important part of the range of recreational opportunities available on the Chugach National Forest, including the following:

- Helicopter skiing provides the opportunity to enjoy the beauty, freedom, solitude, and untracked snow of the backcountry for those without the desire or physical ability to ski tour.
- Helicopter skiing makes the above mentioned opportunity available to those who have adequate skiing skills but lack the specialized equipment, avalanche knowledge, and terrain familiarity to ski in the backcountry safely.
- Helicopter skiing provides a better chance to consistently find quality snow conditions.
- Helicopter skiing provides access to slopes beyond the range of the average backcountry skier.
- Helicopter skiing allows wider dispersion of recreational use in the backcountry by integrating helicopter skiing with other recreational uses.

The purpose and need for this project is to:

1. Provide helicopter skiing opportunities on the Kenai Peninsula geographic area. There is a need to provide helicopter skiing as part of the range of quality recreational opportunities offered on the Chugach National Forest and to respond to increasing demand for this service.

This purpose and need responds to the Revised Land and Resource Management Plan for the Chugach National Forest (USDA-Forest Service 2002a) (Revised Forest Plan) desired conditions and goals to:

- Maintain quality settings for motorized recreation opportunities (Revised Forest Plan p. 3-8).
- Expand recreational capacity by developing new recreation facilities . . . in response to user demands and where appropriate to management area objectives (Revised Forest Plan p. 3-9).
- Allow, during the winter season, snowmachine and other winter motorized recreation [to] occur over most of the Kenai Peninsula . . . Helicopter access for

skiing will occur at appropriate locations (Revised Forest Plan p. 3-15).

- Create improvements that will expand the areas available for winter recreation (Revised Forest Plan p. 3-15).
- Facilitate a variety of businesses that provide or support recreational opportunities on the Forest under special use permit. (Forest Plan p. 3-14).

This purpose and need also responds to regional emphasis areas to:

- Provide infrastructure, including developed and dispersed recreation facilities . . . and associated transportation systems appropriate to the recreation setting, to meet the demand for a diverse array of quality recreational opportunities (R10 Emphasis Areas, January 2003, p. 10)

2. Provide a viable, safe, and high quality recreation experience. There is a need to provide the permitted operator with a five-year permit so that the proponent can make the investment and business decisions needed to provide a viable, safe, and high quality recreation experience. The current scenario of approving one-year permits does not allow the operator to make long-term business investments.

There is also a need to provide an adequate number of permitted days and permitted areas so that the operation is feasible given changing weather and snow conditions throughout the season. It is important to the Forest Service to permit a viable operation because it allows for:

- A high quality recreational experience to be provided on National Forest lands.
- Economic benefits to forest dependent communities associated with heli-skiing operations.
- The greatest opportunity for hiring operationally experienced guides, keeping helicopter equipment well maintained, and an overall safely provided recreational experience.

This purpose and need responds to forestwide desired conditions and goals to facilitate

- A variety of businesses that provide or support recreational opportunities on the Forest . . . under special use permit. Revised Forest Plan p. 3-14)

This purpose and need also responds to regional emphasis areas to provide recreation and tourism

- Which is ecologically sustainable and is an integral economic component of Southeast and Southcentral Alaska communities. (R10 Emphasis Areas, January 2003, p. 9)

- Enhance the health, stability, quality of life, economic vitality and adaptability of communities . . . throughout the State (R10 Emphasis Areas, January 2003, p. 2)

The National Environmental Policy Act Process

Since CPG's activities would involve NFS lands, and since issuing the permit could potentially result in adverse environmental impacts, the National Environmental Policy Act of 1969, as amended (NEPA), requires the Forest Service to assess and disclose the potential impacts on the environment. NEPA requires that environmental information be made available to federal, state, and local agencies, organizations, and individuals that may be interested in or affected by the proposed action. Opportunities to review and comment on this information must be provided before decisions are made or actions are taken on public lands.

This environmental impact statement (EIS) is being prepared in response to these requirements. The Glacier and Seward Ranger Districts collaborated in preparation of this EIS (see Chapter 5). An EIS is a disclosure rather than a decision document. Its primary purpose is to provide environmental analysis to inform the public and to assist the Forest Service in reaching a decision, documented in a Record of Decision (ROD). Specific decisions to be made by the Forest Service in consideration of this analysis are described below.

A Draft EIS on this project was released on January 23, 2004. During the 105 day review period (until May 10), 101 letters were received. The Forest Service has reviewed the comments and responded to them (see Chapter 5 in the Final EIS). The Final EIS and accompanying Record of Decision (ROD) was sent to interested government agencies, organizations, businesses and individuals. Following the release of the Final EIS there is a 45-day period during which the agency's decision can be administratively appealed in accordance with procedures outlined in 36 CFR 215.

Council on Environmental Quality (CEQ) Regulations on the application of NEPA strongly encourage federal agencies to advise private applicants of any environmental studies and information requirements that may be required to support agency review and decision making (40 CFR 1501.2[d]). The objective is to ensure that the planning of proposed actions reflects the environmental values of an area, minimizes potential conflicts, and avoids delays in completing NEPA analysis. Agencies are further directed to utilize information collected by applicants, their consultants, or other parties as long as the agency makes an independent evaluation of the content and scientific credibility of the information (40 CFR 1506.5[c]). All such information used in this EIS has undergone independent evaluation by the Forest Service prior to being used in this analysis.

Forest Plan Direction

The *Revised Land and Resource Management Plan for the Chugach National Forest* (Revised Forest Plan) (USDA-Forest Service 2002a), *Final EIS* (USDA-Forest Service 2002b), and *Record of Decision* (USDA-Forest Service 2002c) were approved on May 31, 2002. This EIS is tiered to these documents.

The management direction for this area is contained in the Revised Forest Plan. The Revised Forest Plan divides the Forest into Management Areas. Each Management Area is assigned a prescription that includes specific direction for managing various resources within the Management Area.

Each Management Area prescription includes the following:

Theme: A short description of a management scenario or philosophy.

Management Intent: A summary of the desired conditions for ecological and social systems.

Activities Table: A tabular display of typical activities that may or may not occur in a given management area.

Standards and Guidelines: Specific management direction for conditionally allowed management activities.

The proposed helicopter skiing units are located in the following management areas:

- | | |
|--|---------------|
| • 132--Wild River | 2,700 acres |
| • 210--Backcountry | 313,000 acres |
| • 231--Scenic River | 1,500 acres |
| • 242--Brown Bear Core Area | 2,200 acres |
| • 244--Fish and Wildlife Conservation Area | 12,700 acres |
| • 312--Fish, Wildlife, and Recreation | 5,300 acres |
| • 331--Recreational River | 100 acres |
| • 521--Minerals | 700 acres |

The Revised Forest Plan established standards and guidelines to protect and mitigate actions on various resources. Management Area 244-Fish and Wildlife Conservation Area has one guideline that is specific to this project, it is as follows: "Recreational activities may be seasonally restricted to meet wildlife habitat objectives or to reduce wildlife-human interactions in important habitat areas or movement corridors." (USDA-Forest Service 2002a) Appropriate standards and guidelines have been incorporated into the mitigation measures for this proposal. (see Mitigation Measures, Chapter 2)

The Revised Forest Plan also contains a provision on motorized/nonmotorized use on NFS lands. All of the proposed alternatives are within areas in the category of "**Open to All Motorized Uses**" in the winter (December 1 through April 30)*. These areas are designed to allow a full spectrum of opportunities for winter motorized recreation. Both snowmachines and helicopters are permitted in these areas during the winter season. Site specific or other closures may be implemented to avoid resource damage, wildlife conflicts, or safety issues.

A decision to issue a special-use permit allowing CPG to continue to provide guided heliskiing while minimizing the potential for conflicts with other recreationists, wildlife, and other resource values would not require any project specific or programmatic forest plan amendments.

* 5,800 acres in the Placer-Skookum unit are closed to all motorized use after March 31.

Public Involvement and Issues to be Considered

NEPA requires that the public and other agencies be involved in federal agency decision-making. An important part of this process is scoping. CEQ regulations refer to scoping as a process to determine the scope of the issues to be addressed in an EIS and to identify the significant issues related to a proposed action (40 CFR 1501.7). The major steps in the scoping process for this EIS include:

- The project was listed in the Chugach National Forest schedule of proposed NEPA projects in January of 2003. This list is sent to approximately 300 people.
- A Notice of Intent to prepare an EIS was published in the Federal Register on May 15, 2003 (Volume 68, Number 94).
- A total of eight public meetings were held at Girdwood, Seward, Moose Pass and Hope (two at each location).
- A notice describing the proposal, outlining the NEPA review process, and inviting comment was distributed to media outlets, agencies, groups, and individuals on October 31, 2002. The Districts received 221 comment letters or e-mails from federal and state agencies (3 letters/e-mails), organizations (14 letters/e-mails), and individuals (204 letters/e-mails).
- An interactive data base was developed (see Appendix A).
- The Forest Service interdisciplinary team internally reviewed the proposal and scoping comments.

As a result of the scoping process, three important issues were identified. These issues guided the analysis documented in this EIS and are summarized below.

Issue 1: Wildlife Impacts

The noise and visual disturbance of helicopters and the physical presence of heli-skiers has the potential to disturb wildlife. Factors include the distance to the disturbance, sensitivity of individual species to noise, and level of habituation (becoming accustomed to). Wildlife concerns emphasized brown bears, Dall's sheep, mountain goats, and wolverines, but potential effects on other wildlife species were also raised. Specific concerns included direct or indirect displacement of individuals by helicopters or heli-skiers, disruption of behavior, disturbance of animals on critical wintering areas or denning sites, and harm to overall health, growth rates, and reproductive success.

To contrast the proposed action and alternatives on the basis of this issue, our analysis focuses on: (1) impacts to federally listed threatened and endangered and Forest Service Region 10 sensitive species (unlikely); (2) impacts to Forest Service management indicator species, (brown bear, moose, mountain goat); (3) species of special interest (bald eagle, Canada lynx, gray wolf, northern goshawk, marbled murrelet, river otter, wolverine); and (4) other species of concern (Dall's sheep, migratory birds). These impacts are summarized in Chapter 2 and discussed in detail in Chapter 4.

Issue 2: Recreational Conflicts

While many forms of winter recreational use have increased in recent years (e.g., ski touring, skate skiing, backcountry skiing, and snowmachine use), backcountry skiers expressed the most concern regarding this proposal. Some backcountry skiers said that the presence of a helicopter, primarily as a source of noise in an otherwise pristine area, detracts from their recreational experience. The conflict is also over competition for untracked snow. Some feel that the sudden presence of heli-skiers in areas that backcountry skiers have expended considerable effort to reach is unfair, especially involving terrain accessible for day tours. Concerns for the safety of backcountry skiers and snowmachine users down slope from heli-ski groups were also expressed. Some snowmachine users felt that allowing heli-skiing in areas closed to snowmachines was unfair. The four main elements of this user conflict are: (1) noise disturbance, (2) a sense of fairness in effort expended to reach backcountry locations, (3) safety concerns regarding avalanches, and (4) litter left behind by the heli-ski company and heli-ski clients.

To contrast the proposed action and alternatives on the basis of this issue, our analysis focuses on the availability of helicopter skiing opportunities and conflicts with other winter recreationists. The following units of measure will be used:

- Proximity of helicopter flight paths and staging areas to areas used by backcountry recreationists.
- Amount of use by motorized and nonmotorized users.
- Days of week of helicopter operations.

These impacts are summarized in Chapter 2 and discussed in detail in Chapter 4.

Issue 3: Impacts on Communities

Lifestyles of rural communities can be negatively impacted by increases in permitted helicopter use either incrementally over a number of years or by a sudden increase. The noise and visual disturbance of concentrated helicopter operations could affect the quality of life for residents in the following areas: Cooper Landing, Girdwood, Hope, Moose Pass, Seward, and Sunrise.

To contrast the proposed action and alternatives on the basis of this issue, this analysis focuses on the impacts of helicopter noise and helicopter sightings on the identified communities. While the overall helicopter operation is the main topic, staging areas and travel corridors are discussed in instances where they impact residential areas.

Other Issues

Wilderness Classification

There is concern that allowing helicopter landing in roadless areas may affect future Wilderness recommendations. It is felt that the Forest Service, by permitting commercial helicopter use, is helping to build a constituency that will oppose future wilderness recommendations in these areas.

All of the proposed permit area is within inventoried roadless areas. None of the areas proposed for heli-skiing have been recommended for inclusion into the National

Wilderness Preservation System (USDA-Forest Service, 2002b). While this could change in the future, The Wilderness Act (section 4(d)) provides the Chief of the Forest Service the discretion to allow the continuation of helicopter use that was established prior to the designation of an area as Wilderness. The concern that permitted helicopter landings in the roadless areas may affect future Wilderness recommendations is addressed in the Revised Forest Plan EIS (USDA-Forest Service, 2002b) and is beyond the scope of this analysis.

All of the areas proposed for heli-skiing are "Open to All Motorized Uses" in the winter (December 1 through April 30)* through decisions made in the Revised Forest Plan (USDA-Forest Service 2002a). Whether permitting commercial helicopter use in these areas would help build a constituency that would oppose future Wilderness recommendations is beyond the scope of this analysis.

* 5,800 acres in the Placer Skookum unit are closed to all motorized use after March 31.

Cumulative Effects

There is a concern that a Forest-wide cumulative effects analysis be completed on helicopter skiing/motorized uses. There is also a concern that that the cumulative effects of year around sound should be analyzed.

The Revised Forest Plan EIS analyzed the effects of allowing winter helicopter activities and other motorized uses on a Forest-wide basis. Such an analysis is beyond the scope of this project. Summer time sounds are outside of the winter season when CPG operates. Therefore, there would be no cumulative effects. Cumulative effects for this project are discussed throughout Chapter 3.

Currently, there is one other area on the Chugach National Forest where commercially guided heli-skiing is permitted. Across Prince William Sound, the Cordova Ranger District permits heli-skiing in the Allen Glacier to Cleave Creek area. Near this area, the State of Alaska and the Bureau of Land Management permits heli-skiing on their lands in the Thompson Pass area. Because of the separation by long distances and over water, there would be no cumulative effects from these activities.

Closed Snowmachine Areas

Some snowmachine users felt that allowing heli-skiing in areas closed to snowmachines was not fair.

There are two areas within the proposed helicopter skiing units that are closed to snowmachine use: Glacier-Winner (6,100 acres) and North Bench Peak (5,600 acres). These are Revised Forest Plan decisions and beyond the scope of this project.

Decisions to be Made

The decision to be made is whether or not to issue the requested five-year special use permit for helicopter skiing in the core and exploratory units, and, if so, under what terms and conditions. The Glacier District Ranger and the Seward District Ranger are the Responsible Officials who will make these decisions.

Required Permits and Approvals

This EIS is intended to provide analysis to support decisions to be made by the Forest Service and other agencies with permitting authority over CPG's operation. The Forest Service decision will apply only to NFS lands. However, potential effects resulting from implementation of the proposed action and alternatives on lands and activities administered by other federal, state, and local jurisdictions are also disclosed in this document.

A Forest Service special use permit would be the authorizing document of any selected alternative. A special use permit would require aircraft operating on NFS lands to have: (1) a Federal Aviation Administration (FAA)-FAR Part 135 Certificate documenting safety standards and requirements, and (2) written permission to stage and refuel helicopters on private land. While the Forest Service assumes no responsibility for enforcing laws, regulations, or ordinances under the jurisdiction of other governmental agencies, Forest Service special use regulations require that permittees abide by applicable laws and conditions imposed by other jurisdictions.

Under the Coastal Zone Management Act of 1972, as amended (CZMA), Forest Service activities and development projects that affect the coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Program (ACMP). This project falls under CZMA category Federal License or Permit (15 CFR 930.50) ACMP consistency certification is normally not required.

Planning Record

This EIS takes advantage of existing information included in the *Revised Forest Plan Final EIS* (USDA-Forest Service 2002b), other environmental analyses for heli-skiing, project-specific reports and related information, and other sources as indicated. Where applicable, such information is briefly summarized and referenced to avoid duplication. The planning record for this analysis documents all project-specific information, including resource reports and other field investigations. The planning record also contains information resulting from public involvement. The planning record is located at the Glacier Ranger District in Girdwood, Alaska, and is available for review during regular business hours. Information from the record is available upon request.

Chapter 2: Alternatives

Introduction

This chapter describes how alternatives were developed, the alternatives considered but not analyzed in detail, and the alternatives studied in detail. It presents mitigation requirements that would be in place under any action alternative, and compares the environmental impacts anticipated under each alternative.

Alternative Development

Based on the preliminary issues, the Interdisciplinary Team developed five alternatives to the proposed action submitted by CPG. Included in the range of alternatives is the “No Action” alternative as required by NEPA (40 CFR 1502.14(d)). These alternatives were sent to interested parties for further review and comment. Four public meetings to review the proposed alternatives were held at Girdwood, Seward, Moose Pass, and Hope. Fifty written responses were received.

Most respondents commented on the alternative they preferred. Several respondents requested that the 2000-2002 level of use (800 client days and 111,200 acres) be added as an alternative studied in detail. Alternative 9 reflects this request.

The alternatives analyzed in detail distinguish use areas as either Core Units or Exploratory Units. Core Units are defined as areas historically authorized for commercially guided helicopter skiing operations. Exploratory Units are defined as areas that have not been historically authorized for guided heli-skiing or, in the case of the Moose Creek Unit, were authorized for temporary use in 1997 and 1998. Throughout the life of the permit core and exploratory units would remain as distinct units and would not be combined.

Alternatives Not Analyzed in Detail

Six alternatives were developed but were eliminated from detailed study.

CPG’s Original Proposal

This alternative was submitted by CPG on June 24, 2002 with their application for a five-year special use permit for guided helicopter skiing. This alternative was not carried forward because the proponent made modifications to the proposal to reduce user conflicts and impacts to communities. These modifications include, moving the boundary of the East Moose Creek unit, placing a timing restriction on the West Bench Peak unit, and changing the staging areas from Trail Lake to Mile 33.2 and Mile 14 to Mile 12.4. These modifications have been incorporated into Alternative 2, the modified proposed action.

Alternative A

This alternative was developed to address the number of takeoffs/landings in Girdwood. This alternative included fewer takeoffs and landings than the 30 cycles in the proposed action. Elements of this alternative have been incorporated into Alternative 9. For example, Alternative 9 would allow 24 takeoffs/landings from the Girdwood Airstrip.

Alternative B

This alternative was developed to mitigate mountain goat impacts using a 1,000-meter buffer. This alternative differs from the proposed action, which outlines a 500-meter buffer. This alternative was eliminated from detailed study because it excludes flights to and landings in most of the proposed use area. Furthermore, the amount of “unbuffered” non-goat habitat would not have been adequate to support a viable heli-skiing operation.

Alternative 6 - Reduced Noise and Social Impacts

This alternative was developed by the Interdisciplinary Team to emphasize a reduction of the noise and social impacts in the community of Moose Pass. No use would be permitted in West Bench Peak, West Seattle Creek, East Seattle Creek, West Moose Creek, East Moose Creek, West Ptarmigan, and East Ptarmigan. In addition, there would be no staging area at Mile 33.2.

Through public comment, CPG responded that since only the Snow River and Mt. Ascension units would be available for their use on the southern end of the project area and so little skiing is planned in these units, it would not be viable to operate in these exploratory units. Therefore, Alternative 6 was eliminated from detailed study, and Alternative 5 was modified to include the significant features in Alternative 6 to reduce user conflicts and community impacts.

Alternative 7

This alternative was developed by the Interdisciplinary Team to minimize the cumulative effects on wildlife in the heavily used motorized use areas. In this alternative, helicopter-skiing would not be authorized in East and West Moose Creek and East and West Ptarmigan units. This alternative was eliminated from detailed study because there are no additional cumulative effects on wildlife that are not already addressed by the mitigation measures developed for all alternatives.

Alternative 8

This alternative was developed by the Interdisciplinary Team to address noise concerns in the community of Moose Pass. This alternative addressed this issue by excluding the exploratory units. It was eliminated from detailed study because Alternatives 4 and 9 incorporate this design, and do not include the exploratory areas.

Alternatives Studied in Detail

This analysis addresses six alternatives in detail. These alternatives can be summarized as follows:

- **Alternative 1 - No Action:** In this case, no action is defined as not issuing the requested special use permit, and thus not authorizing CPG helicopter skiing operations on the Chugach National Forest.
- **Alternative 2 - Proposed Action:** This modified proposed action is Forest Service approval of CPG’s application for a five-year special use permit to conduct heli-skiing operations on the Chugach National Forest.

- Alternative 3 (Modified) - Reduced Recreation Conflicts and Impact on Communities: This alternative was developed by the Interdisciplinary Team to emphasize a reduction of the recreational user conflict and noise impact to communities concerns discussed in Chapter 1.

This alternative was modified slightly in the Final EIS by eliminating the timing restriction on the North Bench Peak unit, reversing the timing restriction on the East Seattle Creek exploratory unit, and adding the same restriction to the Mid Seattle Creek exploratory unit. These changes were made in response to public comments received on the DEIS (see Chapter 5).

- Alternative 4 - Current Level: This alternative is the 2003 permit level of helicopter skiing.
- Alternative 5 - Minimized Recreation Conflicts: This alternative was developed by the Interdisciplinary Team to minimize the recreational conflicts.
- Alternative 9 – 2000-2002 Level of Use: This alternative was developed by the Interdisciplinary Team to reflect the 2000-2002 level of use and acreage under permit. Some areas permitted in 2002 and prior years are no longer available for helicopter skiing under the Revised Forest Plan. To compensate for these reductions, adjacent areas that are available for helicopter skiing and were analyzed and permitted in 2003 were added to this alternative.

Table 2-1, at the end of this section, displays a summary of the alternatives.

Alternative 1 - No Action

Under the No Action Alternative, the Forest Service would not issue CPG a special use permit for guided heli-skiing. For the purposes of this analysis, it is assumed that no other permits would be issued, and that the recreational opportunity for guided heli-skiing would no longer be available on the Kenai Peninsula, CNF. It does not preclude unguided publics from chartering a helicopter and skiing in the area. This alternative provides a clear baseline for comparing the environmental impacts of the proposed action and other alternatives in this EIS. See Map 2-1.

Map 2-1

Back of Map 2-1

Alternative 2 - Proposed Action

Core Units — 141,000 acres

Core Restricted Units*— 18,100 acres

Exploratory Units — 179,100 acres

Net Acres Available (after mitigation)** - 272,801 (131,247 Core, 141,554 Exp.)

Client Days – 2,400 (1,800 Core and 600 Exploratory)

Alternative Design. This alternative is the applicant's modified proposal for a five-year helicopter skiing permit.

Alternative Description. This alternative would implement the client days proposed by the applicant - 1,800 within core units and 600 within exploratory units. A maximum of 30 takeoffs/landings per day would be allowed at each staging area. The season of operation would be from December 15 through April 20. Two helicopters would be used. A third helicopter may be occasionally used. This alternative would authorize CPG use of the units described below (see map 2-2.) .

Core Units (1,800 client days)

- Glacier-Winner
- West Twentymile
- North Twentymile
- East Twentymile
- Placer-Skookum
- Grandview
- West Bench Peak (Monday-Thursday)
- North Bench Peak
- East Bench Peak

Exploratory Units (600 client days)

- West Seattle Creek
- Mid Seattle Creek
- East Seattle Creek
- West Moose Creek
- East Moose Creek
- West Ptarmigan
- East Ptarmigan
- Snow River
- Mount Ascension

Staging Areas

- Girdwood Airstrip
- Kern Creek (avalanche gun mount site)
- Ingram Creek (limited use)
- Big Game Alaska
- Mile 62 Gravel Pit (National Forest site)
- Mile 33.2 Gravel Pit (National Forest site)
- Mile 12.4

* **Core Restricted Units** no use on Fridays, Saturdays, and Sundays.

*****Net Acres Available (after mitigation)** No-Fly Zones (see Chap. 2, Mitigation Measures, Wildlife Impact Issues, #3.)

front of Map 2-2

back of map 2-2

Alternative 3 (modified) - Reduced Recreation Conflicts/Community Impacts

Core Units — 141,000

Core Restricted Units*— 18,100

Exploratory Units — 128,200

Exploratory Restricted Units**— 19,000

Net Acres Available (after mitigation) *** – 249,992 (Core 131,247, Exp 118,745)

Client Days – 2,200 (1,800 Core and 400 Exploratory)

Alternative Design. This alternative was developed to address user conflict and community impacts. This alternative incorporates both the use of timing features and a reduction in the overall use levels in the exploratory units.

Timing features include a weekend (Friday, Saturday, and Sunday) restriction on heli-skiing in the West Bench Peak unit and a weekday (Monday through Thursday) restriction on the Mid Seattle Creek and the East Seattle Creek units. During public scoping, these areas were specifically identified as popular and accessible by non-motorized users. The timing feature is included to separate and accommodate both user groups. This alternative also reduces the amount of client days in the exploratory units from 600 to 400. This reduction was designed to reduce the chance of motorized/non-motorized interaction within the exploratory area.

This alternative also addresses community impacts by eliminating a staging area adjacent to Moose Pass and by reducing the amount of skiing area within an audible and visual zone adjacent to the communities of Hope, Sunrise and Moose Pass. Approximately 32,000 acres have been removed from the proposal. These acres comprise the exploratory units of West Seattle Creek, West Moose Creek and West Ptarmigan. In addition to eliminating these acres from the proposed action, this alternative further reduces helicopter traffic near Moose Pass by eliminating the staging area at the Mile 33.2 Gravel Pit, near Moose Pass.

Alternative Description. This alternative would implement the same user days within the core use units—1800 client days, but a reduction from 600 to 400 within the exploratory units. This alternative eliminates helicopter use in the West Seattle Creek, West Moose Creek and West Ptarmigan units and implements timing restrictions in Mid Seattle Creek, East Seattle Creek, and West Bench Peak areas. Other elements, including the season of use and design and mitigation measures are the same as the proposed action.

This alternative would authorize CPG use of the units described below (see Map 2-2).

Core Units (1,800 client days)

- Glacier-Winner
- West Twentymile
- North Twentymile
- East Twentymile
- Placer-Skookum
- Grandview
- West Bench Peak (Monday-Thursday)
- North Bench Peak
- East Bench Peak

Exploratory Unit (400 client days)

- Mid Seattle Creek (Friday-Sunday)
- East Seattle Creek (Friday- Sunday)
- East Moose Creek
- East Ptarmigan
- Snow River
- Mount Ascension

Staging Areas

- Girdwood Airstrip
- Kern Creek (avalanche gun mount site)
- Ingram Creek (limited use)
- Big Game Alaska
- Mile 62 Gravel Pit (National Forest site)
- Mile 12.4

* **Core Restricted Units** no use on Fridays, Saturdays and Sundays.

** **Exploratory Restricted Units** no use on Monday - Thursday.

*****Net Acres Available (after mitigation)** No-Fly Zones (see Chap. 2, Mitigation Measures, Wildlife Impact Issues, #3.)

Map 2-3

Back of map 2-3

Alternative 4 – Permitted Use-2003/2004

Core Units — 141,000 acres
Core Restricted Units*— 18,100 acres
Net Acres Available (after mitigation)*** – 131,247
Client Days – 1,200

Alternative Design. This alternative responds to comments expressed during public scoping that did not desire an *expansion* of the existing helicopter-skiing activity. Therefore this alternative maintains the 2003/2004 permitted helicopter skiing use level and geographic area. This alternative analyzes 1,200 user days as compared to 2,400 in the proposed action.

This alternative would not expand helicopter operations adjacent to the communities of Moose Pass, Seward, Sunrise or Hope. Therefore, no specific design features are included in this alternative to address impacts to these communities.

In addition, this alternative would not expand helicopter operations into areas with potential user conflict, such as Seattle Creek. However, this alternative does include helicopter skiing in the Bench Peak Area. Therefore user conflicts are addressed in this alternative by timing features in the West Bench Peak area, similar to Alternative 3.

Alternative Description. There would be no use in West Seattle Creek, Mid Seattle Creek, East Seattle Creek, West Moose Creek, East Moose Creek, West Ptarmigan, East Ptarmigan, Snow River, and Mount Ascension (all exploratory units). There would be no use on Friday, Saturdays, and Sundays in the West Bench Peak unit. There would be no staging areas at Kern Creek, Ingram Creek, Mile 33.2 (near Moose Pass) or Mile 12.4. Two helicopters would be used. Other elements of this alternative, including the season of use and design and mitigation measures are the same as the proposed action. This alternative would authorize CPG use of the following units (see Map 2-4):

Core Units (1,200 client days)

- Glacier-Winner
- West Twentymile
- North Twentymile
- East Twentymile
- Placer-Skookum
- Grandview
- West Bench Peak (Monday-Thursday)
- North Bench Peak
- East Bench Peak

Staging Areas

- Girdwood Airstrip
- Big Game Alaska
- Mile 62 Creek Gravel Pit (National Forest site)

* **Core Restricted Units** no use on Fridays, Saturdays and Sundays.

*****Net Acres Available (after mitigation)** No-Fly Zones (see Chap. 2, Mitigation Measures, Wildlife Impact Issues, #3.)

front of map 2-4

Back of map 2-4

Alternative 5 - Minimize User Conflicts

Core Units —135,400 acres

Exploratory Units —96,000 acres

Net Acres Available (after mitigation)*** - 179,588 (114,401 Core & 65,187 Exp.)

Client Days – 1,800 (1,500 Core and 300 Exploratory)

Alternative Design: This alternative is designed to minimize user conflicts. Alternative 5 differs from alternative 3 by *minimizing* user conflict. For example, instead of utilizing timing features, this alternative eliminates helicopter skiing in areas with user conflicts. This alternative also eliminates the exploratory unit, Mt. Ascension, and further reduces client days within the exploratory unit to 300.

User conflicts are addressed in this alternative by eliminating use areas and reducing use levels, as compared to the timing features utilized in Alternative 3. Specifically, no helicopter use would be authorized in the East Seattle Creek, West Bench Peak and North Bench Peak. As described above, non-motorized users specifically identified these areas as popular and accessible areas.

This alternative reduces user days and eliminates the Mt. Ascension area in the exploratory unit. This reduction, in both numbers and geographic area, was designed to reduce the chance of motorized/non-motorized interaction within the exploratory unit.

This alternative addresses community impacts similar to the features and design of Alternative 3. It eliminates a staging area adjacent to Moose pass and reduces the amount of skiing area within an audible and visual zone adjacent to the communities of Hope, Sunrise and Moose Pass.

Alternative Description: There would be no use in the West Bench Peak, West Seattle Creek, East Seattle Creek, West Moose Creek, West Ptarmigan and Mt. Ascension units. Other elements of this alternative, including the season of use and design and mitigation measures are the same as the proposed action. This alternative authorizes CPG use of the following units (see Map 2- 5):

Core Units (1,500 client days)

- Glacier-Winner
- West Twentymile
- North Twentymile
- East Twentymile
- Placer-Skookum
- Grandview
- East Bench Peak

Exploratory Units (300 client days)

- Mid Seattle Creek
- East Moose Creek
- East Ptarmigan
- Snow River

Staging Areas

- Girdwood Airstrip
- Kern Creek (avalanche gun mount site)
- Big Game Alaska
- Ingram Creek (limited use)
- Mile 62 Gravel Pit (National Forest site)
- Mile 12.4

***Net Acres Available (after mitigation) No-Fly Zones (see Chap. 2, Mitigation Measures, Wildlife Impact Issues, #3.)

Map 2-5

Back of Map 2-5

Alternative 9 – Reflects 2000-2002 Level of Use

Core Units —104,700 acres

Net Acres Available (after mitigation) *** – 92,623

Client Days - 800

Alternative Design. This alternative analyzes a reduction in client days from existing levels in the proposed action. This alternative analyzes 800 user days as compared to 2400 in the proposed action. Th

is alternative reflects use levels during the period 2000-2002, but would authorize a five-year permit. This alternative responds to comments received during public scoping which desired a *reduction* of the existing (2003) helicopter-skiing activity.

Alternative Description. Under this alternative, the number of client days reflects 2000-2002 use, but total acres and ski units are adjusted to account for a closure to motorized use of a portion of the Glacier-Winner Creek unit per the Revised Forest Plan. There would be no use in East Twentymile, West Seattle Creek, Mid Seattle Creek, East Seattle Creek, West Bench Peak, West Moose Creek, East Moose Creek, East Ptarmigan, West Ptarmigan, Snow River, and Mount Ascension. There would be no staging areas at Kern Creek, Ingram Creek, Mile 33.2 (near Moose Pass) or Mile 12.4. Two helicopters would be used. Other elements of this alternative, including the season of use and design and mitigation measures are the same as the proposed action. This alternative would authorize CPG use of the following units (see Map 2-6):

Core Units (800 client days)

- Glacier-Winner
- West Twentymile
- North Twentymile
- Placer-Skookum
- Grandview
- East Bench Peak
- North Bench Peak

Staging Areas

- Girdwood Airstrip
- Big Game Alaska
- Mile 62 Creek Gravel Pit (National Forest site)

***Net Acres Available (after mitigation) No-Fly Zones (see Chap. 2, Mitigation Measures, Wildlife Impact Issues, #3.)

Map 2-6

back of map 2-6

Table 2-1 Summary of Alternatives

End Notes for Table 2-1

Mitigation Measures

In addition to the specific restrictions to CPG's operation included under each alternative, the following mitigation measures apply to each action alternative. Wildlife mitigation measures have been coordinated with the Alaska Department of Fish and Game (ADFG). All mitigation measures are assumed to be in place in the "Effect of Alternatives" section in Chapter 3.

General Operating Issues

1. CPG will submit, annually, a Safety and Operating Plan for Glacier and Seward Ranger District approval that, at a minimum, will include (1) avalanche safety (addressing client safety, as well as safety of other backcountry users in the area); (2) helicopter safety; (3) emergency rescue procedures; (4) guide requirements; and (5) a system for resolving complaints from the public.
2. CPG will follow an established set of flight routes to and from heli-skiing units that avoid low-level (less than 1,500 feet above ground level [AGL]), overflights of no-fly zones, backcountry ski areas closed to heli-skiing, and residences, as weather allows. *
3. Glacier and Seward Ranger District personnel will monitor all aspects of the CPG operation on NFS lands to assure permit compliance. CPG will provide, on a need only basis, an approved (Office of Air Services carded) pilot and helicopter and follow Forest Service air safety procedures for permit administration.
4. CPG will provide the Glacier Ranger District a copy of their run log every two weeks.
5. CPG will use a GPS data logger to track their flights, and provide data to the Glacier Ranger District once every two weeks.
6. CPG will ensure that all litter is removed from the permit areas. In addition, at the end of the season, CPG shall ensure that all helicopter landing area improvements are removed. This may require a flight during the summer months after the snow has melted.

Wildlife Impact Issues

1. Helicopters will maintain a 1/2-mile horizontal (ground level) or 1,500 feet above ground level (AGL) from all observed wildlife. *
2. Helicopters will not hover, circle, or harass any species of wildlife in any way.
3. CPG will adhere to the No-Fly Zones, which identify mountain goat and Dall's sheep concentration areas (See No-Fly Zone Maps, Appendix B). No-Fly Zones are based on a separation distance of 1,500 feet from important habitat. The ADFG will be consulted by the Forest Service before any alteration of zone boundaries to less than 1,500 feet.
4. CPG will provide mountain goat, Dall's sheep, and other wildlife sightings to the Glacier Ranger District. The District will provide CPG with incidental wildlife observation forms to be filled out daily. These forms are to be submitted annually upon completion of the permit season. Unique wildlife sightings, such as wolves, wolverines, or brown bears, will be reported during the next business day.

5. If a brown bear or wolverine den is located (either by CPG or during wildlife observation flights), CPG will maintain a 1/2 mile horizontal (ground level) or 1,500 AGL separation during their operations. *
6. CPG will not ski or conduct any activity within 330 feet of known bald eagle nests.
7. Helicopter flights will not fly within 1/4-mile horizontal distance or 1,500 AGL of any active bald eagle or goshawk nest. When it is not known whether the nest is active, helicopter flights will avoid the nest*. The Glacier Ranger District will provide CPG an updated bald eagle and goshawk nest map prior to each season.

Recreation Conflicts and Community Impacts Issues

1. CPG will provide a public “heli-skiing hot line” stating their planned runs for the day.
2. CPG will not fly over the east side of Turnagain Pass (non-motorized recreation area).
3. All heli-skiing will take place between 8:30 a.m. and 7:00 p.m.
4. All helicopters will maintain a distance of 1/2 mile above the valley floors.**
5. All helicopters will maintain a distance of 1/2-mile horizontal (ground level) distance or 1,500 feet AGL above observed users. *
6. Helicopters exiting from the Girdwood Airstrip will stay at very low levels either in Glacier Creek Gorge or just west of the creek until near the Four Corners area. Flights toward Turnagain Arm and the southern units will follow the western fringe of the Girdwood Valley until over the Seward Highway, then will follow the highway or cross Turnagain Arm. Flight departures from the Girdwood Airstrip to the south over residential areas will only be used as absolutely needed due to wind direction or other safety factors. When flying south, CPG will also test and evaluate a flight path over the western fringe of Girdwood by flying low over Glacier Creek and then veering east halfway out the valley where there are no residential areas. Based on public’s comments or complaints, if any, this route could be used exclusively.
7. Helicopters exiting from the Mile 33.2 gravel pit staging area and traveling toward Upper Trail Lake will travel in a manner as to minimize noise impacts to people living with the Wilderness Park and Toklat Estates subdivisions at mile 34 of the Seward Highway, Trail Lake Hatchery and associated homes, and people’s homes along the highway on the north side of Moose Pass community at mile 30 of the Seward Highway. (Alternative 2).
8. CPG will not fly along the South Fork of Snow River drainage to reduce potential conflicts with non-motorized users. CPG will minimize the number of crossings of the drainage to access Mile 12.4 staging area and these crossings will occur as close to the South Fork and North Fork of Snow River confluence as possible.
9. Helicopters exiting/entering from the Seward Airport or Mile 12.4 staging area will not fly in the Resurrection River Valley corridor. There will be no flightseeing over Exit Glacier or Harding Ice Fields to preserve the natural quiet of the Exit Glacier area.

10. Helicopter skiing will not be permitted after March 31 in the Placer-Skookum unit in the area that is closed to all motorized use by the Revised Forest Plan.

Safety Issues

1. All FAA safety requirements will be followed.
2. Helicopters will not land above, nor will CPG ski onto an avalanche path above any observed backcountry user.
3. Explosives will not be used for avalanche control.
4. CPG will have standard fuel spill prevention, containment, and cleanup materials on hand at any fueling site and will maintain and follow a spill plan that includes spill prevention, containment, cleanup, and notification procedures. If fueling takes place within 50 feet of a wetland or water body, the fuel tank will be located within an impermeable containment basin.

**Helicopters may fly less than the minimum required distance when flight safety may be compromised.*

***Helicopters may fly less than the minimum required distance when (1) shuttling passengers from the bottom to the top of a run, (2) during landing and takeoffs, (3) flying over major highway corridors, and (4) when safety may be compromised.*

Monitoring

The National Forest Management Act requires a national forest to monitor and evaluate their forest plan (36 CFR 219.11). Chapter 5 of the Revised Forest Plan includes the monitoring and evaluation activities to be conducted as a part of Forest Plan implementation. The categories of monitoring include:

- **Implementation Monitoring:** Used to determine if the goals, objectives, standards and guidelines, and practices of the Revised Forest Plan are implemented in accordance with the Revised Forest Plan.
- **Effectiveness Monitoring:** Used to determine if the Revised Forest Plan is achieving its objectives and whether the objectives are achieving goals.
- **Validation Monitoring:** Used to determine whether the data, assumptions, and estimated effects used in developing the Revised Forest Plan are correct.
- **Baseline Questions:** Used to examine whether the assumptions and predicted effects used to formulate the Revised Forest Plan are correct.

Routine implementation monitoring is part of the administration of a special-use permit. Routine implementation monitoring assesses whether the project was implemented as designed. The Forest Service monitors the operator's performance relative to special-use requirements. If an operator is deficient in any areas of their Operation and Safety Plan or permit requirements, they are given an opportunity to correct them. If the operator is not successful in correcting the deficiencies, action is taken to revoke the permit.

The Forest Service will continue to gather information on wildlife and recreation use as described in Chapter 3.

Summary of Impacts

Wildlife Impacts (Issue 1)

General Wildlife

Under Alternative 1, No Action, CPG's permit would not be issued and no commercially guided helicopter skiing would occur on NFS lands on the Kenai Peninsula unless another permit was applied for and granted. As a consequence, there would be no impacts to wildlife from commercial helicopter skiing activities.

One may make the assumption that the action alternative that impacts the least number of acres would impact the least number of individual wildlife, and the alternative that provides for the least number of client days would have a lessening degree of the overall effect on wildlife. If this was true, then the alternatives would range from least impacting to potentially more impacting in the following order: Alternatives 9, 4, 5, 3, and 2. However, the distribution of individuals in the population is not equal across the project area. Therefore, this assumption may not be correct. Furthermore, the specific locations of wide ranging species such as wolverine and grizzly bear are difficult to pinpoint.

In order to address the uncertainty related to population distribution over the large geographic area analyzed, the project has applied similar mitigation to all action alternatives. Furthermore, the mitigation and design features applied to the project are designed to have minimal impacts on wildlife populations, regardless of whether or not a specific population was present in a certain ski area. By implementing this conservative approach, none of the proposed heli-skiing activities should impact any wildlife population, although minor effects to individual animals may occur.

Brown Bears

Brown bears are normally not active during the heli-skiing season but winter in dens through mid-April. Brown bears may be susceptible to disturbance while in their dens or at the time of emergence. The proposed mitigation measure would reduce the potential for direct disturbance, but would not eliminate it, as brown bears den in different locations each year. Identifying emerging brown bears would reduce further disturbance by avoiding the area.

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit were applied for and granted. As a consequence, there would be no impacts to brown bears. Under all action alternatives, heli-skiing operation may affect individual brown bears. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and unless safety would be compromised. If a brown bear den is located (either by CPG or during wildlife observation flights), then CPG would maintain a ½ mile horizontal or 1,500 AGL separation during their operations. Helicopters may not hover, circle, or harass brown bears in any way. Therefore, it is unlikely that any action alternative would have a substantial effect on brown bears or impact brown bear populations or viability.

Mountain Goats

Heli-skiing has the potential to disturb mountain goats. Physiological responses are unknown, but measures of overt behavior indicate short-term disturbance and no significant alteration of maintenance behavior. If helicopters consistently use similar flight paths, mountain goats may become habituated, reducing the effect of the disturbance.

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit were applied for and granted. As a consequence, there would be no impact from this activity to mountain goats. All action alternatives may affect individual mountain goats, but it is unlikely that any alternative would have a substantial effect on mountain goat populations or viability. Helicopters are not allowed to access the no fly zones unless they maintain a 1,500 feet AGL at all times and they must maintain a 1,500 feet separation level from all observed goats. Helicopters may not hover, circle, or harass mountain goats in any way.

Wolverine

Denning females could be displaced by helicopter skiing activities occurring in denning areas and could abandon their den sites. Heli-skiing in remote areas has the potential to displace wolverines, or disrupt foraging or travel patterns.

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area, unless another permit were applied for and granted. As a consequence, there would be no impacts to wolverine. Under all action alternatives, heli-skiing operation may affect individual wolverine. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and if safety would be compromised. If a wolverine den is located (either by CPG or during wildlife observation flights), then CPG would maintain a 1/2 mile horizontal or 1,500 AGL separation during their operations. Helicopters may not hover, circle, or harass wolverine in any way. Therefore, it is unlikely that any action alternative would have a substantial effect on wolverine or impact wolverine populations or viability.

Dall's Sheep

Heli-skiing has the potential to disturb Dall's sheep. Behavior responses are similar to those observed in mountain goats.

Under Alternative 1, No Action, CPG's permit would not be issued and there would be no impacts to the Dall's sheep. No-fly zones created for mountain goats overlap with concentrations of Dall's sheep according to observations made by the ADFG (L. Nichols personal communication) and summer survey data (USDA-Forest Service, unpublished). Helicopters are not allowed to access the no fly zones unless they maintain a 1,500 feet AGL at all times and they must maintain a 1,500 feet separation level from all observed sheep. Helicopters may not hover, circle, or harass sheep in any way. Under all action alternatives, heli-skiing operation may affect individual sheep, but it is unlikely to have a substantial effect on their populations or viability.

Recreation Conflicts (Issue 2)

Alternative 1 - No Action

Heli-skiing opportunities

This alternative would eliminate any opportunities for heli-skiing opportunities on the Kenai Peninsula geographic portion of the Chugach National Forest (including the area around the community of Girdwood). These opportunities would still be available on other portions of the Chugach National Forest near Valdez.

User Conflicts

Denial of CPG's application would benefit backcountry skiers by eliminating the noise and other visual disturbances associated with helicopters as well as the competition for untracked snow associated with heli-skiers. These benefits would be most evident in areas used by both types of skiers, particularly in the Glacier- Winner Creek and Bench Peak areas and other accessible terrain on the Kenai Peninsula.

Alternative 2 - Proposed Action

Heli-skiing opportunities

A total of 2,400 client days would be permitted for heli-skiing with 1,800 client days for core units and 600 client days for exploratory units. The area that would be permitted totals 338,200 acres. There is a timing restriction, no use on Friday through Sunday, on one unit (18,100 acres). This alternative would make the maximum opportunities available to members of the public who wish to participate in heli-skiing activities. New areas would be available for those clients who are returning.

User Conflicts

This alternative would have the highest potential for user conflicts because of the total number of client days (2,400) that would be permitted, and it would be the largest area under permit (338,200 acres). This alternative would authorize use on 18 units, 9 core units and 9 exploratory units. As compared to 2003 in which 7 units were authorized for heli-skiing on a total of 159,100 acres.

Alternative 3 (modified)

Heli-skiing opportunities

This alternative would have the same number of client days in core units available for heli-skiing in core units as Alternative 2, but less client days in exploratory units. Some units would be eliminated and there would be a timing restriction on some units. The area that would be permitted for heli-skiing totals 306,300 acres. A total of ***** acres would not be available Friday through Sunday and ***** acres Monday through Thursday. New areas would be available for those clients who are returning. A total of 2,200 client days would be permitted with 1,800 client days for core units and 400 client days for exploratory units.

User Conflicts

This alternative would have the second highest potential for user conflicts because of the total number of client days that would be permitted and it would be the second largest area under permit.

Alternative 4

Heli-skiing opportunities

This alternative would make available the same opportunities for heli-skiing than what has been permitted in the past two years (159,100 acres). Several of the units requested by CPG would not be permitted in this alternative (see Map 2-4). There is a timing restriction on one unit (18,100 acres). Heli-skiing activities in this unit would be permitted on Monday through Thursday. There would be no new areas available for those clients who are returning but they may be able to ski different terrain in the same units pending weather and snow conditions. A total of 1,200 client days would be permitted.

User Conflicts

This alternative would have a low potential for user conflicts because of the total number of client days that would be permitted and the reduced area under permit.

Alternative 5

Heli-skiing opportunities

This alternative would have less client days available for heli-skiing than Alternative 2 and some areas would be eliminated. The units that would be permitted cover 231,400 acres of National Forest. New areas would be available for those clients who are returning. A total of 1,800 client days would be permitted with 1,500 client days for core units and 300 client days for exploratory units.

User Conflicts

This alternative would have a moderate potential for user conflicts because of the total number of client days that would be permitted and the area under permit.

Alternative 9

Heli-skiing opportunities

This alternative would have less client days available for heli-skiing than in Alternative 2 and several areas are omitted. The units that would be permitted cover 104,700 acres of National Forest. No new areas would be available for those clients who are returning. A total of 800 client days would be permitted. This alternative is similar to CPG's permitted use prior to 2003.

User Conflicts

This alternative would have the least potential for user conflicts because it has the least number of client days that would be permitted and smallest area under permit.

Impacts on Communities (Issue 3)

When viewed in terms of the weighed populations percentage (see Chapter 4, Issue 3), residents of Girdwood would be the most affected by helicopter noise and helicopter sightings. Helicopters using the Girdwood Airstrip as a staging area and the North Twentymile Complex travel corridor through Glacier/Winner Creek unit would be readily heard and seen. In the Moose Pass area, helicopters would be readily heard and seen when using the Moose Creek travel corridor and the Mile 33.2 Gravel Pit staging area. People living near the staging area would be affected the most. As Mile 33.2 staging area is not analyzed in the other alternatives, this is relevant only to Alternative 2. Helicopters would also be heard and seen in Sunrise during helicopter activity in the West Seattle unit.

Chapter 3: Affected Environment

Introduction

This chapter describes the current environment that would be affected by the alternatives. The Background Information section lays the foundation for the environmental analysis relevant to assessing impacts from helicopter skiing on the Kenai Peninsula geographic area during the winter. The environmental analysis centers on the three issues associated with this proposal that were identified through public and agency scoping as described in Chapter 1. In addition, items required by NEPA are also addressed.

Background Information

Winter Recreationists

The Kenai Peninsula has a wide variety of terrain for winter recreation activities. While terrain somewhat dictates the type of activity, it is not a hard and fixed criteria. For example, Nordic or cross-country skiers do not always ski close to a road. Some long-narrow, gentle valleys, such as Twentymile and Placer Creek, take cross-country skiers deep into the backcountry. While other areas close to the highway, such as Carter Lake, require a short arduous climb to reach the open, gentle terrain of the lake. While still other areas, such as the upper Snow River, require a long and strenuous climb. Likewise, snowmachine users also use a wide variety of terrain. Some like the gentle valleys to travel far into the backcountry, while others prefer the challenge of a demanding climb. Other activities that take place in the winter season include trapping, ice fishing, ice skating, and nature photography with people using motorized or non-motorized modes for transportation to pursue these activities.

In order to minimize confusion in this analysis, it is important to establish terms and definitions for each type of winter backcountry user. These users and activities are described below to lay the foundation for the analysis of effects, discussed in the sections that follow (see Chapter 6 Glossary).

- **Non-motorized winter users:** People using non-motorized methods for access and transportation for winter activities such as skiing, snowboarding, and snowshoeing.
- **Backcountry skiers:** Includes those skiers who travel away from the highway system and seek steeper terrain to telemark, alpine ski, and snowboard.
- **Touring skiers and skate skiers:** Includes people who utilize skate skis and traditional Nordic skis, and who are away from the highway system but seek flatter terrain (i.e. valley bottoms, trails, etc).
- **Winter motorized users:** People using motorized equipment for access and transport for winter activities such as heli-skiing and snowmachining.

- **Heli-skiers:** Heli-skiers are delivered to drop-off points on ridges or peaks by helicopter, gathered at pickup points after skiing down, and are ferried back to drop-off points. Most use alpine equipment, but telemark, touring, and snowboard gear is also used. Guided heli-skiing has increased from 213 client days in 1997 to over 1,000 client days in 2002. Under this proposal, CPG is seeking 2,400 client days of use.
- **Snowmachine users:** Includes all people using over-the-snow machines. Since 1996, Alaska has seen nearly a six-fold increase in the number of registered snowmachines. In 2004, Anchorage had 23,755 registered snowmachines. Statewide, there were over 90,000 registered snowmachines (Alaska Division of Motor Vehicles 2004).

The attitudes and feelings about helicopter noise and disruption of the serenity of the area varies widely. Some winter recreationists demand that the natural quiet of the area be maintained with no helicopter or snowmachine use. Others accept the activity as long as the noise does not affect them or the helicopters operate away from the road system. Still others fully support heli-skiing because of the opportunity to ski the backcountry and the economic benefit it provides to the local community. Some residents find helicopter noise to be one of the most annoying noises there is, while others accept it and do not think it is obtrusive.

Duration of heli-skiing activities

Guided helicopter skiing on the Kenai Peninsula geographic area was first approved in 1974. Another operator, Far North Ski Guides, had a permit in 1977. There is no record of the level of use. In 1997 CPG was granted a permit. A similar permit was issued in 1998. In 1999, the permit area was reduced. For the 2000 season, a one-year permit was issued for five units totaling 111,200 acres with a maximum of 800 client days of skiing. Similar permits were issued for the 2001 and 2002 seasons. In 2003, the use area was expanded to seven units totaling 159,000 acres with a maximum use of 1,200 client days. In 2004 permit was reissued for the same areas and client days of use.

CPG's 2003 permit had a 76-day (2/3 – 4/20) operating season with an upper limit of 1,200 client days of use. Due to weather, snow conditions, and number of clients, in 2003 CPG flew heli-skiers on 35 days and used 531 of their client days. The most used unit, Glacier-Winner, was used on 21 days. The least used unit, East Twentymile, was only used 2 days. One unit, North Twentymile, was not used at all. In 2004, CPG used 404 client day. Again poor snow conditions contributed to this low use (see Appendix G-1 and 2 for detailed information on CPG's use for 2001 through 2003.) The impact analysis assumes that each area could be used to the maximum allowable days.

Communities Affected

Listed are the principle areas where helicopter activities could be heard from each of the communities. (see the Impacts to Communities section in this chapter for a detailed description of the affected communities and residents.)

The following communities could be affected by the helicopter skiing proposal:

<u>Community</u>	<u>Areas Affected by</u>
Cooper Landing	Mt. Ascension unit
Girdwood	Girdwood Airstrip staging area Glacier-Winner unit Bench Complex travel corridor
Hope	None
Moose Pass	Mile 33.2 Gravel Pit staging area Mt. Ascension unit Moose Creek travel corridor
Seward	Flights to and from Airstrip
Sunrise	West Seattle Creek unit

Sound

Measuring Sound in General

The most common unit for measuring sound is the decibel (dB), a logarithmic scale of sound power or intensity. Like the Richter scale used to measure the magnitude of earthquakes, an increase of 10 dB means an increase in sound intensity by a factor of 10 (10x) and an increase in 20 dB means an increase in sound intensity of 100 (100x). Conversely, a reduction of 10dB means 1/10 the sound intensity and a reduction of 20 dB means a 1/100 the sound intensity. Ambient levels of sound refer to typical average sound levels over a period of time, typically 24 hours.

Common Transportation Sounds

Ambient sound data suggests that transportation sound is a common frame of reference if not part of the sound environment in a community. Data for "typical" highway, railroad, and aircraft noise levels are sparse and generalized, with dB ranges given being so large (because they are trying to average a wide range of situations and machinery) that variations in the reported sound levels may make qualitative analysis applied to individual situations meaningless. In other words, the precision of the measurement tool exceeds that of the data to be measured.

For example, estimates of "highway" traffic sound include between 70 dB for passing automobiles and 80 dB for heavy traffic as heard from a sidewalk. Another source estimated light automobile traffic at about 50 dB. Further, since frequency (volume of traffic) also enters into the sound equation, as does relative composition or proportion of commercial and noncommercial vehicles, average speed, stop-and-go traffic, and time of day, estimates of typical noise are endlessly dynamic.

Snowmobiles are reported to routinely produce sound levels exceeding 80 dB and some have been reported to exceed 100 dB.

Railroad sound levels may reach 110 dB from horns at a distance of 100 feet and the train itself passing at 80 dB.

Reported aircraft noises typically refer to large commercial aircraft using metro airports, since the potential impact was great enough to warrant expenditure of a noise study.

Rural areas have had little or no searchable study results on aircraft sound. The Federal Aviation Administration has published some detailed noise outputs of light aircraft and helicopters. For example, common models such as the Cessna 206 generate 70dB and the Piper PA-18 Super Cub generates 60 dB on take-off. In level flight at 500 feet elevation, an AStar 350 helicopter used by CPG produces 75 dB, at 1,000 feet it produces approximately 70 dB. During power ascent and landing approaches, sounds are the loudest - 87.1 to 94.5 dB.

Effect of Distance on Sound Intensity

Sound level (noise) dissipates predictably as a function of distance from source and receptor (in this case, humans). In the simplest situation, a stationary point source, noise dissipates inversely as the square of the distance from the source--assuming no barriers or interference--such that sound level decreases approximately 6 dB for every doubling of distance. For a simple example, an automobile might produce 80 decibels at a distance of 25 feet. At a distance of 50, the noise level will be 74 dB; at a distance of 100 feet the noise level will be 68 dB; and at distance of 200 feet the noise level will be 62 dB.

Other Sound Attenuation Factors

Distance is but one factor in buffering or reducing the impact of noise. In addition, terrain, ground cover and vegetation, and temperature may also affect the transmission or reflection of noise. For example, sound dissipates less in cold, dense air. Vegetation in general tends to absorb sound but snow cover tends to mask the absorptive capacity of vegetation. Sound will tend to reflect within canyons and valleys.

Reasonable Foreseeable Actions

Any action that results in more people in the backcountry or more disturbances of natural habitats in or near the permit area has the potential to cause cumulative impacts to wildlife, winter recreationists, and local residents. The following on-going projects may increase winter recreational use in the project area:

Seward to Girdwood Iditarod National Historic Trail

The primary goal of this plan is to promote the preservation, enjoyment, use, and appreciation of the Iditarod National Historic Trail (INHT). Since the INHT designation as a National Historic Trail in 1978 and the development of the *INHT Seward to Nome Route Comprehensive Management Plan* in 1986, there has been subsequent development of a variety of agency, community and advocate plans and activities associated with the INHT.

The Forest Service approved a Decision Notice and Finding of No Significant Impact for this trail on January 23, 2004 (USDA, Forest Service 2003d). The decision includes approximately 186 miles to be managed as part of the INHT. Approximately 82 miles of trail reconstruction, 77 miles of new trail construction, 32 major trail bridges, and at least 50 minor bridges and walkways. Winter motorized use on approximately 105 miles of winter trail and 81 miles of trail would be closed to winter motorized use. All routes follow Revised Forest Plan direction relative to winter motorized and non-motorized use. The project also includes construction of five new trailheads and reconstruction of three existing trailheads, and the construction up to six new cabins: Mills Creek, eastside of Ptarmigan Pass, Lost Lake Trail and Twentymile, and two in the Johnson Pass area.

Portions of the selected trail route cross through the Glacier/Winner Creek unit and through the southwest corner of West Twentymile unit. Winter use management is not proposed for these sections of the trail. The trail would also cross through the Bench Peak unit along Johnson Pass Trail from Trail Lake to Granite Creek and travel along Lost Lake Trail/Primrose Trail that is adjacent to the Mt. Ascension unit.

Nordic Ski Train Permit

The Anchorage Nordic Ski Club has received a permit from the Forest Service in past years to have several railroad cars of skiers transported up to Grandview and be dropped off for a day of skiing along Trail Creek and up to several of the glaciers in the area. The permit was typically authorized several weekends in March of each year. In 2004, the Ski Club was reissued a multi-year permit for this activity.

Outfitter/Guide Use

There are currently three outfitter/guide companies, other than Chugach Powder Guides, that are permitted to use associated trails and areas within or adjacent to the project area. These companies are Alaska Snow Safaris, Glacier City Snowmobile Tours, and Wilkinson Expeditions. The first two companies are permitted to guide snowmachine trips in the Turnagain Pass area, Placer and Twenty Mile drainages, as well as Johnson Pass Trail area from the north side. Alaska Snow Safaris has a total of 575 available client days, and Glacier City Snowmobile Tours has a total of 300 available client days. Wilkinson Expeditions is permitted for skiing and camping in Placer River Valley, Johnson Pass from the south side, Russian Lakes Trail, and Ptarmigan Creek Trail. Wilkinson Expeditions is permitted for 15 or less available client days at each area.

Paradise Valley Hut-to-Hut Proposal

The Alaska Mountain and Wilderness Huts Association (AMWHA) submitted a proposal in June 2002 for a system of multi-party backcountry huts that are open to the general public and linked by foot trail through the backcountry of Ptarmigan Lake and through the North Fork of Snow River drainages. However, this proposal has been modified due to public concern regarding the impacts of a hut to hut system on the resources in this area. Currently, AMWHA is exploring the possibility of a hut to hut system in Mills Creek through Stormy Creek either connecting to Johnson Pass Trail or to the Alaska Railroad. A revised proposal has not been received by the Forest Service as of the publication of the EIS. The Huts Association may also expand their proposal to include the possibility of building a hut-to-hut system within the Twentymile River drainage, and/or the Placer River drainage. The Forest Service as of the date of this report has not formally accepted the AMWHA proposal as an application of use. AMWHA is continuing to evaluate locations for a possible hut to hut trail system”

Alaska Mountain Yurt Proposal

There is a proposal to build a yurt structure (a semi-permanent tent) near Cooper Lake for guided recreation use primarily in the winter but could also serve summer recreationists. The proposal includes establishing a yurt on decking for paying clients for overnight accommodations during their guided recreation trips near Cooper Lake. The heli-skiing proposal overlaps with the yurt proposal in the Mt. Ascension area. Since the primary use season is winter and their target is backcountry skiers, there could be a conflict between the two proposals. The Forest Service, as of this date, has not formally

accepted this proposal as an application of use.

Recreation Facility Development within the project area

A new cabin is being proposed at Carmen Lake (East Twentymile unit). Two other recreation facilities under consideration include a ski trail system in the Grayling/Meridian Lake area and a whistlestop campground adjacent to the Railroad. These proposed facilities have not yet been analyzed or added to the Forest program of work.

Other Helicopter Supported Recreation Activities in the project area

Permits have been granted for other helicopter supported recreation activities including dog sledding on Punch Bowl Glacier, snowmobiling on Spencer Ice Field, and hiking on Spencer Glacier and Witter Glacier. All of these are summer activities and are outside of the winter cumulative effects period.

Kenai Forest Plan Amendment (Carter Crescent Project)

In response to a Revised Forest Plan appeal decision, the Regional Forester directed the Chugach National Forest to reconsider the closing of the Carter-Crescent Lakes area to winter motorized access. As a result of scoping on the project, the area to be analyzed for winter motorized/non-motorized determinations was expanded to areas south of Summit Lake.

Sterling Highway Reroute (Cooper Landing Bypass)

The Alaska Department of Transportation and Facilities (ADTF) has proposed to reroute the Sterling Highway to bypass Cooper Landing and to move the highway away from the river canyon. Three Alternatives have been proposed: Juneau Creek, G-South, and Cooper Creek. All of these alternatives involved National Forest land. An EIS is being prepared on this project by ADTF. It is not anticipated that this project will not effect this proposal.

Wildlife

Wildlife in this EIS is address at two levels: (1) general wildlife and (2) individual species including: (a) federally listed threatened and endangered species and Forest Service Region 10 sensitive species, (b) Forest Service management indicator species, (c) species of special interest, and (d) other species of concern that may be affected by this proposal. Much of this information is taken from the *Wildlife Specialist Report* prepared for this project by Forest Service Wildlife Biologists Michael I. Goldstein, Mary Ann Benoit, William Shuster and Aaron J. Poe (USDA-Forest Service 2003a).

General Wildlife

Current Situation

The Chugach National Forest provides habitat for an estimated 232 vertebrate species including 51 mammals, 179 birds, and 2 amphibians. There are 15 orders and 37 families of birds and 6 orders of 15 families of mammals. These species contribute to the overall health of the Forest and provide Forest users with a full range of opportunities that include consumptive and non-consumptive activities (USDA Forest Service 2002b). Many of these species are found on the Kenai Peninsula geographic area.

Individual Species

Current Situation

Threatened and endangered species and Forest Service Region 10 sensitive species (TES), Forest Service management indicator species (MIS), species of special interest (SSI) are defined in the Revised Forest Plan (USDA-Forest Service 2002a). These species and other species of concern (SOC) are listed in Table 3-1. Species that are shaded do not have occupied habitat within the proposed heli-skiing areas or are not winter residents and, therefore, will not be further evaluated.

Threatened, Endangered and Sensitive Species

No threatened, endangered or sensitive species occur within the permit area during the permit-operating season.

Management Indicator Species

Management Indicator Species that may be present during the heli-skiing operating season are the brown bear, moose, and mountain goat.

Table 3-1 Wildlife Species

Species	TES	MIS	SSI	SOC
Dusky Canada Goose	X			
Humpback Whale (Endangered)	X			
Montague Island Tundra Vole	X			
Osprey	X			
Peal's Peregrine Falcon	X			
Steller's Eider (Threatened)	X			
Steller Sea Lion (Endangered)	X			
Trumpeter Swan	X			
Black Oystercatcher		X		
Brown Bear		X		
Moose		X		
Mountain Goat		X		
Bald Eagle			X	
Canada Lynx			X	
Gray Wolf			X	
Marbled Murrelet			X	
Montague Island Hoary Marmot			X	
Northern Goshawk			X	
River Otter			X	
Sitka Black-tailed Deer			X	
Townsend's Warbler			X	
Wolverine			X	
Dall's Sheep				X
Migratory Birds				X

Brown Bear--The Kenai Brown Bear has been the subject of study for over 20 years culminating in *A Conservation Assessment for the Kenai Peninsula Brown Bear* (Interagency Brown Bear Study Team 2001). The number of brown bears on the Kenai Peninsula is estimated at 280, but the accuracy of this number is uncertain. New genetic mark-recapture techniques are being developed which will provide a more accurate estimate of the population. A recent genetic study found that brown bears (1) appeared to be one large panmictic population (random mating within a breeding population), with no genetic subdivisions, (2) showed neither significant evidence of inbreeding nor any signature of a significant historic bottleneck, and (3) were genetically stable (Jackson et al. in preparation). Barriers such as mountains and glaciers on the Kenai Peninsula, as well as the isthmus at Turnagain Arm, seemed insignificant in reducing gene flow.

Habitat modification and human activities such as road construction, residential and commercial developments, mining, timber harvest, and outdoor recreation has reduced the habitat of the brown bear on the Kenai Peninsula (Suring et al. 1998). Habitat modification and human activities have increased the number of brown bear killed in defense of life and property (DLP) (Suring and Del Frate 2002). During the summer, bears concentrate along low-elevation valley bottoms and coastal streams. Several encounters have occurred resulting in injury to humans and injury or death to bears. For 2003, 12 female brown bears were killed in DLP and the fall hunting season was cancelled by the ADFG.

In the winter, brown bears den throughout the Kenai Peninsula. Bears use a variety of habitats for denning but have a tendency to den on steep slopes with stable snow conditions. Emergence typically occurs in mid-April. Bears are prone to starvation during den emergence and require undisturbed habitat in order to acquire adequate forage (Olliff et al. 1999). To help identify areas where backcountry recreation and brown bear dens might conflict, two models were built to describe habitat variables conducive to brown bear denning. They are based on radio telemetry locations collected from denning brown bears during winters of 1995-2002. Using statistical distance estimators (e.g., Mahalanobis distance) the similarity between sites used by denning bears and associated habitat layers across the analysis area were modeled. This model has been produced, presented in professional meetings, and is currently under statistical review. A stepwise logistic regression model was built (resource selection functions) from the same data with three objectives: (1) to validate the statistical procedure; (2) to obtain the best result for management; (3) to best understand what variables are most important to bears selecting den sites. The development of the final validated models should be complete by December 2004.

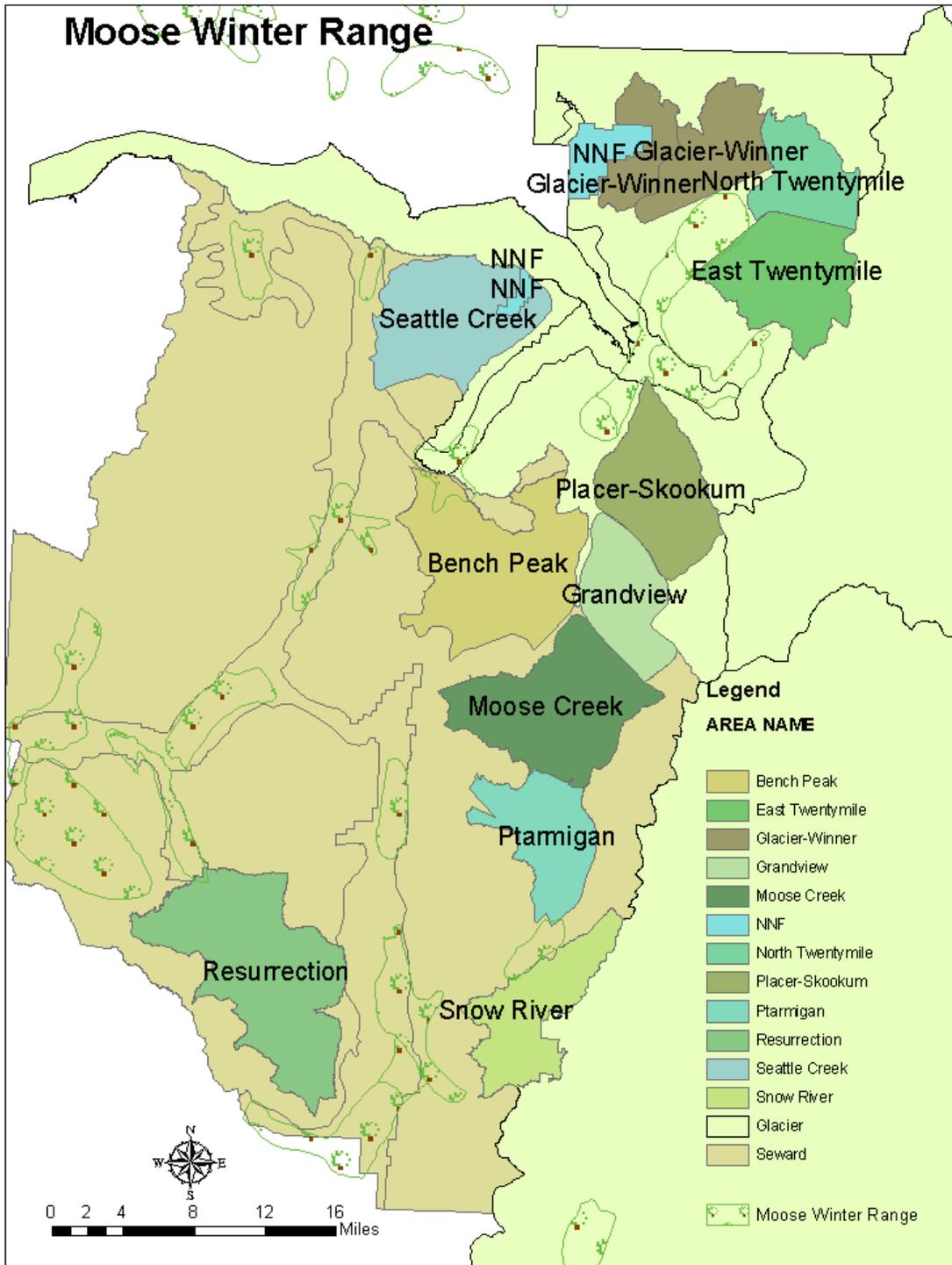
Studies on the effects of aircraft, including fixed-wing planes and helicopter, report both behavioral and physiological responses of brown bears to overflights (Harding and Nagle 1980, Scallenberg 1980, Reynolds et al. 1986, McLellan and Shackleton 1989, and McLellan 1990). Overt behavior responses, such as running and hiding, typically occur when bears are active. The literature presents differing opinions on whether or not bears will habituate to noise disturbances, such as helicopter overflights (Harding and Nagy 1980, McLellan 1990). In general, habituation is less likely to occur when the disturbance is unpredictable and irregular. Responses of bears in dens are harder to measure, and few studies of aircraft disturbances over dens exist (Reynold et al. 1986).

Overflights during radio telemetry studies have caused increased movement in the den (Shoen et al. 1987, Smith and Van Daele 1990), but there is no threshold for overflights causing den emergence or relocation.

Moose--Moose are primarily associated with early to mid-succession habitat and riparian areas (USDA-Forest Service 2002b). On the Kenai Peninsula, limitations on population growth include winter habitat, predation, hunting, and mortality from vehicular collisions (Lottsfeld-Frost 2000). The location of feeding and thermal cover is important for winter survival (Renecker and Schwartz 1998). Moose are typically concentrated at lower elevations during the winter; wintering grounds are generally forested habitat below tree line (see Map 3-1).

Little information exists on the effect of helicopter over-flights on moose. Moose in the summer were more affected by encounters with humans on foot than by encounters with vehicles including helicopters and airplanes. Disturbance in the winter may be more important due to higher energy costs of movement in the snow and lower quality of available forage (Anderson et al. 1996).

Map 3-1



Mountain Goat--Mountain goats use cliffs, alpine, and sub-alpine habitats. They are generally found near steep cliffs with slopes over 50 degrees. Goats are most abundant in the highly glaciated costal mountains and least abundant along the relative dry west slopes of the Kenai Mountain range where they coexist with the Dall's sheep (Del Frate 1994). Cliffs and steep broken ground are used as habitat to escape from predators. The need for escape terrain in close proximity to food is a critical factor in habitat selection. During the winter, mountain goats restrict their activities to south facing slopes, steep cliffs, and windswept alpine ridges where the snow accumulation is less than in other portions of their range (Fox 1983, Chadwick 1983). Winter habitat may limit goat populations in South-central Alaska (Surling et al. 1992).

Winter surveys were conducted for mountain goats on the Kenai Peninsula and upper Turnagain Arm between late February and mid-April, 2000-2002. Summer surveys were conducted during August and September 2000-2002 in the central Kenai Peninsula, immediately adjacent to or overlapping areas surveyed during the winter. From this information, a winter mountain goat habitat model was created. Fifty-seven no-fly zones were developed based on winter goat locations and modeled winter habitat; and buffered by at least 1,500 feet to allow for goat/helicopter separation. Map 3-2 shows mountain goat winter habitat modeled from goat surveys and track collections during the winters of 2000-2003. No-fly zone are shown in Appendix C. This model will be updated as additional survey information is collected.

Mountain goats respond to helicopter and aircraft overflights based on type of aircraft, distance from goats, angle of approach, topography and habitat (Foster and RaHS 1983, Joslin 1986, Coté 1996, USDA-Forest Service 2003b). Behavior responses included alert interruptions from rest, increased foraging, and escape behavior. Closer and more direct flight paths elicited the strongest responses. It is unknown how these behavioral responses correlate with physiological stress or population viability.

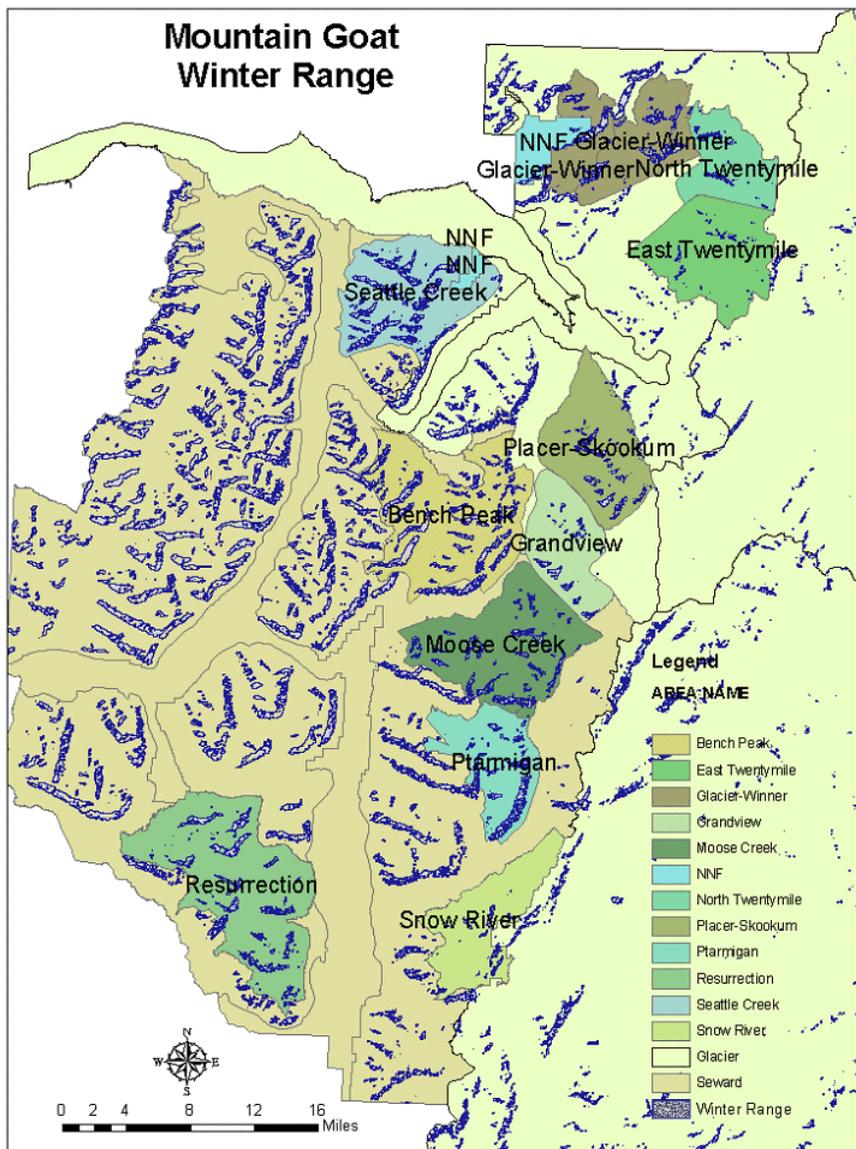
Contrary evidence exists as to whether or not goats habituate to aircraft overflights. Goats in southeast Alaska were exposed to repeated flight-seeing overflight and reacted less than goats with no prior history to aircraft (USDA-Forest Service 2003b). However, goats in Canada exposed to helicopters with sling loads did not habituate (Foster and RaHS 1983, Coté 1996)

Preliminary data analysis from the Chugach National Forest found that over 90 percent of all disturbance reactions were short term in nature (less than two minutes) and that experimental helicopter overflights did not appear to affect the amount of time the goats spent in maintenance behavior (USDA-Forest Service 2003b).

Winter surveys were conducted for mountain goats on the Kenai Peninsula geographic area between late February and mid-April 2000-2003. Summer surveys were conducted during August and September 2000-2002 in the central Kenai Peninsula immediately adjacent to or overlapping areas surveyed during the winter. From this information, a winter mountain goat habitat model was created. Fifty-seven no-fly zones were developed based on winter goat locations and modeled winter habitat; and buffered by at least 1,500 feet to allow for goat/helicopter separation. Figure 3-2 shows mountain goat winter range modeled from goat survey and track collections during the winters of

2002-2003. No-fly zones are shown in Appendix C. Resource selection function analyses are underway which will update the model. Presence/absence data will be modeled to provide probability of occurrence of goats across the eastern Kenai Peninsula and upper Turnagain Arm. The model will have confidence intervals and be statistically validated for its application across the entire analysis area. From this analysis, and based on the data collected from 2000-2004, there will be an updated GIS coverage of goat habitat. Completion of this analysis is scheduled for April 2005. ADF&G biologists may complete additional validation of these findings by conducting survey flights over the southern areas of the analysis area. If needed, these flights could occur as early as February of 2005.

Map3-2

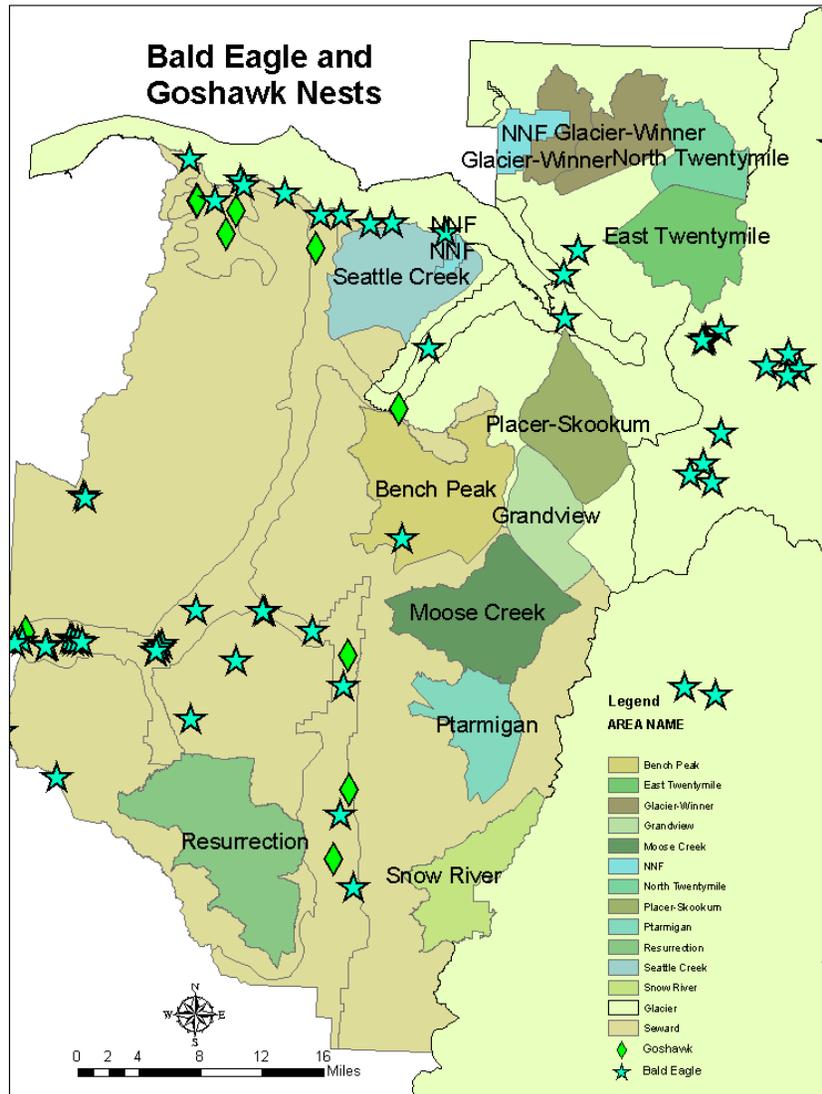


Species of Special Interest

Species of Special Interest that may use the area during the heli-skiing operating season include the bald eagle, Canada lynx, gray wolf, northern goshawk, river otter, marbled murrelet and wolverine.

Bald Eagle--Bald eagles in Southcentral Alaska generally nest in old cottonwood trees near water and use the same nest each year (Daum 1994). The nesting season is generally from March 1 to August 31 (USDA-Forest Service 2002b). Bald eagle protection standards are outlined in an Interagency Agreement between the Forest Service and the U.S. Fish and Wildlife Service, and include a 330-foot limited use zone around nest locations (U.S. Fish and Wildlife Service 2002). Bald eagle nests occur within Seattle Creek, Bench Peak, and Twentymile, near Mt. Ascension and along the Kenai River and Kenai Lake. Identified nests have been mapped (see Map 3-3).

Map 3-3



Canada Lynx--Lynx are most likely found within the project area in relative low numbers. Lynx use a variety of habitat, including spruce and hardwood forest. They require a mosaic of conditions, including early successional forests for hunting and mature forests for denning (Koehler and Brittell 1990). The most current research suggests that lynx utilize large blocks of connected forest habitat, generally dominated by spruce/fir, white fir, Douglas fir, and aspen, with a mosaic of age classes (Seidel et al. 1998). Lynx seem to prefer areas of low topographic relief (Apps 2000).

In Alaska, lynx habitat occurs where fires or other factors create and maintain a mixture of vegetation types with an abundance of early successional growth. Lynx tend to use elevations ranging from 300-1,075 meters (approximately 1,000-4,000 feet), and seldom use unforested alpine slopes. Lynx habitat closely matches that of the snowshoe hare, its primary prey species. Mating occurs in March and early April and kittens are born 63 days later under a natural shelter such as a windfall spruce or a rock ledge (Berrie 1973, Berrie et al. 1994).

Gray Wolf--Wolves are found in the project area in low numbers. Wolves are habitat generalists. Wolves prey mainly on ungulates year-round (Mech 1970). During the winter wolves are found at lower elevations in forested or woodland areas (Stephenson 1994). Wolves are highly social animals and usually live in packs that include parents and pups of the year. Pack size usually ranges from 2 to 12 animals. In Alaska, the territory of a pack varies from 300 to 1,000 square miles of habitat with an average of about 600 square miles. Wolves normally breed in February and March and the pups are born in May or early June (Stephenson 1994). Wolves have been documented as sometimes abandoning a den and moving pups to an alternative den if disturbed by humans (Mech et al. 1991). There are approximately 10-11 wolf packs on the Seward Ranger District (Ted Spraker, personal communication) and another 2 packs range across the Placer Valley, Turnagain Arm, and Portage Valley on the Glacier Ranger District (Cliff Fox, personal communication).

Northern Goshawk--The northern goshawk is an uncommon forest raptor that feeds on small and medium sized mammals and birds that they capture on the ground, in trees, or in the air. The amount and location of feeding and nesting habitat appears to limit population viability in Southeast Alaska (Iverson et al. 1996). The nesting-breeding season is March through July. Goshawks are year-round residents of the Chugach National Forest (USDA- Forest Service 1984). The majority of goshawk nests on the Seward Ranger District are in old growth hemlock-spruce forest characterized by a closed canopy, large diameter, gap regeneration (small patches, usually less than one acre, where the overstory trees have been damaged, such as from wind, and there is dense reproduction), and an open understory (USDA-Forest Service, Seward District Goshawk files). There are no known goshawk nests within the proposed heli-skiing units (see Map 3-3). Goshawk nests are located in the vicinity of the proposed staging area at Mile 12.4 near Meridian and Lost Lake.

Marbled Murrelet--Marbled murrelets are medium sized seabirds that inhabit coastal waters, inland freshwater lakes, and nest in inland areas of old-growth conifer forest on the ground (Carter and Sealy 1988). Except for the fall period when they are molting, flightless and stay on the ocean, murrelets are known to fly to tree stands. Murrelets

may use forested area and costal water under the flight paths of helicopters during the permit period, but the spatial and temporal overlap is low to negative.

River Otter--River otter are associated with coastal and fresh water environments and the immediately adjacent (within 100-500 feet) upland habitats (Toweill and Taber 1982, USDA-Forest Service 2002b). Beach characteristics affect the availability of food and cover, and adjacent uplands vegetation also provides cover. Otters travel several miles overland between bodies of water and develop well-defined trails that are used year after year (USDA-Forest Service 2002b). River otters breed in late winter or early spring. Young are born from November to May with a peak in March and April (Toweill and Taber 1982).

Townsend's Warbler-- The Townsend's warbler is a neo-tropical migrant that breeds in Alaska. They are largely restricted to mature forest with tall coniferous trees, and are abundant in large undisturbed tracks of continuous forest, but will also use forest in late successional stages (Matsuoka et al. 1997). Townsend's warblers may be present, but are uncommon in the spring during the end of the permitted helicopter skiing season.

Wolverine--The wolverine has been characterized as one of North America's most rare mammals and least known large carnivores. Very few studies have been done on the wolverine in North America. Wolverines live in montane forest, tundra, and taiga (Wilson 1982). The most apparent characteristic of the wolverine is its isolation from the presence of humans (Wolverine Foundation 2001). Wolverines are primarily scavengers and forage on carcasses of ungulates such as moose, mountain goats, and Dall's sheep. They also hunt for snowshoe hares, marmots, mice, voles, ground squirrels, and grouse but will also eat fruits, berries, and insects when other prey is unavailable (Hash 1987).

Wolverines have low reproductive rates, low population densities, and large home ranges (Hornoker and Hash 1981, Olliff et al. 1999). Adult males in South-central Alaska have a home range of 535 square kilometer (approximately 200 square miles). Adult females have a home range of 105 square kilometers (approximately 40 square miles) (Whitman et al. 1986). Adult male home ranges generally overlap several female home ranges.

Wolverines are normally active during the winter; they rear kits in dens, and naturally move between multiple den sites (Howell 1999). Kits are born from January through April with most females giving birth before late March (Pallianinen 1968). Because the female regularly move maternal dens, natal and maternal dens are found across a variety of habitats.

Wolverine surveys were conducted in February 1992 as part of a cooperative project with the ADFG. Surveys of the Kenai Peninsula showed concentrations of wolverine along Six Mile Creek, Canyon Creek, and Resurrection Creek. Wolverine surveys were again conducted beginning in the winter of 2003-2004 by an interagency team (ADFG, US Fish and Wildlife Service, National Park Service, and Forest Service). Initial survey efforts indicated a density of 2.9 animals/1000 kilometers on the Kenai Peninsula. The survey was incomplete (all the grid areas were not surveyed), and it was a snapshot in

time (only one winter survey was completed), but it did indicate that other information was needed. During 2004-05 individual wolverines will be radio collared and their movement will be tracked for several consecutive winter months. This information may allow us to understand animal movements and their actual overlap with winter recreation activities. Initial results from this wolverine movement study will be available in fall of 2005.

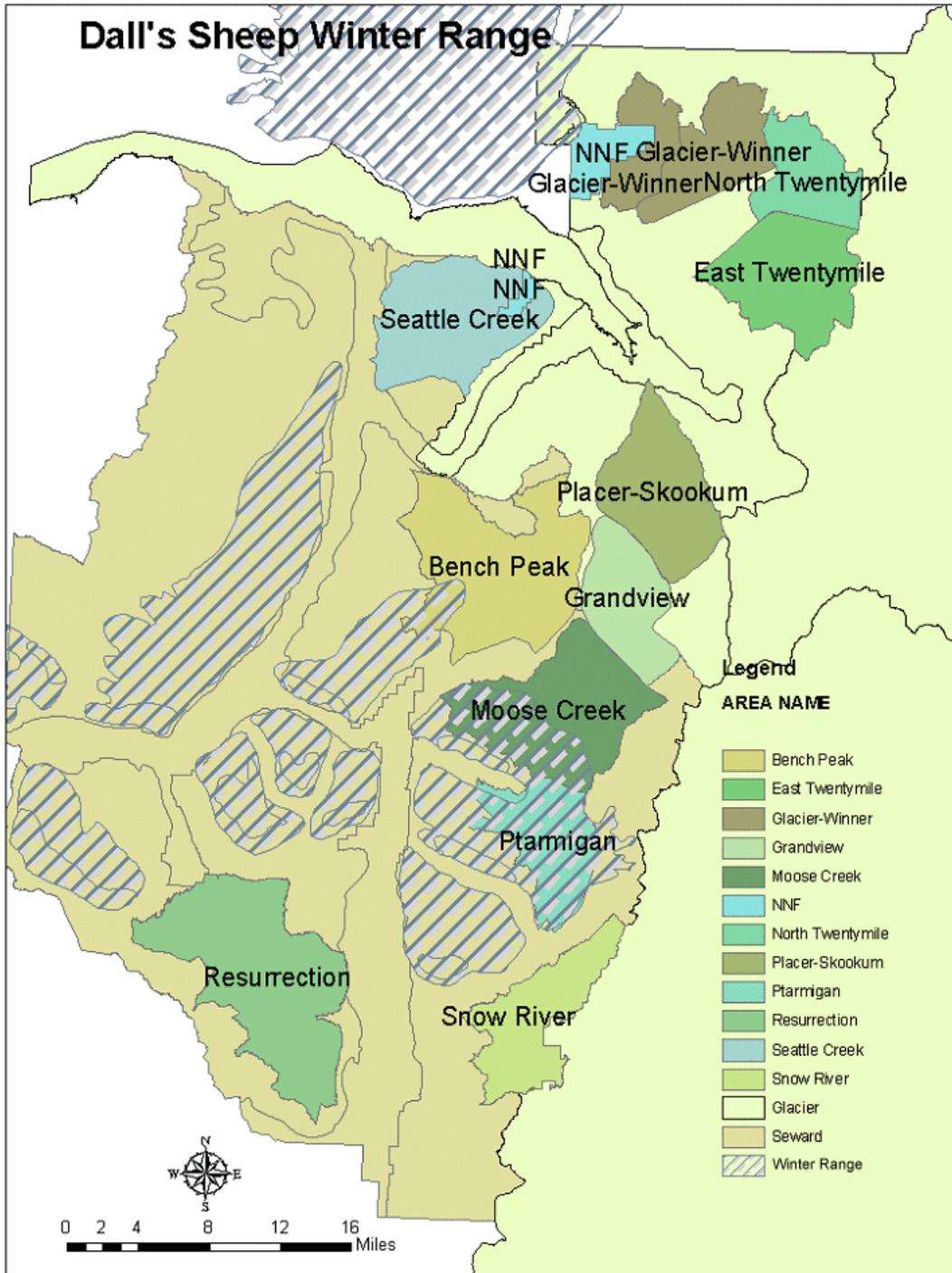
Other Species of Concern

Other Species of Concern are species or group of species that may be affected by the project as identified through public scoping and the interdisciplinary team process. These included the Dall's sheep and migratory birds.

Dall's Sheep--Dall's sheep inhabit the mountain ranges of Alaska on open alpine ridges, meadows, and steep slopes with rugged terrain. Dall's sheep are known to be disturbed by helicopter overflights (Stockwell et al. 1991, Frid 2003). Winter habitat on the Kenai Peninsula was identified using the Alaska Habitat Management Guide for Dall's Sheep (see Map 3-4). Winter Dall's sheep habitat is found within the Moose Creek, Ptarmigan, and a small part of Bench Peak West areas. Specific overflight guidelines for Dall's sheep follow those for mountain goat (USDA-Forest Service 2002b). No-fly zones created for mountain goats within these three areas overlap with concentrations of Dall's sheep according to observations made by the ADFG (L. Nichols [retired], personal communication) and summer survey data (USDA-Forest Service, unpublished data).

Migratory Birds--Federal agencies are directed through an Executive Order to protect migratory birds. The Revised Forest Plan lists some migratory birds as threatened, endangered, sensitive, or species of special interest. These lists were compared with the *Birds of the Chugach National Forest* (USDA-Forest Service 1984). Migratory birds of concern that may occur in the project area in March and April during the heli-skiing operating season are listed in the *Wildlife Specialist Report* (USDA-Forest Service 2003a).

Map 3-4



Recreation

While many forms of winter recreational use have increased in recent years (e.g., ski touring, skate skiing, backcountry skiing, snowmachine use), non-motorized recreationists expressed the most concern regarding this proposal. Some backcountry skiers said that the presence of the helicopter, primarily as a source of noise in an otherwise pristine area, detracts from their recreational experience. The conflict is also over competition for untracked snow. Some feel that the sudden presence of heli-skiers in areas that backcountry skiers have expended considerable effort to reach is unfair, especially when it involves terrain accessible for day tours. Concerns for the safety of backcountry skiers and snowmachine users down slope from heli-ski groups were also expressed. Much of this information is taken from the *Recreation Resource Report* prepared for this project by Teresa Paquet, Glacier Ranger District and Karen Kromrey, Seward Ranger District (USDA-Forest Service 2003c).

Current Situation

A majority of the winter recreational use occurs along travel corridors in the valley bottoms. Some of the more heavily traveled areas for both snowmachine and skiing include: Placer drainage, Turnagain Pass area, Twentymile drainage, Seattle Creek drainage, Johnson Pass Trail north and south, Lynx Creek, Bench Creek, Center Creek, Lost Lake Trail/Primrose Trail to Cooper Lake, South Fork of Snow River, Trail Creek to Snow Glacier and into the Paradise Lakes area. Backcountry skiers who are out for a day trip generally do not travel more than 3 – 5 miles from the highway (see Maps 3-5 A and B).

The Glacier Ranger District has recorded the number of vehicles at various winter recreation access points on the district. The Seward Ranger District has done the same but has recorded these vehicle counts into the approximate number of people who occupied the vehicles. Both districts split out the type of user (non-motorized vs. motorized). Appendix D shows a summary of the vehicle/people counts for winter access points on both districts. The Detailed Recreation Effects section in Appendix H shows a summary of the vehicle/people counts for the various winter access points. There are limitations on the accuracy of this data. The survey times and locations were not chosen with statistical accuracy nor were survey sites surveyed every weekend. The data simply indicates observations of where people started their recreation experience and an approximate split between non-motorized and motorized use and an approximate number of people using different areas at these times. The Seward Ranger District and Glacier Ranger District will continue to monitor winter use to establish number of users, type of use, and location of use. The Seward Ranger District will also re-analyze the winter access issues in the Kenai Amendment project (formerly called the Carter Crescent Project) beginning in the fall of 2004. This will include extensive public scoping and analysis with regard to motorized and non-motorized winter recreation and travel.

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Chugach Powder Guide Past Use

Guided helicopter skiing on the Kenai Peninsula geographic area was first permitted in 1997 to Chugach Powder Guides. Table 3-2 shows the number of client days and various areas under permit for the past seven years.

Table 3-2 Chugach Powder Guides Permitted Use 1997-2004

Year	Number of Client Days Permitted	Number of Client days Used	Areas Approved for Heli-skiing
1997	Not specified in permit	231	Glacier/Winner Creek West Twenty Mile North Twenty Mile East Twenty Mile Placer/Skookum Bench Peak Grandview Moose Creek
1998	Not specified in permit	285	Glacier/Winner Creek West Twenty Mile North Twenty Mile East Twenty Mile Placer/Skookum Bench Peak Grandview Moose Creek
1999	1200	542	Glacier/Winner Creek East Twenty Mile (Bear Valley East only) Placer/Skookum Bench Peak Grandview
2000	800	641	Glacier/Winner Creek East Twenty Mile (Bear Valley East only) Placer/Skookum Bench Peak Grandview
2001	800	886*	Glacier/Winner Creek East Twenty Mile (Bear Valley East only) Placer/Skookum Bench Peak Grandview
2002	800	1029*	Glacier/Winner Creek East Twenty Mile (Bear Valley East only) Placer/Skookum Bench Peak Grandview
2003	1200	531	Glacier/Winner Creek West Twenty Mile North Twenty Mile East Twenty Mile Placer/Skookum Bench Peak Grandview
2004	1200	404	Glacier/Winner Creek West Twenty Mile North Twenty Mile East Twenty Mile Placer/Skookum Bench Peak Grandview

*CPG was issued a letter of non-compliance for exceeding client days used.

Use data from the past seven years was analyzed to determine frequency of use in various units. Data for 2004 was not included because it was not a typical season. The years 2001-2003 have the most detailed use reports and therefore these years were scrutinized thoroughly. Table 3-3 shows the total number of days CPG guided heli-skiing trips. Table 3-4 and Table 3-5 demonstrate the use pattern over all the units permitted for 2001 through 2003. More than one unit was typically used during any one day of heli-skiing. Appendix G summarizes use patterns in more detail.

Table 3-3 Chugach Powder Guides Past Use 2001-2003

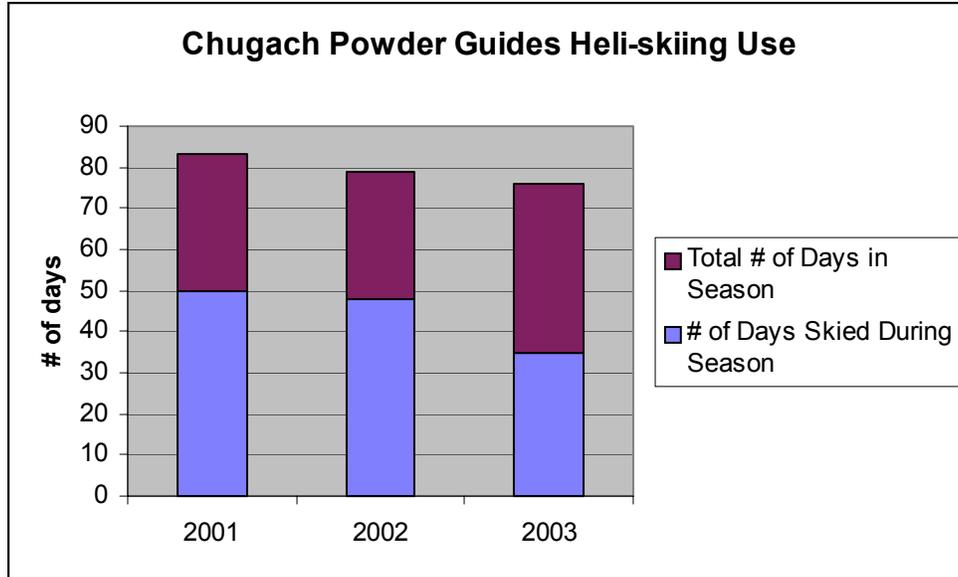
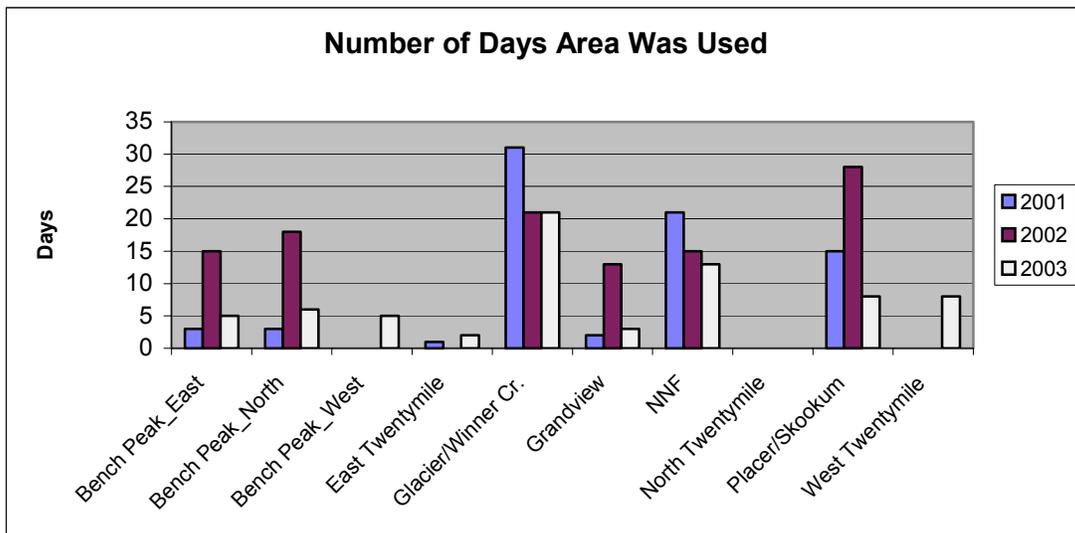


Table 3-4 Past Use of Heli-skiing units 2001-2003.



In general the Glacier/Winner Creek and Placer/Skookum units were consistently used more times in the season than any of the other units. Some units such as Bench Peak East and Bench Peak North were not used as often as Glacier/Winner Creek but when use occurred, the area was used heavily for that day.

Table 3-5 Average number of times ski runs were used

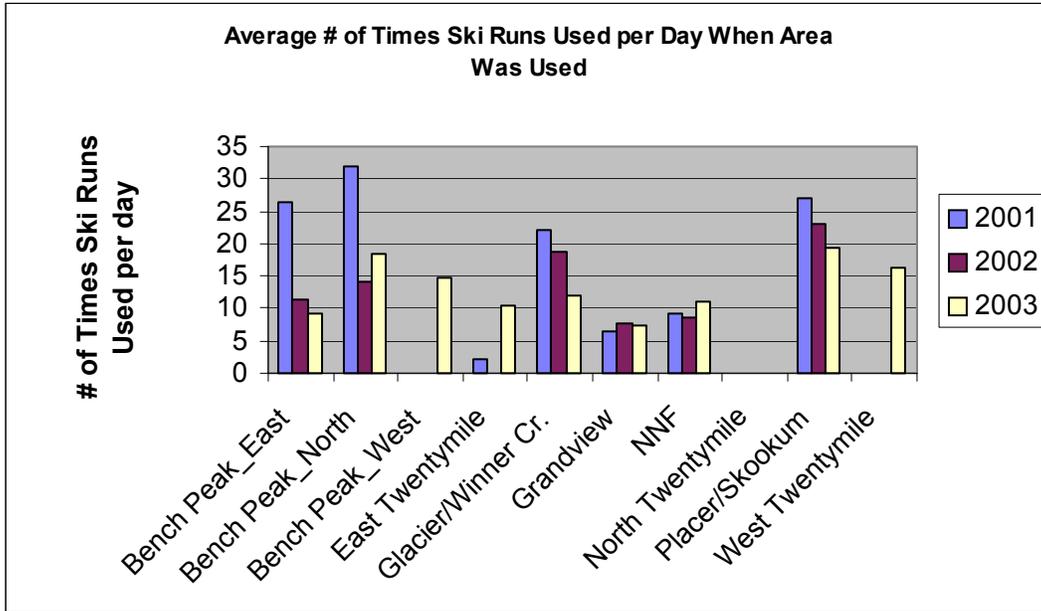
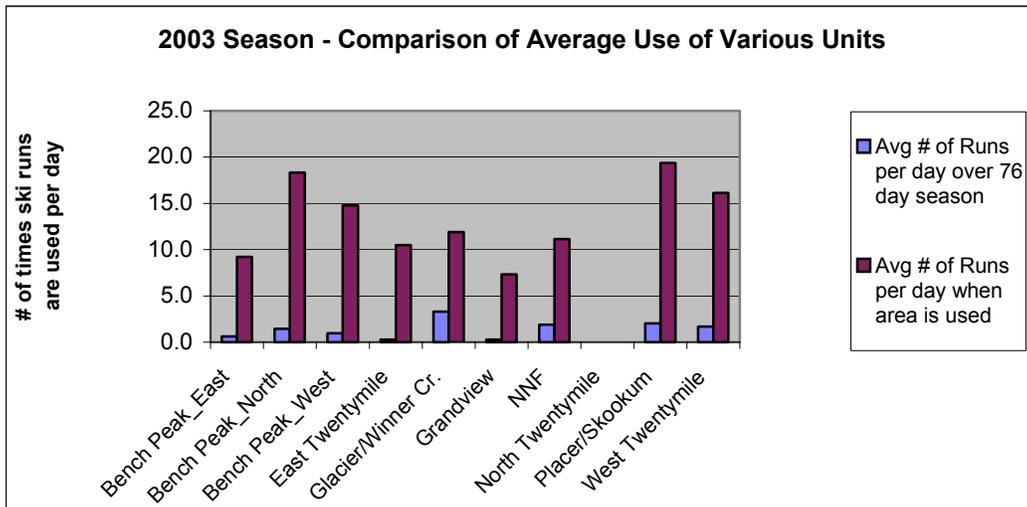


Table 3-6 shows a comparison for the 2003 season between average numbers of runs made in each unit over an entire season (includes those days when CPG is not using the unit) and the average numbers of runs completed in a day for just those days when CPG is using the unit. The table demonstrates that the likelihood of CPG using any one area on any given day during the season is fairly low. However, for those days that CPG is using an area, their use may be fairly high. The high use days are also likely to correspond with nice weather days when other non-guided recreationists also want to use some of the same areas.

Table 3-6 2003 Season – Comparison of Average Use of Various Units



Conflict Between Users

Conflict is defined as “to be at variance, clash, to struggle, or contend”. Conflicts can occur among different user groups, among different users within the same user group, and as a result of factors not related to recreation user activities at all. Activity style, focus of trip, expectations, attitudes toward and perceptions of the environment, level of tolerance for others, and different norms held by different users are related to user conflicts. User conflicts develop when a recreation user fails to achieve the experience desired from the trip and determined that it is due to someone else’s behavior (Moore 1994).

The main user conflict existing in most areas open for motorized use is between motorized snowmachine users and non-motorized users. Motorized/non-motorized decisions were made in the Revised Forest Plan and will not be addressed in this document, as it does not pertain to the issues at hand except when analyzing cumulative effects of adding another different motorized activity (helicopter skiing) into an area where user conflicts already exist.

From the scoping comments the Forest Service received, the backcountry skiers were concerned with heli-skiing activities diminishing their backcountry skiing experience particularly in areas closer to the road system. The public comments received from people whom use snow-machines were about safety (heli-skiers creating avalanches above them), concern regarding additional snowmachine area closures, and to a lesser extent concerns regarding their recreation experience. A small number of people use snowmachines to access backcountry areas and then participate in backcountry skiing once at these more remote locations. These users may be more likely to experience user conflicts with heli-skiing due to an expectation of fewer skiers because of the distance they have traveled from the road system.

Members of the public commented that they would experience (or have experienced) some or all elements of the above described user conflict in the following areas proposed by Chugach Powder Guides:

- Glacier/Winner (potential noise impacts by flight path)
- West Seattle Creek (potential noise impacts)
- East Seattle Creek
- Placer/Skookum (potential noise impacts from flight path from staging area)
- West Bench Peak
- North Bench Peak
- Mt. Ascension

In addition the following areas outside of heli-skiing units were identified in scoping comments and comments addressing the Draft EIS:

- Mile 12 area – Golden Fin Trail and Grayling Lake Trail (Potential noise impacts from Mile 12.4 staging area)
- Backcountry skiing route to Pyramid and Wolverine Creek areas from Ingram Creek parking area along Turnagain Arm (Potential noise impacts from helicopters using Ingram Creek Staging Area)

Regional and Community Descriptions

Kenai Peninsula Borough

According to the Alaska Department of Community and Economic Development (2003a) and Fried and Windisch-Cole (1999), the Kenai Peninsula Borough is one of the most thriving areas of Alaska. Southcentral Alaska is the most populated and fastest growing region of the state, and the Kenai Peninsula Borough is accordingly growing quickly. Its estimated 2001 population of 50,066 ranked fourth among the Alaska boroughs and census areas (US Bureau of Economic Analysis 2003). Between 1990 and 2000 the population in the borough grew by nearly 22 percent.

In 2000, Alaska Natives alone or in combination with one or more races comprised about 10 percent of the population (US Bureau of the Census 2000). The median age of borough residents is 36 years. Eleven percent of residents had not completed a high school education. The median household income was \$46,400; per capita income was \$20,950; and 10 percent of residents were living below the poverty level. Unemployment stood at 11 percent, with about 44 percent of the adults not working. The unemployment rate is higher than the statewide average. About 10 percent of households receive some form of public assistance. Borough residents show a relatively low dependence upon wild-food subsistence use in comparison to other areas of the state (Alaska Department of Community and Economic Development 2003a). Demographic characteristics (including median household and per capita income) cited above and in the following community descriptions have been compiled using US Bureau of Census data from the 2000 census and as referenced by the State of Alaska. It should be noted that this data was derived from samples of households rather than true censuses of all households in a community. Especially in the case of small communities some unreported sampling error is likely present in the reported estimates.

While the population of the Kenai Peninsula Borough is experiencing overall growth it is also relatively "stable" in terms of retaining a high proportion of long-term residents. More than three-fourths of the population (78 percent) has lived in the borough since 1990. Some three-fourths of households are occupied by families (74 percent) and are owner occupied (74 percent).

The economy of the borough is more diverse than many areas of the state (Fried and Windisch-Cole 1999). The foundation of the economy includes fishing, tourism, oil and gas, refining, and government. The economic base of the borough has declined two percent since 1995, with drops in the demand for seafood and wood products contributing to the overall decline. Government employment provides some stability to the economy.

Partially offsetting these decreases has been the rather steady growth in tourism statewide. The importance of tourism to the economy of the Kenai Peninsula is significant. A number of major cruise ship lines regularly dock large tour ships throughout the summer months in Seward (and will soon return to Whittier), annually sending tens of thousands of visitors traveling through the Peninsula to Anchorage to view wildlife and scenery. Some small businesses in communities such as Girdwood, Cooper Landing, and Seward receive and are able to capture some of the tourism

expenditures, primarily for adventure-based activities. Winter tourism demand is far less developed as an out-of-state attraction. Public lands, including the Chugach National Forest, Kenai National Wildlife Refuge, Kenai Fjords National Park, and Kachemak Bay State Park, are largely roadless tracts, serving to effectively limit direct highway access to many areas although motorized access by snowmachine is generally guaranteed by public law.

Cooper Landing

An unincorporated community, Cooper Landing, lies at the west end of Kenai Lake on a stretch of the Sterling Highway, 30 miles northwest of Seward in the Chugach Mountains. The Sterling Highway provides access to Anchorage and beyond. Kenai offers air transportation and docking facilities. A privately owned boat launch is available. The State-owned Quartz Creek Airstrip provides a 2,200-foot gravel runway, and floatplanes may land at Cooper Lake.

The U.S. Geological Survey first recorded Cooper Landing in 1898. The Riddiford Post Office began operations in 1924, and the Riddiford School opened in 1928. In 1938, a road was constructed to Seward. In 1948, a road to Kenai was opened, and by 1951, residents could drive to Anchorage. The Cooper Landing Community Club was first formed in 1949. The Cooper Lake Hydroelectric Facility was constructed in 1959-60.

Currently, 4.9 percent of the community's estimated 375 residents in 2002 are Alaska Native or part Native (Alaska Department of Community and Economic Development 2003b). The Cooper Landing Community Club is involved extensively in local development issues and is an advocate for residents' concerns. The population of the area nearly doubles each summer to support tourism businesses and activities, and tourism and services provide the majority of employment. The 70-room Kenai Princess Lodge accommodates Princess cruise ship passengers and other visitors. Four residents hold commercial fishing permits.

During the 2000 census, there were 379 total housing units, and 217 were vacant. One hundred eighty-four of these vacant housing units are used only seasonally. One hundred fifty-nine residents were employed. There was no unemployment, although 44 percent of all adults were not in the work force. The median household income was \$34,840; per capita income was \$24,800; and two percent of residents were living below the poverty level. Cooper Landing's population is neither low income nor minority in terms of environmental justice concerns. The community was not included in ANCSA (Alaska Native Claims Settlement Act) and is not federally recognized as a Native village. However, members of the federally recognized Kenaitze Tribe historically inhabiting the area still reside throughout the Kenai Peninsula.

Girdwood

Girdwood is located on Turnagain Arm, within the Municipality of Anchorage, 35 miles southwest of downtown Anchorage. Access to the area is by the Seward Highway. The Chugach State Park and Chugach National Forest border Girdwood on three sides. Girdwood has an airstrip and the Alaska Railroad provides passenger service in the summer from Anchorage to nearby Whittier. The train sometimes stops in the Portage Valley.

In 1951, the Seward Highway was completed, linking Anchorage to the Kenai Peninsula.

The City of Girdwood was formed during the 1960s, but the community was unified with the City of Anchorage and the Greater Anchorage Area Borough in 1975. Residents of this community, estimated to number 1,817 in 2002, enjoy a rural lifestyle (Alaska Department of Community and Economic Development 2003b).

Girdwood is home to the Alyeska Ski Resort. Anchorage and Kenai residents frequent it during winter months, and tourists during summer months. Four hundred thirty-six of these vacant housing units are used only seasonally. Girdwood's population is neither low income nor minority in terms of environmental justice concerns. The community was not included in ANCSA and is not federally recognized as a Native village.

Hope and Sunrise

Hope is a small, unincorporated community of an estimated 155 residents in 2002 and is located on the southern shore of Turnagain Arm near the mouth of Resurrection Creek (Alaska Department of Community and Economic Development 2003). Hope is accessible from the Seward Highway. A State-owned 2,000 foot gravel airstrip is available. Both nearby Anchorage and Kenai offer a variety of transportation services.

Hope was established in 1896 as a mining camp and some limited mining still occurs. Currently, however, Hope has limited economic opportunities (Crone et al. 2002). The school and local retail businesses provide the only employment in Hope (Alaska Department of Community and Economic Development 2003b). The community uses a small sawmill. Two residents hold commercial fishing permits.

The population of Hope has declined nearly 18 percent since 1990. During the 2000 U.S. Census, there were 175 total housing units, and 98 were vacant level (Alaska Department of Community and Economic Development 2003b). Of these vacant housing units, 84 are used only seasonally. Thirty-nine residents were employed. The unemployment rate at that time was 13 percent although 60 percent of all adults were not in the work force. The median household income was \$21,790; per capita income was \$9,080; and 12 percent of residents were living below the poverty.

The demographic characteristics suggest that Hope could not be classified as a low income or minority population for environmental justice concerns. It does, nevertheless, have one of the area's lowest income levels. Neither Hope nor Sunrise was included in ANCSA and they are not federally recognized as Native villages.

Sunrise is an even smaller, unincorporated community of an estimated 13 residents in 2002 and is located seven miles southeast of Hope. Sunrise is accessible by the Hope Road off the Seward Highway. A gravel airstrip is available nearby, at Hope. Both Anchorage and Kenai are accessible by road, and offer a variety of transportation services. This community dates back to the 1890s when it also was home to miners, and some mining still occurs in the area (Alaska Department of Community and Economic Development 2003b).

The 2000 census data concerning Sunrise residents are suspect due to rather small sampling size and undoubtedly are not representative of all residents. No data from the 1990 census is available for Sunrise. For this reason, little further description of Sunrise is provided.

Moose Pass

Unincorporated, Moose Pass is recognized to generally include the area from Lower Trail Creek north to the junction of the Sterling highway, with the core of the community located on the southwest shore of Upper Trail Lake at Mile Post 29 on the Seward Highway. The community was first named in 1912 as a station on the Alaska Railroad. A post office was established in 1928.

The estimated population of Moose Pass in 2002 was 216 (Alaska Department of Community and Economic Development 2003b). Alaska Natives or part Natives make up about 6 percent of the population. During the 2000 U.S. Census, there were 119 total housing units, and 35 were vacant. Nineteen of these vacant housing units are used only seasonally. Ninety-seven residents were employed. The unemployment rate at that time was 0 percent, although 31 percent of all adults were not in the work force. The median household income was \$87,290; per capita income was \$28,150; and no residents were living below the poverty level.

The demographic characteristics suggest that Moose Pass could not be classified as a low income or minority population for environmental justice concerns. Moose Pass was not included in ANCSA and is not federally recognized as Native village.

The State Division of Forestry and local businesses provide most employment. The community is not within an easy commute of either Seward or Kenai. Two residents hold commercial fishing permits.

The Seward and Sterling Highways provide access to Anchorage. Nearby Seward offers an Airstrip, railroad, harbor/dock facilities and State Ferry access. A floatplane base is available at Summit Lake. There is a small private airstrip at Mile Post 24 (Loving).

In the summer time (June, July, August), on an average day over 3,300 vehicles pass through the community (six times the number in the winter). This coupled with increased sounds of aircraft traveling to Seward and from seaplane landing or taking off from nearby Summit, Trail and Upper Trail Lakes, and from the addition of daily passenger trains on the railroad makes the relative quiet of winter an important value of the Moose Pass Community.

Seward

Seward is a home rule city situated on Resurrection Bay on the east coast of the Kenai Peninsula, 125 highway miles south of Anchorage. It lies at the foot of Mount Marathon, and is the gateway to the Kenai Fjords National Park.

In 1903, a group of settlers arrived to begin construction of a railroad. Seward became an incorporated city in 1912. The Alaska Railroad was constructed between 1915 and 1923, and Seward developed as the ocean terminus and supply center. By 1960, Seward was the largest community on the Peninsula. Tsunamis generated after the 1964 earthquake destroyed the railroad terminal and killed several residents. As an ice-free harbor, Seward has become an important supply center for Interior Alaska. The population of Seward in 2002 was estimated to be 2,794 (Alaska Department of Community and Economic Development 2003b).

As the southern terminus for the Alaska Railroad and road link to Anchorage and the Interior, Seward has long been a transportation center. The economy has diversified with tourism, commercial fishing, ship services and repairs, oil and gas development, a coal export facility for Usibelli Mine, Alaska Vocational Technical Center, a State Prison, and the University of Alaska's Institute of Marine Sciences. The Alaska SeaLife Center, the Chugach Heritage Center, the Kenai Fjords National Park including the adjacent Exit Glacier area, and the Mt. Marathon Race and Fourth of July festivities attract visitors. Over 320,000 cruise ship passengers visit Seward annually. Eighty residents hold commercial fishing permits.

The Seward Highway connects Seward to the Alaska Highway. Daily air services and charters are available at the State-owned Airstrip. Two paved runways are utilized, at 4,240 and 2,300 feet. The Port serves cruise ships, the State Ferry, cargo barges and ocean freighters from Seattle and overseas. The small boat harbor has moorage for 650 boats, and two boats launch ramps. The Alaska Railroad provides over 1.4 billion pounds of cargo transit each year, importing cargo for the Interior and exporting coal to the Pacific Rim. A new railroad depot was completed in the fall of 1997.

Seward is primarily a non-Native community, although 20.9 percent of the population are Alaska Native or part Native and the Mount Marathon Indians are very active within the community. During the 2000 U.S. Census, there were 1,058 total housing units, and 141 were vacant. Sixty-three of these vacant housing units are used only seasonally. Some 1,011 residents were employed. The unemployment rate at that time was 17 percent, although 55 percent of all adults were not in the work force. The median household income was \$44,310; per capita income was \$20,360; and 11 percent of residents were living below the poverty level.

The demographic characteristics suggest that Seward could not be classified as a low income or minority population for environmental justice concerns. Seward is not included in ANCSA and is not federally recognized as a Native village.

COMMUNITY ATTITUDES AND BELIEFS

Some additional insight into the attitudes and beliefs of residents of potentially affected communities towards helicopter skiing may be found in the results of previous social research. Alaska Pacific University (APU) conducted random mail surveys of residents in 12 communities surrounding the Chugach National Forest, including Anchorage, Cooper Landing, Cordova, Girdwood, Hope, Kenai, Moose Pass, Seward, Soldotna, Sterling, Valdez, and Whittier in 1998 and 1999 (Crone et al. 2002).

In 1998, responses from more than 750 residents were received regarding participation in Forest planning, the values of the Chugach National Forest, support or opposition to both general forest uses, and specific projected management issues. In 1999, a second survey yielded responses from over 500 residents in the same communities. This survey asked questions designed to rank the importance of and satisfaction with selected quality of life measures, as well as perceptions and preferences for change. Response rates for the two surveys were 32 percent and 24 percent respectively.

Such survey results (1) are the average of attitudes of a number of residents in the

communities and there is no single characterization that exactly describes everyone (and therefore the community), and (2) the majority of attitudes do not necessarily constitute a coherent community response or recommendation. These survey results do provide some recent anecdotal insight into the attitudes and beliefs of residents of potentially affected communities, including how they might view the proposed helicopter skiing activity today.

Forest Values

The first (1998) APU survey asked residents to indicate how important they felt each of 13 different forest ecosystem values were to them personally. The 13 ecosystem values included: aesthetic, biological diversity, cultural, economic, future, historic, intrinsic, learning, life support, recreation, spiritual, subsistence, and therapeutic. The survey posed the question in terms of the percent of a hypothetical sum of money a resident would allocate to each value in order to ensure that the value would be retained as a result of the forest plan then in progress. The following summarize the results of three relevant values—aesthetic, recreation, and economic—among the five communities of Cooper Landing, Girdwood, Hope, Moose Pass, and Seward. (For purposes of comparison in the following discussions, had each of the 13 ecosystem values been considered of equal importance they would have received approximately 7.7 percent. Percent values greater than 7.7 percent suggest that a value is more important than if the value was viewed equal to all or others. Similarly, percent values less than 7.7 suggest that a value is less important than if the value was viewed equal to all or others.)

Recreation Value

Recreation value was defined in the survey as, “I value the forest because it provides a place for my favorite outdoor recreation activities.” Among all respondents in the 12 communities recreation value was the highest rated value (14.9 percent). However, among the six potentially affected communities recreation value was never the highest rated value. Cooper Landing residents rated it highest (13.4 percent), followed by Moose Pass (13.1 percent), Seward (12.9 percent), Girdwood (12.8 percent), and Hope (8.1 percent). The highest rating for recreation value was found among residents of Sterling (20.9 percent) and the lowest in Hope.

Aesthetic Value

Aesthetic value was defined in the survey as, “I value the forest because I enjoy the forest scenery, sights, sounds, smells, etc.” Aesthetic value ranked third (12.4 percent) behind recreation and life support (13.5 percent) among residents of all communities. Among the six communities, aesthetic value was most important to residents of Moose Pass (15.1 percent). Other community responses (in order of aesthetic value importance) were as follows: Seward (13.1 percent), Girdwood (12.7 percent), and Cooper Landing and Hope. The highest rating for aesthetic value among all twelve communities was found among Moose Pass residents. Sterling (10.4 percent) had the lowest aesthetic value rating.

Economic Value

Economic value was defined in the survey as, “I value the forest because it provides timber, fisheries, minerals, or tourism opportunities such as outfitting and guiding.” Among the six potentially affected communities, economic value was most important to

Cooper Landing residents (8.2 percent) and least important to residents of Moose Pass (5.5 percent). Other community responses (in order of economic value importance) were as follows: Hope (7.5 percent), Seward (7.0 percent), and Girdwood (6.1 percent). Whittier and Moose Pass represented, respectively, the highest and lowest values among the 12 communities surveyed.

In the five potentially affected communities, either aesthetic or recreation value is generally considered more important than economic value to most residents, although all three values were generally among the more important values of the Forest. Because the survey did not ask residents to evaluate any pairings of values, nor were specific contexts for choices mentioned, it is not possible to definitively argue that one value necessarily “trumps” another value for residents. The results would, however, tend to suggest that local residents are aware of and appreciate certain non-economic amenities of the Forest.

Community Preferences for Selected Forest Uses

The 1998 APU survey described 20 general forest uses (without specific temporal or spatial context other than somewhere in the Forest) and asked respondents to indicate whether they “favored” or “opposed” the uses in general (measured on a 5-point Likert scale ranging from 5.0, “strongly favor,” to 1.0, or “strongly oppose” with 3.0 indicating neutral). The following summarize survey results for several relevant general forest uses among the five communities of Cooper Landing, Girdwood, Hope, Moose Pass, and Seward.

Commercial Tourism

Support for commercial tourism was fairly consistent among residents. Of the 12 communities surveyed, residents of Girdwood and Whittier were most in favor of unspecified commercial tourism activities (3.4), followed by Cooper Landing and Moose Pass (3.3), and Hope and Seward (3.2). (None of the 12 communities had a mean response lower than 3.0.)

Commercial Outfitting and Guiding

Of the 12 communities, residents of Whittier (3.6) expressed the most support for commercial outfitting and guiding services. Girdwood residents (3.4) were less supportive, as were Cooper Landing, Moose Pass, and Seward (3.2). Hope residents (3.0) were generally split in their opinions.

Motorized Recreation

Of the five communities, residents of Moose Pass (3.3) most favored motorized recreation activities in general, followed by Seward (3.1), Cooper Landing, Hope, (3.0), and Girdwood (2.9, and the least supportive of all twelve communities).

Helicopter Skiing and Hiking

Support for helicopter skiing and hiking among all communities was generally mixed. Of the 12 communities surveyed, respondents in Moose Pass and Hope were most opposed to helicopter skiing and hiking (2.8), followed closely by Cooper Landing (2.9). Residents of Girdwood were most in favor (3.5). Other results included Seward (3.1).

Non-motorized Recreation: Residents of all 12 communities generally favored non-motorized recreation activities more than motorized recreation activities, with the following levels of support: Cooper Landing and Girdwood, 4.5; Seward, 4.4; Hope, 4.3; and Moose Pass, 4.2

The survey results suggest several points. First, support for commercial tourism and outfitting activities in general appeared somewhat marginal in 1998 among residents of the 12 communities overall. In general, Girdwood and Whittier residents were perhaps more in favor of such activities than those of other communities, especially Hope and Seward. Second, support among residents for both commercial activities and motorized recreation did not necessarily transfer over to support for helicopter skiing and hiking. Third, support for non-motorized recreation appears stronger than support for motorized recreation.

Quality of Life Factors

The 1999 APU survey described 30 generic factors thought to influence one's quality of life in a community surrounding the Forest. In addition, the survey also posed a similar question in terms of 20 similar, but public land management related factors. Respondents were asked to indicate how "important" each factor was in general (measured on a 4-point Likert scale ranging from 1.0, "extremely important," to 4.0, or "not at all important" with 2.5 indicating neutral). Respondents were asked to indicate how "satisfied" they were with each factor in general (measured on a 5-point Likert scale ranging from 1.0, "very satisfied," to 5.0, or "very unsatisfied" with 3.0 indicating neutral). The following summarize survey results for several selected, relevant quality of life factors among the five communities of Cooper Landing, Girdwood, Hope, Moose Pass, and Seward.

Beauty of the Surrounding Area

"Beauty of the surrounding area" was considered to be the most important factor in a resident's sense of what contributes to quality of life in their community. It was only slightly more important (1.2) to residents of Cooper Landing, Girdwood, Moose Pass, and Seward than to residents of Hope. In general, the importance of the beauty of the surrounding areas was more important to residents of the six potentially affected communities than it was to those of the other six communities surveyed.

Residents of the five potentially affected communities expressed high levels of satisfaction with the beauty of the surrounding area: Cooper Landing (1.1), Moose Pass (1.2), Girdwood, Hope, and Seward (1.3).

Access and Use of Nearby Public Lands

Of the 30 generic factors, "access and use of nearby public lands" was among the top five most important factors in all six of the potentially affected communities, following other factors such as beauty of the surrounding area, clean air and water, local recreational trails, and open and undeveloped areas. Importance ratings for the communities were as follows: Cooper Landing, Girdwood, Hope, Moose Pass, and Seward (1.8).

In general, residents of the five potentially affected communities expressed lower levels

of satisfaction with access and use of nearby public lands than with the beauty of the surrounding area: Hope (1.8), Girdwood and Moose Pass (2.0), and Cooper Landing (2.1), Seward (2.5).

Job and Employment Opportunities

“Job and employment opportunities” ranked below both “beauty of the surrounding area” and “access and use of nearby public lands” in terms of contribution to quality of life, but still within the top third of factors: Whittier (1.5), Seward (1.7), Girdwood (2.3), Moose Pass (2.4), Cooper Landing (2.5), and Hope (3.2).

Residents of the five potentially affected communities expressed higher levels of dissatisfaction with current job and employment opportunities than for a large number of quality of life factors, including beauty of the surrounding area and access and use of nearby public lands: Girdwood and Seward (2.7), Moose Pass (3.0), and Cooper Landing and Hope (3.1).

These results suggest that while residents place very high importance on environmental and access amenities in their communities, they also expressed significant dissatisfaction with current job and employment opportunities. It may not necessarily follow from these results however, that any given circumstantial trade-off preference for the factors is a foregone conclusion.

Preferences for Change in Local Economic Sectors

The 1999 survey asked residents to comment on their preferences for increased or decreased activity in 12 broad categories of local economic sectors, including forestry/forest products, mining, commercial fishing, and tourism services among.

In general, the number of residents expressing an interest in seeing some level of increase in “tourism services” as a component of their local economy exceeded those desiring a decrease: Whittier (83 percent for an “increase” to 6 percent for a “decrease”), Girdwood (44 percent to 13 percent), Hope (38 percent to 6 percent), Moose Pass (38 percent to 14 percent), and Cooper Landing (35 percent to 6 percent). Only in Seward did a preference for decreased tourism activity (32 percent) exceed the preference for increased tourism activity (24 percent).

Most residents of the six potentially affected communities reported an interest in a wide array of some level of increased economic activity, with the notable exception of government. Tourism generally was more supported than other economic activities such as mining and forestry. The most universally desired sector for new economic activity were service industries

Changes in Desirability of Community

The 1999 survey also queried residents about their perception of change in the quality of life in their communities, specifically, had the communities become more or less desirable since they have lived there. Communities where more residents felt that the quality of life had increased than decreased include Hope (47 percent “increased” to 18 percent “decreased”), Cooper Landing (33 percent to 24 percent), and Girdwood (33 percent to 31 percent). Communities where more residents felt that the quality of life

had decreased than increased include Whittier (5 percent “increased” to 53 percent “decreased”) and Seward (33 percent to 45 percent). An equal proportion of Moose Pass residents (29 percent) felt that the quality of life in their community had either increased as had felt it had decreased.

Self-Rated Quality of Life

Finally, the 1999 survey asked respondents to summarily rate the quality of life in their community on a 7-point Likert scale ranging from 7.0 (“very positive”) to 1.0 (“very negative”), with a neutral rating of 3.5. Residents of Girdwood (5.7) were the most positive about the quality of life in their community, with residents of Whittier (4.0) the least positive. Both scores represented the highest and lowest score among all 12 communities. Other summary quality of life scores were Cooper Landing (5.6), Moose Pass (5.5), Hope (5.2), and Seward (4.9).

Survey Summaries

Crone et al (2002) summarized the findings of the 1998 survey as follows:

- A significant portion of the public is interested in how the Chugach National Forest is managed and wishes to be involved as a partner in its planning.
- Major conceptual changes to the current forest management situation are probably not warranted, although some specific changes appear to be desired.
- Community residents appreciate the amenity values, such as recreation, life support, and aesthetic values of Chugach National Forest more than the commodity values traditionally examined in forest planning.

Similarly, Crone et al (2002) summarized the findings of the 1999 survey:

- In most communities, respondents felt that local community interests should be given more attention than national interest in public land use planning near their community.
- The quality of life in Chugach National Forest communities of interest is heavily influenced by factors that are related to public lands or affected by public land management activities.
- In most communities, survey respondents favored the current amount of economic activity in the sectors most associated with forest resources.
- Whittier, Kenai, Anchorage, and Valdez seem the most in favor of additional growth in their communities, whereas Hope, Cooper Landing, Girdwood, and Moose Pass seems the least in favor of additional growth.
- The quality of life and community resiliency of the Chugach National Forest communities of interest is generally high, although the community of Whittier had both the lowest quality of life ranking and the lowest community resiliency score.

Air Quality

Much of the Kenai Peninsula lies within the Cook Inlet Interstate Air Quality Region and is classified as Class II under the Clear Air Act. Air quality is temporarily lowered by vehicle emissions, dust, contaminations from urban communities, and burning from wildfires and prescribed fires. All areas of the Forest are currently in compliance with National Ambient Air Quality Standards (USDA-Forest Service 2003b).

Soil and Water Resources

While fueling helicopters there may be some slight spillage of fuel onto the ground. There is also a very slight risk of a major spill from fueling operations or from an accident involving the fuel truck. CPG would have standard fuel spill prevention, containment, and cleanup materials on hand at any fueling site and would maintain and follow a spill plan that includes spill prevention, containment, cleanup, and notification procedures. If fueling takes place within 50 feet of a wetland or water body, the fuel tank would be located within an impermeable containment basin.

Roadless Areas

All of the proposed permit area is within inventoried roadless areas. None of the areas proposed for heli-skiing have been recommended for inclusion in the National Wilderness System (USDA-Forest Service, 2002b). All of the areas proposed for heli-skiing are "Open to All Motorized Uses" in the winter (December 1 through April 30) through decisions made in the Revised Forest Plan (USDA-Forest Service 2002a). The exception to this is in the Skookum Glacier area, which is closed after March 31 to all motorized use.

Wild and Scenic Rivers

Three of the proposed helicopter skiing units are within areas recommended to be included in the National Wild and Scenic River System (USDA-Forest Service, 2002a). The Twentymile River, recommend for Scenic classification, is within the West Twentymile unit (1,100 acres) and East Twentymile (400 acres). The East Fork of Sixmile Creek, recommended for Recreational classification, is within the West Bench Peak unit (100 acres). The upper Snow River, recommended for Wild classification, is within the Snow River unit (900 acres) and East Ptarmigan. All of these areas are available for winter motorized use (USDA-Forest Service, 2002a).

Chapter 4: Environmental Consequences

Introduction

NEPA requires that an EIS analyze and disclose a proposed action's direct, indirect, and cumulative effects (40 CFR 1508.25 (c)). Cumulative impacts are those resulting from the combination of the proposed action and other past, present, or reasonably foreseeable actions with the potential to impact the same resources (40 CFR 1508.7). In this analysis, several foreseeable actions by the Forest Service or permitted by the Forest Service could cause an increase in the winter recreational use of the permit area. These actions are identified and discussed below. There are a number of other winter recreational and sound-generating activities that occur in the permit area, creating the potential for overlapping uses or impacts. Some of these, such as general road traffic, other aircraft, and avalanche control for the ski area, highway, and railroad are outside the control of the Forest Service, however these effects are disclosed throughout this chapter. These effects are disclosed throughout this chapter. Summertime use and summertime sound-generating activities are outside the helicopter skiing season and, therefore, are not included in the cumulative effects analysis. The cumulative effects analysis focuses only on impact created from wintertime activities.

Impact Assessment

The results of NEPA analysis should clearly contrast the direct, indirect, and cumulative environmental impacts of the proposed action and alternatives. However, many of the impacts of heli-skiing are difficult to assess or quantify because some tend to be subjective (e.g., recreational conflicts) while others have not been well studied or documented (e.g., helicopter impacts on some wildlife species). To facilitate comparison of alternatives, the impact discussions below are organized as follows:

- The three issues in Chapter 1, Public Involvement and Issues to be Considered are restated under each topic below. These issues are discussed in the order presented. Each issue analysis discusses anticipated impacts, and concludes with the effects of the proposed action and alternatives.
- Disclosure of impacts to air quality, soil and water, vegetation and sensitive plants, heritage resources, roadless areas, wild and scenic rivers, economics, and environmental justice are addressed at the end of the chapter.
- Unavoidable adverse impacts and irreversible and irretrievable commitments of resources as required by NEPA are addressed at the end of the chapter.

Stipulations have been included in the action alternatives to protect wildlife from disturbances associated with heli-skiing activities. In addition, several mitigation measures have been designed to address these issues. In evaluating potential impacts, it is assumed that all mitigation measures listed in Chapter 2 are in place.

Other On-going or Potential Projects

Any action that results in more people in the backcountry or more disturbances of natural habitats in or near the permit area has the potential to cause cumulative impacts to wildlife, winter recreationists, and local residents. These projects, ongoing and potential, are summarized in Chapter 3 and the effects are disclosed later in this chapter.

Wildlife Impacts (Issue 1)

Issue Statement

The sound and visual disturbance of the helicopter and the physical presence of heli-skiers has the potential to disturb wildlife. Factors include the distance to the disturbance, sensitivity of individual species to sound, and level of habituation (becoming accustomed to). Identified wildlife concerns centered on brown bears, Dall's sheep, mountain goats, and wolverines, but effects on other wildlife species were also raised. Specific concerns included direct or indirect displacement of individuals by the helicopter or by heli-skiers, disruption of behavior, disturbance of animals on wintering areas or around potential denning sites, and harm to overall health, growth rates, and reproductive success.

Wildlife in this EIS is addressed at two levels: (1) general wildlife and (2) individual species including: (a) federally listed threatened and endangered species and Forest Service Region 10 sensitive species, (b) Forest Service management indicator species, (c) species of special interest, and (d) other species of concern that may be affected by this proposal. Effects include: (1) direct effects of the project (disturbance to wildlife from helicopter flights and heli-skiers); (2) indirect effects (potential changes in animal behavior or movement patterns as a result of disturbance, and the associated changes in predator/prey interactions); and (3) cumulative effects (effects on wildlife from heli-skiing along with other winter recreation activities). Much of this information is taken from the *Wildlife Specialist Report* prepared for this project by Forest Service Wildlife Biologists Michael I. Goldstein, Mary Ann Benoit, William Shuster and Aaron J. Poe (USDA-Forest Service 2003a).

General Wildlife Effects

Direct Effects

Several reports have been written to document heli-skiing impacts on wildlife on the Chugach National Forest (e.g. USDA Forest Service 1999a, 2002b, 2002d). The principle sources of impacts associated with heli-skiing are helicopter overflights, takeoffs and landings, and skiing near wildlife. Proximity and frequency of these disturbances determine the likelihood of human consequences. The sound and visual stimuli of overflights can affect the physiology and behavior of wildlife. If stress becomes chronic, it can negatively affect an animal's fitness and long-term survival (USDI-National Park Service 1994). The manner and degree to which overflights influence wildlife depends on each species' life history, characteristics of the aircraft and flight activities, and other factors including habitat, season, activity time of exposure, sex, age, health, and previous experience with aircraft (USDI-National Park Service 1994). Reactions to overflights can vary according to the tolerances of individual animals. The relationship between overflights and impacts to wildlife is complex, but one recognized generality is that the closer the aircraft, the more likely an animal will be stressed

(Altmann 1958, Berger et al. 1983, Krausman and Hervert 1983, Knight and Knight 1984, Miller and Smith 1985, Krausman et al. 1986, Stockwell et al. 1991).

The helicopter itself triggers most documented wildlife impacts associated with heli-skiing. Although there has been little published research on the impacts of heli-skiers to wildlife, logic and experience indicates that the physical presence of skiers creates a disturbance to wildlife and often results in behavior modification, displacement, and/or increased energy expenditure. When combined with other factors such as stressful winters, this could result in increased mortality or reduced productivity.

Responses to overflights can range from indifference to extreme panic (USDI-National Park Service 1994). Behavior can vary among species, and even among individuals within a species. Escape flight is the most common response. Behavioral reactions can cause injury and influence breeding success, feeding, and habitat use. Accidental injury can result from trampling, falling, running into objects or off cliffs. Reproductive losses can occur when young or eggs are trampled, left unattended, or abandon. Panicked running or flying results in increased energy use, and reduced food intake if the animal happens to be feeding.

Indirect Effects

Physiological responses such as increased heart rate or stress hormone levels have been demonstrated, but whether such response lead to long-term harm is equivocal (McArthur et al. 1982, USDA-Forest Service 1992, USDI-National Park Service 1994). Combined with other events such as breeding, nursing young, or harsh winters, the impacts of physiological stress can be more severe.

There is some evidence that human activities that compact snow (e.g. tour skiers, skate skiers, snowmachine users) provide easy travel routes for predators such as wolves, wolverines, and coyotes, in areas that would otherwise be difficult to reach in deep snow. Changes in species composition may result from these accessible travel routes and could result in competition for food and /or pressure for species such as wolverine, lynx, and marten that would otherwise not occur. Heli-ski runs, however, are not likely to constitute compacted snow trails that could be used by predators. The runs are isolated segments of snow that could not be accessed by a competitor species, and it is unlikely that a pass over the snow by a heli-skier would compact the snow sufficiently to allow an animal to walk where it otherwise could not.

Cumulative Effects

Abundance and distribution of the many species discussed in this EIS have been most influenced by alterations of their habitats and by disturbance from activities, such as past mining and timber harvest, past and current residential and commercial developments, past and current outdoor recreational activities, and for some species, hunting and trapping (USDA-Forest Service 2002b). Any action that results in more people in the backcountry or more disturbances of natural habitats in or near the permit area has the potential to cause cumulative impacts to wildlife. As recreation and development increases over time there could be additional habitat loss, additional disturbance to wildlife, and a reduction in habitat quality. Forest Plan Standards and guidelines and project mitigation measure should limit the effects on individuals of any species and

prevent any affect on wildlife populations.

The proposed heli-skiing operation would add cumulatively to the human disturbances of wildlife populations. These disturbances include both motorized and non-motorized recreation as discussed in the Background Information section above.

General road traffic, snowmachines, other aircraft, and avalanche control for the ski area, highway, and railroad also contributes to the sound disturbance of wildlife. However, with the required mitigation in place, the generally small incremental increase attributable to heli-skiing would not trigger any qualitative increase in impacts. On the other hand, not authorizing heli-skiing would not substantially reduce wildlife impacts because of continued use of these areas by other winter recreationists (for example, Mt. Ascension and Seattle Creek would still be heavily used by snowmachine users and ski tourers).

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and no commercially guided helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit was applied for and granted. As a consequence, there would be no impacts to wildlife from commercial helicopter skiing activities. However, private groups or individuals could still rent a helicopter or fixed wing aircraft and ski the area without a permit. The Forest Service does not control aircraft use or flight paths over the Chugach National Forest, and aircraft used for other purposes could disturb wildlife. Other forms of winter recreational activities will continue and will likely increase in the future. Because of sound level and mobility, snowmachine users have the potential to have the greatest impact. Terrain and accessibility limit the extent of disturbance by these activities to some degree. However, human activity of any kind in the vicinity of important habitat would likely cause a disturbance to wildlife.

One may make the assumption that the action alternative that impacts the least number of acres would impact the least number of individual wildlife, and the alternative that provides for the least number of client days would have a lessening degree of the overall effect on wildlife. If this was true, then the alternatives would range from least impacting to potentially more impacting in the following order, Alternatives 9, 4, 5, 3, and 2. However, the distribution of individuals in the population is not equal across the project area. Therefore, this assumption may not be correct. That is why the same mitigation is applied to all action alternatives. By implementing this mitigation, none of the proposed heli-skiing activities should impact any wildlife population, although individual animals may be affected.

Effects on Individual Species

Potential impacts to each species were considered using the following ranked approach to address disturbance impacts on wildlife species (USDI-National Park Service 1994).

Negligible effects

- No species of concern are present, minor or no impacts expected.
- Minor impacts that do occur have no secondary (long-term 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 and/or present for critical life stages.
- Mortality/interference is 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 a 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.

Threatened, Endangered and Sensitive Species

There would be no direct, indirect, or cumulative impacts to threatened, endangered or sensitive species because they do not occur within the permit area during the operating season (see Biological Evaluation, Appendix C).

Management Indicator Species

Management Indicator Species that could experience *low to moderate* impacts from heli-skiing are the brown bear and mountain goat. There would be *low to negligible* effects on the moose.

Brown Bear--

Brown bears are normally not active during the heli-skiing season but winter in dens through mid-April. Brown bears may be susceptible to disturbance while in their dens or at the time of emergence. Denning bears react to disturbance depending on several factors, such as bear temperament, the type of disturbance, the insulation of the den, and the time of year. Bear dens would most likely be in deep snow that would provide good auditory insulation. During emergence, brown bears are prone to starvation and require undisturbed habitat in order to acquire adequate forage. Den abandonment increases the mortality rates of brown bears (Olliff et al. 1999). The proposed mitigation measure (see Chapter 2) would reduce the potential for direct disturbance, but would not eliminate it, as brown bears den in different locations each year. Identifying emerging brown bears would reduce further disturbance by avoiding the area.

Indirect Effects

No indirect effects on brown bears are expected.

Cumulative Effects

There are three stages in the annual cycle where brown bears are vulnerable to the

impact of winter recreation use: (1) pre-denning; (2) denning; and (3) post-denning emergence. Conflicts could occur when skiing and snowmachine use coincides with spring bear emergence and foraging (USDA-Forest Service 2002b). Heli-skiing operations in combination with other motorized and non-motorized dispersed winter recreation activities may result in cumulative disturbance that could impact individual brown bear. As winter recreation uses continues to expand, the overall cumulative effect is uncertain. The development of a model to predict den areas on the Kenai Peninsula will help reduce this conflict. A review of brown bears killed in defense of life and property (DLP) from 1961-1999 show that the number of bears killed correlates with the increased human population. Most (81 percent) of brown bears killed in DLP were by hunters or at residents.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit were applied for and granted. As a consequence, there would be no impacts to brown bears. Under all action alternatives, heli-skiing operation may affect individual brown bears. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and unless safety would be compromised. If a brown bear den is located (either by CPG or during wildlife observation flights), then CPG would maintain a ½ mile horizontal or 1,500 AGL separation during their operations. Helicopters may not hover, circle, or harass brown bears in any way. Therefore, it is unlikely that any action alternative would have a substantial effect on brown bears or impact brown bear populations or viability.

Mountain Goat--

Direct Effects

Heli-skiing has the potential to disturb mountain goats. Goats are active during the heli-skiing season, are widespread, and their winter habitat overlaps some parts of the proposed heli-skiing areas. Helicopter overflights can disturb and alter normal goat behavior, to varying degrees (Forest and Raas 1983, Coté 1996, USDA-Forest Service 2003b). Physiological responses are unknown, but measures of overt behavior indicate short-term disturbance and no significant alteration of maintenance behavior. If helicopters consistently use similar flight paths, mountain goats may become habituated, reducing the effect of the disturbance.

Management recommendations for helicopter activities aimed at reducing impacts to mountain goats include excluding mountain goat winter concentration areas (no-fly zones), modifying flight patterns to avoid occupied goat range, minimizing the number of flights in areas used by goats, and regulating the flight altitudes above goat habitat (Wilson and Shackleton 2001). These measures would provide protection to mountain goats wintering in the permit areas. However, it is possible that there could be goats wintering outside of the designated no-fly zones. In these instances, some disturbance to individuals could occur. The level of disturbance would depend on the frequency of the skiing activity.

Indirect Effects

None expected.

Cumulative Effects

Aircraft assisted recreation, such as heli-skiing, backcountry skiing, and site seeing has increased annually in the amount and level of disturbance. This may have a cumulative impact on mountain goats. Other forms of winter recreation would have little cumulative impact because of the rugged terrain used by the goats. Occasionally, a snowmachine user may disturb them. The Chugach National Forest will continue to survey for and monitor mountain goats. This information will be used to update the mountain goat model. Monitoring goat numbers and locations over time will assist in identifying trends in their populations.

During winter, disturbance that causes energy expenditure can be detrimental to mountain goats. The exact metabolic cost depends on the intensity and duration of the disturbance. However, the cumulative stresses encountered over an entire winter can result in alteration of seasonal and daily movements, reduced foraging efficiency, decreased reproductive success, increased chance of accidents and falls, abandonment of preferred range, decreased resistance to disease, increased vulnerability to predation, and direct mortality (Geist 1978, Joslin 1986, Vogel et al. 1995). Kidding may also be a particularly sensitive time for goats, when the consequences of disturbance could be detrimental for a population. However, kidding in Alaska goat populations takes place in mid-May to mid-June, after the helicopter skiing season is concluded.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit were applied for and granted. As a consequence, there would be no impact from this activity to mountain goats. All action alternatives may affect individual mountain goats, but it is unlikely that any alternative would have a substantial effect on mountain goat populations or viability. Winter goat locations were documented through annual aerial surveys. These locations were used to develop a goat habitat model. From this work wildlife biologist from the Chugach National Forest and ADFG identified 57 no-fly zones (see Appendix C). Helicopters are not allowed to access the no-fly zones unless they maintain a 1,500 feet AGL at all times and they must maintain a 1,500 feet separation level from all observed goats. Helicopters may not hover, circle, or harass mountain goats in any way.

Moose--

Direct Effects

Moose do not inhabit the areas used for heli-skiing, but do occur on winter ranges in the valley bottom. Moose winter range is found within the Mile 12.4 staging area and within the lower reaches of the Bench Peak area. Helicopters may fly over moose winter range to access the East Twentymile, Placer-Skookum, Snow River, and Mt. Ascension units, but they must maintain a minimum of 1,500 feet AGL.

Indirect Effects

No indirect effects are expected.

Cumulative Effects

Motorized and non-motorized winter recreation activities in moose winter range could

cause individual animals to expend energy to move away from the disturbance. Moose disturbed by snowmachines and skiers could further be disturbed by helicopter overflights. Such a disturbance would be relatively minor and short term.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit were applied for and granted. As a consequence, there would be no impacts to the moose. Under all action alternatives, heli-skiing operation may affect individual moose. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and if safety would be compromised. Helicopters may not hover, circle, or harass moose in any way. Therefore, it is unlikely that any action alternative would have a substantial effect on the moose. Alternatives 4 and 9 would have less impact on the moose, as heli-skiing would not be permitted in the Mt. Ascension and Snow River units, thereby eliminating overflights of moose winter range in these areas.

Species of Special Interest

The Species of Special Interest that could experience *low to moderate* impacts from heli-skiing is the wolverine. The bald eagle, Canada lynx, and gray wolf could experience *low to negligible* impacts. There would be *negligible* effects on the river otter, northern goshawk, marbled murrelet, and Townsend's Warbler. They will not be discussed further in this document.

Wolverine--

Direct Effects

Given the lack of studies on wolverine, it is not surprising that none of the published information deals directly with the issue of helicopter disturbance on this species. However, there is evidence that the species may tolerate human intrusion poorly, particularly when the disturbance is near reproductive denning sites.

Denning females could be displaced by helicopter skiing activities occurring in denning areas and could abandon their den sites. Myrberget (1968) mentions four instances of den abandonment due to human disturbance and suggests that secondary dens may be less suitable. Direct contact occurred with two denning females in Idaho in late April and May and resulted in den abandonment in both cases (Copeland 1996). Abandonment of den sites would adversely impact both the female wolverine and her kits. The natal denning period is a critical time for females because they must maintain energy levels to properly nourish their kits during a time when food is scarce. Disturbance during this time, when the females are lactating, could lead to increased energy expenditure and reduced fitness. Kits are at risk to various sources of mortality if they have to abandon their den site. Kits are more vulnerable to predation while being moved to a new den site, or when kept at insecure sites (Magoun and Copeland 1998). They could also experience loss of fitness due to nutritional stress induced by the mother's search for and move to a new den site. Magoun and Copeland (1998) reported instances where although females did not abandon natal dens after disturbances from humans, associated maternal dens, which are speculated to be less "secure" than natal dens, were abandoned within hours of being disturbed by humans

Wolverines may be distributed across all of the units proposed for heli-skiing (Golden et al. 1993). Wolverine tracks were located in Seattle Creek, Bench Peak, Moose Creek, Ptarmigan, Snow River and Mt. Ascension. Placer-Skookum, Grandview, and units north of the Turnagain Arm were not surveyed. Heli-skiing in remote areas has the potential to displace wolverines, or disrupt foraging or travel patterns. Wolverine tracks may abandon dens after human disturbance (Heinemeyer et al 2001). Den abandonment can lead to reduced reproduction or lower kit survival (Magoun and Copeland 1998).

Indirect Effects

No indirect effects are expected.

Cumulative Effects

Heli-skiing in combination with other motorized and non-motorized winter recreation activities in remote areas would result in a cumulative disturbance to wolverine. Although the denning period appears to be the most critical time for wolverine breeding success, it is possible that individuals of either gender could be displaced due to the presence of any type of backcountry recreationists including heli-skiers. Unless an area was to receive repeated and high frequency use, it is unlikely that such a displacement would be permanent or result in long-distance movements. Wolverine maintain extensive territories and disturbance in one area of their territory would likely lead only to an individual refocusing its activities elsewhere within its territory. Wolverine surveys beginning in the winter of 2003-2004 will aid in identifying distribution, density, and denning habitat.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area, unless another permit were applied for and granted. As a consequence, there would be no impacts to wolverine. Under all action alternatives, heli-skiing operation may affect individual wolverine. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and if safety would be compromised. If a wolverine den is located (either by CPG or during wildlife observation flights), then CPG would maintain a 1/2 mile horizontal or 1,500 AGL separation during their operations. Helicopters may not hover, circle, or harass wolverine in any way. Therefore, it is unlikely that any action alternative would have a substantial effect on wolverine or impact wolverine populations or viability.

Bald Eagle--

Direct Effects

Helicopter flights have the potential to disturb nesting and foraging eagles. Reactions to helicopters are reportedly mixed and may be related to the amount of helicopter hovering time spent above a nest, height above the nest, or the frequency of flights in a nest's vicinity (Hancock 1966, White and Sherrod 1973, Call 1979). Bald eagles typically utilize lower elevations along open water in winter, habitat conditions that do not occur at the altitudes and locations where heli-skiing activities take place. Some over-flights of individuals utilizing habitat near helicopter staging areas could occur. To minimize any possible effect on the bald eagle, two mitigation measures have been formulated. (1) No

skiing or other human activity is allowed with 330 feet of known bald eagle nests. The Glacier Ranger District will provide CPG an updated bald eagle nest map prior to each season. (2) Helicopters will not fly within 1/4-mile horizontal distance or 1,500 AGL of any active bald eagle nest. When it is not known whether the nest is active, helicopter flights will avoid the nest. For these reasons, it is predicted that issuance of the heli-ski permit would have no effect on bald eagles within or in the vicinity of the permit area.

Indirect Effects

No indirect effects are expected.

Cumulative Effects

The cumulative effects of recreation activities can have deleterious effects on bald eagle populations through a reduction in survival, especially in the winter and in reduced reproductive success rates (Anthony, et al. 1995, Montolopi and Anderson 1991). Snowmachines may be especially disturbing, probably due to random movement, loud sound, and operators who are generally out in the open (Walter and Garrett 1981). Grubb and King (1991) found that pedestrians were the most disruptive of the human activities to bald eagles. The proposed mitigation measures are expected to prevent any adverse effects on bald eagle populations and their habitat and will not result in loss of species viability.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and there would be no impacts to the bald eagle. Under all action alternatives, heli-skiing operations are not expected to have a substantial effect on individual bald eagles. Alternatives 4 and 9 would have less impacts to bald eagle, as heli-skiing would not be permitted in the Seattle Creek unit where eagles concentrate nesting and foraging along Turnagain Arm. Alternatives 3 and 5 reduce the heli-skiing use in parts of Seattle Creek.

Canada Lynx--

Direct Effects

Because the lynx is crepuscular (active at dawn and dusk), and are probably active on moonlit nights, some natural temporal separation would occur between the lynx's period of activity and helicopter skiing activities. Also, skiing takes place primarily on open slopes, with a smaller percentage of skiing activity conducted in sparsely timbered areas. The density of trees that allows skiing is generally lower than the highest quality lynx or snowshoe hare habitat. Some forms of human activity in the vicinity of lynx appear to be compatible with the species' persistence (Mowat et al. 2000).

Indirect Effects

No indirect effects are expected. Helicopter skiing activities are not likely to facilitate the movement of the lynx's competitors into lynx habitat. Unlike snowmachine activity or backcountry skiing, heli-skiing produces segmented trails that are confined to a relatively limited area. Furthermore, heli-skiers tend to make a single run in a track, which in most snow conditions does not produce a well-packed travel surface for wildlife. In contrast, snowmachines and skiers create more extensive trail networks and trails packed from repeated use, typically originating from lower elevations where lynx competitors occur, and these trails could facilitate the movement of competitors into lynx habitat.

Cumulative Effects

The cumulative effects of winter backcountry recreation activities could impact lynx populations. However, lynx are generally crepuscular, and their highest activity time would be outside of most winter recreation activities. Also, lynx are known to tolerate a moderate amount of human activity. If disturbed by a helicopter, snow machine, or skier, they would be expected to seek cover and then return to normal activity.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and there would be no impacts to the lynx. Under all action alternatives, heli-skiing operation may affect individual lynx, but it is unlikely to have a substantial effect on their populations or viability.

Gray Wolf--

Direct Effects

Impacts of helicopter skiing activities on wolves have not been studied. Some wolves could abandon a den site after disturbance, and other more tolerant individuals may not abandon dens unless disturbance is frequent or severe (Thiel et al. 1998). It is possible that wolves could modify their behavior as a result of overflights.

Indirect Effects

Wolves may also be impacted if prey species, such as mountain goats, Dall's sheep, or moose, alter their behavior in response to heli-skiing (Olliff et al. 1999). Depending on the behavioral modifications of the prey, this could result in either a positive or negative result for wolves (e.g., disturbance of prey could make it more vulnerable to predation, or it could force prey out of the pack's range).

Cumulative Effects

The cumulative effects of winter recreation activities could impact wolf populations. If disturbed by a helicopter, snowmachine, or skier they would be expected to move away from the disturbance and seek cover, and then return to normal activity.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and no helicopter skiing would occur on the Kenai Peninsula geographic area unless another permit were applied for and granted. As a consequence, there would be no impacts to gray wolves. Under all action alternatives, heli-skiing operation may affect individual wolves. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and if safety would be compromised. Helicopters may not hover, circle, or harass wolves in any way. Therefore, it is unlikely that any action alternative would have a substantial effect on wolves or impact wolf populations or viability.

Other Species of Concern

Other species of concern that could experience *low to moderate* impacts from heli-skiing is the Dall's sheep. There would be *negligible* effects on migratory birds and they will not be discussed further in this document.

Dall's Sheep--

Direct Effects

Heli-skiing has the potential to disturb Dall's sheep. Sheep are active during the heli-skiing season and are found in large concentrations during the winter in discrete locations. Sheep locations overlap the proposed heli-skiing in the Moose Creek, Ptarmigan, and a small part of the West Bench Peak units. Behavior responses are similar to those observed in mountain goats. These include interruption of rest and rumination, increased alertness, and fleeing to escape terrain (Krausman and Hervert 1983, Stockwell et al. 1991, Frid 2003). Nette and others (1984) documented injuries due to panicked escape behavior and increased vulnerability.

Indirect Effects

Prolonged elevated heart rates have been measured when overflight were less than 400 meters away (approximately 1/4 mile) (MacArthur et al. 1982, Stemp 1983). Indirect effect could include reduced reproduction, if physiological disturbance is substantial. Other indirect effect could result if predators, such as bears, wolves, or wolverines, reduce their use of an area because of the helicopter disturbance resulting in a benefit to the sheep. With the proposed mitigation, it would be unlikely that there would be a change in behavior or physiological responses by sheep.

Cumulative Effects

Dall's sheep may be affected over time by aircraft assisted recreation, such as heli-skiing, backcountry skiing and site seeing. Monitoring of sheep numbers and locations should assist in identifying changing population numbers.

Comparison of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and there would be no impacts to the Dall's sheep. No-fly zones created for mountain goats overlap with concentrations of Dall's sheep according to observations made by the ADFG (L. Nichols personal communication) and summer survey data (USDA-Forest Service, unpublished). Helicopters are not allowed to access the no-fly zones unless they maintain a 1,500 feet AGL at all times and they must maintain a 1,500 feet separation level from all observed sheep. Helicopters may not hover, circle, or harass sheep in any way. Under all action alternatives, heli-skiing operation may affect individual sheep, but it is unlikely to have a substantial effect on their populations or viability.

Recreation Conflicts (Issue 2)

Issue Statement

While many forms of winter recreational use have increased in recent years (e.g., ski touring, skate skiing, backcountry skiing, snowmachine use), non-motorized recreationists express the most concern regarding this proposal. Some backcountry skiers said that the presence of the helicopter, primarily as a source of sound in an otherwise pristine area, detracts from their recreational experience. The conflict is also over competition for snow. Some feel that the sudden presence of heli-skiers in areas that backcountry skiers have expended considerable effort to reach is unfair, especially when it involves terrain accessible for day tours. Concerns for the safety of backcountry skiers and snowmachine users down slope from heli-ski groups were also expressed. While other winter recreation activities such as ice-fishing, ice skating, and nature

photographers use motorized or non-motorized due these activities.

To contrast the proposed action and alternatives on the basis of this issue, our analysis focuses on the availability of helicopter skiing opportunities and conflicts with other winter recreationists. The four main elements of user conflicts are: (1) noise disturbance, (2) a sense of fairness in effort expended to reach backcountry locations, (3) safety concerns about avalanches, and (4) litter left behind by the heli-ski company and heli-ski clients. All effects are direct or cumulative; there are no indirect effects. Much of this information is taken from the *Recreation Resource Report* prepared for this project by Teresa Paquet, Glacier Ranger District and Karen Kromrey, Seward Ranger District (USDA-Forest Service 2003c). See Appendix G and H.

Members of the public commented that they would experience (or have experienced) some or all elements of the above described user conflict in the following areas proposed by Chugach Powder Guides:

- Glacier/Winner (potential sound impacts by flight path)
- West Seattle Creek (potential sound impacts),
- East Seattle Creek
- Placer/Skookum (potential flight path from staging area)
- West Bench Peak,
- North Bench Peak
- Mt. Ascension

In addition the following areas outside of heli-skiing units were identified in scoping comments and comments addressing the Draft EIS:

- Mile 12 area – Golden Fin Trail and Grayling Lake Trail (Potential noise impacts from Mile 12.4 staging area)
- Backcountry skiing route to Pyramid and Wolverine Creek areas from Ingram Creek parking area along Turnagain Arm (Potential noise impacts from helicopters using Ingram Creek staging area)

Each year the snow conditions and weather determine the number of recreation users that use particular areas. Therefore, each year the level of conflict that could occur may vary greatly. The greatest level of conflict would potentially occur on days when the weather is clear and there is adequate snow and cooler temperatures that create ideal conditions for both heli-skiers and backcountry skiers and both user groups are in the area at the same time. The districts developed a scale for rating the potential recreation user conflict each proposed heli-skiing unit might have. The factors that were used to develop the ratings are:

1. Number of non-motorized users in an area in which to experience a conflict with heli-skiing activities.
2. Timing restrictions for heli-skiing activities.
3. Proximity of helicopter staging areas and flight paths to and from the staging area to areas where non-motorized users recreate.
4. Level of heli-skiing use in permitted units in the past.
5. Units where heli-skiing activities would not be permitted.

Table 4-1 shows the rating for potential user conflict for each proposed heli-skiing unit. Appendix E contains a guide that demonstrates how the above factors were used to develop the rating for each area and a detailed discussion of how the rating was developed for each unit. The discussion below is a summary of the ratings for the units and specific discussion of those which received a rating of moderate potential user conflict or higher.

Effect of Alternatives

Table 4-1 displays a summary of the recreation user conflict by heli-skiing unit. Following the table, units that have a rating of Moderate or High are discussed in detail by alternative. Units received a low rating because backcountry non-motorized recreationists do not use the unit extensively and the probability of a conflict of occurring would be low, and/or the unit will not be used and/or impacted by permitted heli-skiing activities. The units with a low or none rating are not discussed in detail in the EIS but are presented in detail in Appendix H

Table 4-1 Summary of Recreation Conflicts

Unit	Alt 1	Alt 2	Alt 3-mod	Alt 4	Alt 5	Alt 9
Glacier-Winner	None	Low	Low	Low	Low	Low
West Twentymile	None	Low	Low	Low	Low	Low
North Twentymile	None	Low	Low	Low	Low	Low
East Twentymile	None	Low	Low	Low	Low	None
Grandview	None	Low	Low	Low	Low	Low
Placer-Skookum	None	Moderate	Moderate	Moderate	Moderate	Moderate
East Bench Peak	None	Low	Low	Low	Low	Low
North Bench Peak	None	Low	Low	Low	Low	Low
West Bench Peak	None	High	Moderate	Moderate	Low	Low
West Seattle Creek	None	Low	Low	None	None	None
Mid Seattle Creek	None	Low	Low Fri-Sun; None: M-Th	None	Low	None
East Seattle Creek	None	Moderate	Mod Fri-Sun; None: M-Th	None	Low	None
West Moose Ck.	None	Low	Low	None	Low	None
East Moose Ck.	None	Low	Low	None	Low	None
West Ptarmigan	None	Low	Low	None	Low	None
East Ptarmigan	None	Low	Low	None	Low	None
Snow River	None	Low	Low	None	Low	None
Mt. Ascension	None	Low	Low	None	Low	None

This analysis recognizes that people who recreate in heli-skiing units that have a low potential conflict rating may still experience conflict if heli-skiing occurs at the time and place the person is recreating. The rating used above describes only the *potential* for conflict.

Regarding displacement of users, it is expected that some non-motorized recreationists would be displaced from those units where recreation user conflict potential is at a

moderate or high rating. These folks may choose to recreate in areas where there is less expected motorized use or choose areas where motorized access is not allowed. Displacement into these areas may further increase crowding in these areas.

Alternative 1 (No Action - No permit issued)

Under this alternative, a special use permit would not be issued to Chugach Powder Guides for heli-skiing activities. Heli-skiing activities by non-guided individuals might still occur in areas open for winter motorized recreation. There are no restrictions on these non-guided activities and it is not known how many trips occur each year but it is estimated to be very low.

The following effects on recreationists and recreation activities can be anticipated under Alternative 1:

Heli-skiing opportunities

This alternative would eliminate any opportunities for heli-skiing opportunities on the Kenai Peninsula geographic portion of the Chugach National Forest (including the area around the community of Girdwood). These opportunities would still be available on other portions of the Chugach National Forest near Valdez.

User Conflicts

This alternative would eliminate existing levels of users conflicts between backcountry skiers/snowboarders/snowshoers and commercially guided heli-skiers in the Bench Peak area and would eliminate any potential for conflicts in additional areas.

Alternative 2 (Chugach Powder Guides Proposal as modified)

Under this alternative, a special use permit would be issued to Chugach Powder Guides for heli-skiing activities in core and exploratory areas, totaling 338,200 acres. The company would be permitted for 1800 client days for the core areas and 600 client days for exploratory areas. Some of the areas permitted would overlap areas used by non-motorized recreationists who expressed concern with CPG's proposal during project scoping. This alternative does restrict heli-skiing activities in West Bench Peak, a popular location for non-motorized recreationists, to Monday through Thursday.

The following effects on recreationists and recreation activities can be anticipated under Alternative 2:

Heli-skiing opportunities

This alternative would make maximum opportunities available to members of the public who wish to participate in heli-skiing activities in regards to varying terrain, elevation, and snow conditions and area. The units that would be permitted cover 338,200 acres of National Forest between the Seward Ranger District and the Glacier Ranger District. A timing restriction on one of the units would reduce the number of acres available for heli-skiing on Friday through Sunday to 320,100. New areas would be available for those clients who are returning. The proponent has stated that many of the clients are return customers.

User Conflicts

This alternative would have the highest potential for user conflicts because of the total number of client days that would be permitted and because of the large amount of area under permit. The following ratings for potential conflict are based on the criteria listed in Appendix E.

- West Bench Peak unit has a high potential for user conflict. This unit has higher non-motorized recreation use, is located in close proximity to the staging area at Mile 62, and is a key connecting unit for CPG to access other units further south. CPG has used this unit in 2003 for 5 days and on the highest use day, CPG utilized ski runs in the unit 43 times during the day (see appendix G for information on 2001 and 2002). The average number of times ski runs were utilized was 15 times during a day. Even though CPG didn't utilize the area very frequently, on the days when heli-skiing occurred, there would have been high probability of conflict occurring with non-motorized skiers.
- Mid Seattle Creek, East Seattle Creek, and Placer-Skookum units have a moderate potential for user conflict. (After March 31st, Placer-Skookum unit has a low potential because it is not available for heli-skiing activities from April 1 through May 1). Mid Seattle Creek and East Seattle Creek have a moderate amount of non-motorized users and access to these units is not located directly along a flight path from a staging area. Placer Skookum also has a moderate amount of non-motorized use but also has a high number of motorized users in the same area and the flight path from Big Game Alaska staging area would travel in the same proximity as this recreation route. Placer-Skookum unit is a consistently high use area for CPG. In 2003, this unit was used 8 days, and ski runs were used 36 times during one day on the highest use day. The average number of times ski runs were used during one day was 19.
- All remaining units have low or no potential for user conflicts due to low numbers of non-motorized recreation users using the areas, and no staging areas or flight paths within close proximity to areas where non-motorized users are recreating. Although some non-motorized recreationists commented that they would experience user conflict with heli-skiing in the Mt. Ascension unit, a lower number of non-motorized recreationists use the area in part due to the large number of snow machines using the area. A rating of low for potential conflict was given because of the low number of non-motorized users who use the area and the area is an exploratory unit, which potentially would receive infrequent heli-skiing use if permitted.
- Non-motorized recreationists using two popular skiing trails (Grayling and Golden Fin) near the Mile 12.4 helicopter staging area may experience user conflict as the helicopter flies to and from the adjacent heli-skiing units. This potential conflict would be low as the total number of flights is anticipated to be lower for these exploratory units.
- The potential staging area at Mile 33.2 is located less than a 1/8 of a mile from Carter Lake Trailhead. Recreationists who utilize the Carter Lake Trailhead at the same time as a helicopter using the staging area would be highly impacted by the sound and exhaust of the helicopter for a short time.

Alternative 3 -modified (Reduce Recreation Conflicts and Impact on Communities)

Under this alternative, a special use permit would be issued to Chugach Powder Guides for heli-skiing activities in core and exploratory units, totaling 306,300 acres. The company would be permitted for 1800 client days for the core units and 400 client days for exploratory units. Some of the units permitted would overlap areas used by non-motorized recreationists who expressed concern with CPG's proposal during project scoping. This alternative restricts heli-skiing activities in West Bench Peak unit to Monday through Thursday and in the Mid Seattle Creek and East Seattle Creek units to Friday, Saturday, and Sunday.

The following effects on recreationists and recreation activities can be anticipated under Alternative 3:

Heli-skiing opportunities

This alternative would have slightly less client days available for skiing (-200) as Alternative 2 because some exploratory units would be eliminated or have timing restrictions. The area that would be permitted for week-long heli-skiing covers 269,200 acres of National Forest. Another 19,000 acres would be available for heli-skiing on Friday, Saturday and Sunday, and 18,000 would be available Monday through Thursday. New areas would be available for those clients who are returning.

User Conflicts

This alternative would have some potential for user conflicts because of the total number of client days that would be permitted and because some of the areas available for heli-skiing activities are in areas where non-motorized users recreate.

- West Bench Peak and Placer-Skookum units have a moderate potential for user conflict. West Bench Peak has a timing restriction for heli-skiing activities occurring on weekdays only, but it is still located within close proximity to the staging area at Mile 62, and is a key connecting unit for CPG to access other units further south. Placer Skookum has a moderate amount of non-motorized use and high numbers of motorized users in the same area. The flight path from the Big Game Alaska staging area would travel in the same proximity as this recreation route (After March 31st, Placer-Skookum unit has a low potential because the unit is not available for heli-skiing activities from April 1 through May 1). Both units have received past use from CPG in varying number of days and intensity.
- Reversing the timing restriction as proposed in the DEIS on the East Seattle Creek unit and adding the same restriction on the Mid Seattle Creek unit would give non-motorized winter users another area that they could use during the week when snowmobile use is light.
- All remaining units have low or no potential for user conflicts due to low numbers of non-motorized recreation users using the areas, and no staging areas or flight paths within close proximity to areas where non-motorized users are recreating.
- Non-motorized recreationists using two popular skiing trails (Grayling and Golden Fin) near the Mile 12.4 helicopter staging area may experience user conflict as the

helicopter flies to and from the adjacent heli-skiing units. This potential conflict would be low as the total number of flights is anticipated to be lower for these exploratory units.

Alternative 4 (Current Level – 2003/2004)

Under this alternative, a special use permit would be issued to Chugach Powder Guides for heli-skiing activities in core units only over 159,100 acres. The company would be permitted for 1200 client days. Some of the areas permitted would overlap areas used by non-motorized recreationists who expressed concern with CPG's proposal during project scoping. This alternative does restrict heli-skiing activities in West Bench Peak to Monday through Thursday only.

The following effects on recreationists and recreation activities can be anticipated under Alternative 4:

Heli-skiing opportunities

This alternative would have the same number of client days available for skiing as the permit issued for the 2003/2004 season. The area that would be permitted for Monday through Thursday covers 159,100 acres of National Forest and the acreage available for heli-skiing on Friday, Saturday, and Sunday would be 141,000 acres. There would be no new areas available for those clients who are returning.

User Conflicts

This alternative would have a lower impact on recreation users because of the lower number of client days and less area that would be permitted. There is still some potential for user conflict as listed below:

- West Bench Peak and Placer-Skookum units have a moderate potential for user conflict. West Bench Peak has a timing restriction for heli-skiing activities occurring on weekdays only but it is still located within close proximity to the staging area at Mile 62, and is a key connecting unit for CPG to access other units further south. Placer Skookum has a moderate amount of non-motorized use and high numbers of motorized users in the same area. The flight path from the Big Game Alaska staging area would travel in the same proximity as this recreation route (After March 31st, Placer-Skookum unit has a low potential because 5,800 acres of the unit are not available for heli-skiing activities from April 1 through May 1). Both units have been used by CPG in varying number of days and intensity.
- All remaining units have low or no potential for user conflicts due to low numbers of non-motorized recreation users using the areas, and no staging areas or flight paths within close proximity to areas where non-motorized users are recreating.

Alternative 5 (Minimize Recreation Conflicts)

Under this alternative, a special use permit would be issued to Chugach Powder Guides for heli-skiing activities in core and exploratory areas, totaling 231,400 acres. The company would be permitted for 1500 client days for the core areas and 300 client days for exploratory areas. This alternative drops those units where scoping comments indicated non-motorized backcountry skiing would be greatly impacted by heli-skiing

activities. The units dropped were East Seattle Creek, West Seattle Creek, West Bench Peak, North Bench Peak, and Mt. Ascension. There are no timing restrictions on the permitted units.

The following effects on recreationists and recreation activities can be anticipated under Alternative 5:

Heli-skiing opportunities

This alternative would have a lower number of client days available for skiing than Alternative 2 and some units would be eliminated. The area that would be permitted for heli-skiing activities covers 231,400 acres of National Forest. New areas would be available for those clients who are returning.

User Conflicts

This alternative as a whole would have low potential to impact other users because of the units that were dropped where non-motorized activities occur but it would still have some potential for conflict with flight routes from staging areas.

- Placer-Skookum unit has a moderate potential for user conflict. The unit has a moderate amount of non-motorized use and high numbers of motorized users in the same area. The flight path from the Big Game Alaska staging area would travel in the same proximity as this recreation route (After March 31st, Placer-Skookum unit has a low potential because 5,800 acres of the unit are not available for heli-skiing activities from April 1 through May 1). This unit is also a consistently higher use area for CPG.
- All remaining units have low or no potential for user conflicts due to low numbers of non-motorized recreation users using the areas, and/or no staging areas or flight paths within close proximity to areas where non-motorized users are recreating.
- Non-motorized recreationists using two popular skiing trails (Grayling and Golden Fin) near the Mile 12.4 helicopter staging area may experience user conflict as the helicopter flies to and from the adjacent heli-skiing units. This potential conflict would be low as the total number of flights is anticipated to be lower for these exploratory units.

Alternative 9 (2000-2002 Level of Use)

Under this alternative, a special use permit would be issued to Chugach Powder Guides for heli-skiing activities in core areas only over 104,700 acres. The company would be permitted for 800 client days. This alternative has no restrictions on use during the weekdays for any unit.

The following effects on recreationists and recreation activities can be anticipated under Alternative 9:

Heli-skiing opportunities

This alternative would have the same number of client days available for skiing as the permit issued for the 2002 season. The area that would be permitted for heli-skiing activities covers 104,700 acres of National Forest. There would be no new areas

available for those clients who are returning

User Conflicts

This alternative would have similar impacts on non-recreation users as alternative 4 but with 400 less client days permitted. There is still some potential for user conflict as listed below:

- Placer-Skookum unit has a moderate potential for user conflict. The unit has a moderate amount of non-motorized use and high numbers of motorized users in the same area. The flight path from the Big Game Alaska staging area would travel in the same proximity as this recreation route (After March 31st, Placer-Skookum unit has a low potential because 5,800 acres of the unit are not available for heli-skiing activities from April 1 through May 1). This unit is also a consistently higher use area for CPG.
- All remaining units have low or no potential for user conflicts due to low numbers of non-motorized recreation users using the areas, and no staging areas or flight paths within close proximity to areas where non-motorized users are recreating.

Cumulative Impacts

From On-Going Activities

The Background Information discussion at the start of Chapter 3 indicates that growth is occurring in most forms of winter outdoor recreation, particularly backcountry skiing, and snowmachine use. Guided heli-skiing has increased from 213 client days in 1997 to over 1,000 client days in 2002. Under this proposal CPG is seeking 2,400 client days of use. More people are backcountry skiing and using backcountry areas. Some perceive Heli-skiing as a nuisance that ruins the experience they are seeking. Growth in snowmachine use, combined with the sound of other aircraft, may in some instances add incrementally to the disturbance associated with heli-skiing. Overall, the net impact is that there are more recreationists seeking the solitude of undisturbed nature and more forces at work to reduce the possibility of finding it. To compensate for some of these impacts, over 200,000 acres has been designated for non-motorized winter recreation activities within the Kenai Peninsula Geographic Area, (USDA Forest Service 2002b).

Some backcountry skiers are reporting a sense of crowding and changing recreation experiences in non-motorized areas that had been favorite skiing, snowboarding, and snowshoeing areas. These areas are Turnagain Pass East Side and Manitoba Mountain near Lower Summit Lake. Non-motorized users are starting to expand into other winter motorized allowed areas to seek less crowded areas. These areas include more areas of the Bench Peak area (West and North areas), Seattle Creek, and Mt. Ascension. Non-motorized users already have a sense of being pushed out of some of these motorized areas by the growing numbers of snowmachine enthusiasts (Mt. Ascension area is an example of this). Permitting heli-skiing in these same areas that have not been permitted in the past (West Seattle Creek and Mt. Ascension) may further add to the situation with the non-motorized recreation users. It may persuade the growing numbers of non-motorized users to stay in the non-motorized use areas, which could lead to a greater sense of crowding felt by all non-motorized users.

Alternative 2, the Proposed Action and Alternative 3 would have the greatest cumulative impacts for non-motorized users. Alternatives 4, and 9 would provide more opportunities for non-motorized users and would have less cumulative impacts. There would be no cumulative impact under Alternative 1, No Action, because the heli-skiing permit would not be issued.

From Proposed Activities

Seward to Girdwood Iditarod National Historic Trail: Development and promotion of the INHT is expected to increase use of this and all area trails, and potentially increased user conflicts. Extensive open space is available for both users groups as specified in the Revised Forest Plan. Additional cabins could increase the amount of use by backcountry recreations and may increase the conflict between user groups.

Nordic Ski Train: The Anchorage Nordic Ski Club has a multi-year permit from the Forest Service to use a Nordic Ski Train to Grandview where people would be dropped off for a day of skiing along Trail Creek and up to several of the glaciers near the railroad. This will bring a large number of skiers into this area on weekends in March.

Outfitter/Guide Use: Outfitter/guide companies for snowmobile use add cumulatively to non-motorized recreation conflict and sound level in the Turnagain Pass area, Placer and Twenty Mile drainages, and the Johnson Pass Trail area. Guided skiing and camping in Placer River Valley, Johnson Pass from the south side, Russian Lakes Trail, and Ptarmigan Creek Trail would have no cumulative impact.

Paradise Valley Hut-to-Hut Proposal: If the Paradise Valley Hut-to-Hut proposal is accepted, approved, and authorized, encourage CPG and the Huts Association permit holders to work together to minimize the user conflicts that may arise in the spring . The primary season of use would be summer, but includes low levels of winter use. The proposed heli-skiing activities would overlap with this proposal in the West Moose Creek, East Moose Creek, and West Ptarmigan heli-skiing use areas. The heli-skiing proposal has generated concern from the Huts Association for the noise intrusion in the areas immediately adjacent to the proposed hut locations. Spring skiers using the huts in March and April would overlap with the proposed heli-skiing. season. The level of user conflicts could rise in the future if the proposal is expanded into the Twentymile drainage.

Cooper Lake Yurt Proposal: If the Cooper Lake Yurt proposal is accepted, approved, and authorized, CPG and the Alaska Mountain Yurt permit holders would be encouraged to work together to minimize the user conflicts that may arise in the skiing season. . There should be little cumulative effects from this project.

Recreation Facility Development within the project area: An additional cabin could increase the amount of use of the East Twentymile area by backcountry skiers. The ski trail system in the Grayling/Meridian Lake Area would increase skiers in this area. As new facilities are implemented user conflicts may well rise to higher levels than are currently present

Kenai Forest Plan Amendment (Carter Crescent Project)

Depending on the outcome of this project there may be cumulative effects with heli-skiing. Any new direction on non-motorized use may affect areas that are currently available for heli-skiing.

Impacts on Communities (Issue 3)

Issue Statement

Lifestyles of rural communities can be negatively impacted by increases in permitted helicopter use either incrementally over a number of years or by a sudden increase. The sound and visual disturbance of concentrated helicopter operations can affect the quality of life for residents in the following areas: Cooper Landing, Girdwood, Hope, Moose Pass, Seward, and Sunrise,

The following analysis focuses on the impacts of helicopter sound and helicopter sightings on the identified communities. While the helicopter operation is the main topic, staging areas are discussed in instances where they impact residential areas.

General Effects

Noise Impacts

The Environmental Protection Agency has established 70 dB to be the *maximum safe average* amount of sound (sleep loss and other adverse physiological and psychological responses may occur at lower levels), and continuous exposures to sound levels of 85 dB and above may be physically hazardous to hearing. Person on the ground exposed to overflights would typically not experience any temporary hearing loss due to the relatively short duration of the sound exposure (Federal Aviation Administration, 1985).

The assessment of psychological response to sound is less determinant. However, there is ample research documenting the expectation that, in general, increasing levels of sound cause an increasing percentage of a community's residents will take increasingly strong measures to control it.

Visibility and Sound

There are two sources of sound associated with helicopter operations: the engines and the rotor blades. Turbine powered helicopter engines, like the A-Star used by CPG, makes a sound no louder than a car or truck (USDA-Forest Service 1999b). The main rotor blades are responsible for much of the signature sound of a helicopter (HAI, 1993, El-Ghobasy, 1995). The "blade slap" is the most disturbing component of the sound due to its impulsive nature and because it occurs in the mid-frequency range where human hearing is most sensitive. An AStar 350 helicopter used by CPG produces 75 dB, at 1,000 feet it produces approximately 70 dB. As a helicopter approach, pass over people along flight paths, and continue on, it is estimated that the sound would be audible for one to four minutes, depending how close one was to the helicopter. The closer people are to the helicopter the longer the sound can be heard. Helicopters produce the most sound during an approach for a landing. The sound from a helicopter sitting at a staging area or a landing/takeoff area could last several minutes.

Lifestyles of rural communities can be negatively impacted by increases in permitted helicopter use either incrementally over a number of years or by a sudden increase. The sound and visual disturbance of concentrated helicopter operations can affect the quality of life for residents in the following areas: Cooper Landing area, Girdwood, Hope, Moose Pass area, Seward, and Sunrise. In addition, individual residences, isolated businesses, and even small subdivisions along the Seward Highway, from Girdwood to Seward, could be impacted by the sound and sight of helicopters.

An analysis of the visibility of the helicopter and potential sound from the helicopter activity in heli-ski units, staging areas, and travel corridors was conducted. The analysis was based on a Digital Elevation Model (DEM). The DEM was digitized from contours on an USGS topographical map with a scale of 1:163360. The elevation model is a vaster data set comprised of an equal-spaced grid. The resolution of this grid is 45 meters. This means that every 45 meters across the landscape is a post containing elevation data. These posts should be thought of in terms of both horizontal accuracy (latitude and longitude positions), and vertical accuracy (elevation of the post). Each post represents 45 meters square. The Digital Elevation Model database for the Chugach National Forest exceeded the minimum standard for vertical accuracy (50 feet). Most have an error of less than 2-5 meters (Geospatial Service and Technology Center, USDA, Forest Service, Salt Lake City, Utah). For purposes of this analysis it was assumed that visibility is a surrogate measure for sound and that if a helicopter cannot be seen because of distance or mountains between an observer and the helicopter that it is also less likely to be heard or not heard at all.

While visibility determination should be a certainty, provided available digital elevation maps are relatively precise, sound determination is only a probability. Further, topography has an affect on normal dissipation of sound over distance. The sound of helicopters operating within a valley may be contained and may dissipate less, while outside the valley the helicopter sound may be less noticeable than at equal distances over flat terrain. Finally, sound transmission is also a function of atmospheric conditions and vegetative cover.

Nearly 400,000 acres, including 18 heli-ski units, 7 staging areas, and 6 travel corridors, were analyzed (see Map 4-1). In addition to the footprint of the areas on the ground, the GIS analysis added 500 feet to ground level elevations in order to insure that flight activity was also accounted for. Five hundred feet was used as it represents an average altitude of a helicopter during take-offs and landing and transporting heli-skiers between runs. Thus, the GIS analysis looked at three- dimensional "boxes" of helicopter activity rather than two-dimensional areas. A total of 12 points in the six communities (with six points in Moose Pass—from Mile 35 to Mile 18 and two in Cooper Landing) were incorporated in the analyses (see Map 4-1). Individual residences and isolated businesses, because of their scattered nature, were not analyzed.

How people perceive the loudness of any given sound depends on several measurable physical characteristics of the sound. These characteristics include: (1) intensity, (2) frequency content, (3) change in sound pressure, and (4) rate of increase of sound pressure levels. However, the loudness of the sound is not the issue. It is the noise of the helicopter. Noise is usually regarded as unwanted sound – sound that disturbs

routine activities and quiet, and perhaps causes a feeling of annoyance. Which sounds are noise is obvious to each listener and he or she has no need to measure it. It is there and it is bothersome. Annoyance response is remarkably complex, and considered on an individual basis, displays a wide variability for any given noise. These variables include (1) emotion variables such as feelings about the necessity or preventability of the noise, judgment of the importance value which is produced by the noise, and activity at the time an individual hears a noise, and (2) physical variables such as type of setting, time of day, season, predictability of noise, control over the noise, and length of time an individual is exposed to the noise (Federal Aviation Administration, 1985).

It is assumed that visual contact with a helicopter is a reasonable predictor of its sound level, such that the further the helicopter is from a person, the less the person is able to hear it. Distance aggregations follow those used for the Scenery Resource System delineations in the Revised Forest Plan. "Foreground" distances are within ½ mile of the observer (or in this case, the "listener"); "mid-ground" distances are more than ½ mile but not greater than 4 miles; and "background" distances are greater than 4 miles from the observation point. The simple assumption that sound decreases to some unknown extent according to these distance zones is thus sound according to the above principle.

In addition to these simple acreage distributions, the populations of the communities were used to weight the visibility results in order to better understand the potential impact of activities on local residents. No attempt was made to determine the percent or actual decibel change in sound reduction in potential helicopter sound by distance or class of visibility.

Front Map 4-1

Back of Map 4-1

Effect of Alternatives

Table 4-2 displays the acres of helicopter skiing units and travel corridors visible from each of the communities. In foreground areas (F), the helicopter would be readily visible and easily heard. In the mid-ground areas (M), the helicopter would generally be seen and could be heard. In the background areas (B), the helicopter would seldom be seen or heard.

Table 4-2 Helicopter Effects Areas by Community (acres)

Community	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 9
Cooper Landing	0	5,456-B	5,456-B	0	0	0
Girdwood	0	128-F 1,805-M 13,991-B	128-F 1,805-M 11,645-B	128-F 1,686-M 6,513-B	128-F 1,805-M 9,126-B	128-F 1,686-M 6,360-B
Hope	0	0	0	0	0	0
Moose Pass	0	153-F 2,811-M 7,396-B	0 855-M 4,887-B	0 0 1,415-B	0 609-M 3,832-B	0 0 840-B
Seward	0	71-B	71-B	0	71-B	0
Sunrise	0	668-M 64-B	0 0	0 0	0 0	0 0

F=Foreground (within ½ mile distance)
M=Mid-ground (1/2 to 4 miles in distance)
B=Background (greater than 4 miles in distance)

Alternative 1 - No Action

Under the No Action Alternative, there would be no helicopter sound or helicopter sighting from commercial guided helicopter skiing. The relative winter quiet would be maintained.

Alternative 2 – Proposed Action

Because up to three helicopters could be operating at one time, there could be some overlap in the sound produced by the helicopters.

Cooper Landing area

There would be little helicopter sound and a slight chance of local residents seeing a helicopter except when they were skiing in the Mt. Ascension unit. About 10 percent of this unit is visible (background) from Cooper Landing.

Girdwood

There would be a moderate amount of helicopter sound and a high chance of local residents seeing a helicopter when they were operating out of the Girdwood Airstrip staging area. About two percent of the North Twentymile Complex travel corridor (includes the Girdwood Airstrip staging area) is within the foreground, 26 percent is in the mid-ground, and 13 percent is in the background from Girdwood. About two percent of the Seattle Creek travel corridor is in the mid-ground and three percent is in background.

There would be little helicopter sound and a slight chance of local residents seeing a helicopter when they were operating in the East Seattle Creek unit (21 percent of the unit is within the background), the Mid Seattle Creek unit (37 percent of the unit is within the background) and the Glacier Winner unit (24 percent of the unit is within the background) as seen from Girdwood.

There would be little helicopter sound and a slight chance of local residents seeing a helicopter when they were skiing in the West Seattle Creek unit (13 percent of the unit is within the background) and Placer-Skookum unit (13 percent is within the background) as seen from Girdwood.

To lessen the impact to Girdwood residents, helicopters exiting from the Girdwood Airstrip will stay at low levels either in Glacier Creek Gorge or just west of the creek until near the Four Corners area. Flights toward Turnagain Arm and the southern units will follow the western fringe of the Girdwood Valley until over the Seward Highway, then will follow the highway or cross Turnagain Arm. Flight departures from the Girdwood Airstrip to the south over residential areas will only be used as absolutely needed due to wind direction or other safety factors. When flying south, CPG will also test and evaluate a flight path over the western fringe of Girdwood by flying low over Glacier Creek and then veering east halfway out the valley where there are no residential areas. Based on public's comments or complaints, if any, this route could be used exclusively.

Moose Pass area

The relative winter quiet would be interrupted by a moderate amount of helicopter sound. There would be a good chance of local residents seeing a helicopter by local residents when they were operating out of the Mile 33.2 Gravel Pit (near Moose Pass) staging area. For those residents living near the staging area or the travel corridor (Wilderness Park and Toklat Estates subdivisions and the Trail Lake Fish Hatchery) the helicopter sound would be loud and there would be a high chance of seeing a helicopter. About 1 percent of the Moose Creek travel corridor is within the foreground, 16 percent is in the mid-ground, and 22 percent is in the background, from the Moose Pass area. About 9 percent of the Snow Creek travel corridor is in the background; and about one percent of the Mt. Ascension travel corridor (includes the Mile 33.2 Gravel Pit staging area) is within the foreground, three percent is in the mid-ground, and three percent is in the background from Moose Pass area.

There would be little helicopter sound and a slight chance of local residents seeing a helicopter when it was using the Grandview, West Bench Peak, East Bench Peak, West Moose Creek, East Ptarmigan, Snow River, and Mt. Ascension units less than five percent of these units can be seen from the Moose Pass area. Most of the seen area is in the background.

Hope

There would be no helicopter sound or helicopter sighting from commercially guided helicopter skiing at Hope.

Seward

The only helicopter sound or helicopter sighting would be in the morning and the late

afternoon when the helicopter was traveling between the Seward Airstrip and Mile 12.4 staging area. Less than one percent of the Snow River unit is visible from Seward.

To preserve the natural quiet of the Exit Glacier area, helicopters exiting/entering from the Seward Airstrip or the Mile 12.4 staging area will not fly in the Resurrection River Valley corridor. There will be no flightseeing over Exit Glacier or Harding Ice Fields.

Sunrise

There would be a good chance for the helicopter to be seen and heard by local residents when the helicopter was using the West Seattle Creek unit. About four percent of the West Seattle Creek unit is visible from Sunrise (mostly mid-ground).

Alternative 3

The potential sound from the helicopter and the visibility of the helicopter would be similar to Alternative 2 except that:

Girdwood

There would no heli-skiing in the West Seattle Creek unit.

Moose Pass area

The relative winter quiet would be mostly retained. The Mile 33.2 Gravel Pit staging area near Moose Pass would not be used. There would be little helicopter sound and a slight chance of local residents seeing a helicopter when they were traveling to the Mile 12.4 staging area.

There would be little helicopter sound and a slight chance of local residents seeing a helicopter when CPG is operating in the Grandview, West Bench Peak, East Bench Peak, East Ptarmigan, Snow River, and Mt. Ascension units as less than five percent of these units can be seen from the Moose Pass area. Most of the seen area is in the background.

Seward

The only helicopter sound or helicopter sighting would be in the morning and the late afternoon when the helicopter was traveling between the Seward Airstrip and Mile 12.4 staging area. Less than one percent of the Snow River unit is visible from Seward.

Sunrise

There would be no helicopter sound or helicopter sighting from commercially guided helicopter skiing at Sunrise.

Alternative 4

The potential sound from the helicopter and the visibility of the helicopter would be similar to Alternative 2 except that:

Because only two helicopters would be operating at one time, there would be less sound overlap.

Cooper Landing area

There would be no sound or helicopter sighting by local residents from commercially guided helicopter skiing.

Girdwood

The Seattle Creek travel corridor would not be used and there would no heli-skiing in the West Seattle Creek, Mid Seattle Creek, and East Seattle Creek units.

Moose Pass area

The staging areas at Mile 33.3 Gravel Pit (near Moose Pass) and Mile 12.4 would not be used. The relative winter quiet would be mostly retained.

There would be little sound from the helicopter and a slight chance of local residents seeing a helicopter when it is operating within the Grandview, West Bench Peak, and East Bench Peak units as less than five percent of these units can be seen from Moose Pass area. Most of the seen area is in the background.

Seward

There would be no helicopter sound or helicopter sighting by local residents from commercially guided helicopter skiing.

Sunrise

There would be no sound or helicopter sighting from commercially guided helicopter skiing at Sunrise.

Alternative 5

The potential sound from the helicopter and the visibility of the helicopter would be similar to Alternative 2 except that:

Girdwood

There would no heli-skiing in the West Seattle Creek or East Seattle Creek units.

Moose Pass area

The Mile 33.2 Gravel Pit near Moose Pass would not be used as a staging area. The relative winter quiet would be mostly retained. There would be little helicopter sound and a slight chance of local residents seeing a helicopter when it was traveling to the Mile 12.4 staging area.

There would be very little helicopter sound and a very slight chance of local residents seeing a helicopter when it was using the Grandview, East Bench Peak, East Ptarmigan, and Snow River units as less than five percent of these units can be seen from Moose Pass. There would be no heli-skiing in the Mt. Ascension unit.

Seward

The only helicopter sound or helicopter sighting would be in the morning and the late afternoon when the helicopter was traveling between the Seward Airstrip and Mile 12.4 staging area. Less than one percent of the Snow River unit is visible from Seward.

Sunrise

There would be no helicopter sound or helicopter sighting by local residents from commercially guided helicopter skiing.

Alternative 9

The potential sound from the helicopter and the visibility of the helicopter would be similar to Alternative 2 except that:

Because only two helicopters would be operating at one time, there would be less sound overlap.

Cooper Landing area

There would be no sound or helicopter sighting by local residents from commercially guided helicopter skiing.

Girdwood

The Seattle Creek travel corridor would not be used and there would no heli-skiing in the West Seattle Creek, Mid Seattle Creek, and East Seattle Creek units.

Moose Pass area

The staging areas at Mile 33.3 Gravel Pit (near Moose Pass) and Mile 12.4 would not be used. The relative winter quiet would be mostly retained.

There would be little sound from the helicopter and a slight chance of local residents seeing a helicopter when it is operating within the Grandview, West Bench Peak, and East Bench Peak units as less than five percent of these units can be seen from Moose Pass area. All of the seen area is within the background.

Seward

There would be no helicopter sound or helicopter sighting by local residents from commercially guided helicopter skiing.

Sunrise

There would be no sound or helicopter sighting by local residents from commercial lyguided helicopter.

Weighted Populations

The populations of the communities were used to weight the visibility results in order to better understand the potential impact of activities on local communities. Visibility of the helicopter activity as inventoried and modeled through seen area and distance was weighted by population in each combination of seen area distance.

Helicopters using the Girdwood Airstrip as a staging area and the North Twenymile travel corridor would be readily heard and seen. In the Moose Pass area, helicopters would be readily heard and seen when using the Moose Creek travel corridor and the Mile 33.2 Gravel Pit staging area (only Alternative 2). People living near the staging area would be affected the most. Helicopters would also be heard and seen in Sunrise when they used the West Seattle Creek unit (only Alternative 2).

Cumulative Effects

Determining the ambient noise levels of a rural community is difficult since not only the noise outputs of various activities are not well documented but also the amount of activities generating noise is not well documented. The following summarizes the sources, and, where possible, quantitative indicators, of ambient noise, including industry, highway traffic, railroad, recreation, and aircraft.

How one perceives sound is based on one's values, exposure, tolerance, and expectations. In the project area, the most sound comes from vehicles using the highways and from people inhabiting the valley bottom. The Seward Highway was constructed in 1951, upgraded in the 1960s and rebuilt in 1998. In 2002, the Seward Highway average daily traffic count figures were 4,265 for Ingram Creek to Turnagain Pass, 4,050 for Turnagain Pass to the Hope cutoff, and through Moose Pass 1,770. In 2002, the Sterling Highway average daily traffic count figure was 3,042 at Cooper Landing (Alaska Department of Transportation and Public Works 2002). Nearly 6,000 people live in or adjacent to the project area. Most the people live in Seward or Girdwood. Cooper Landing, Hope, Moose Pass, and Sunrise are smaller communities. A few people live in homes or businesses scattered along the highway. All of these places generate sound-associated inhabitation.

During periods of good weather in the winter, several aircraft use the airstrips at Girdwood and Seward each day. The Cooper Landing and Lowing airstrips have limited use. Small fixed wing aircraft use Portage Pass as their primary travel route between Anchorage and Prince William Sound. Small planes use the Seward Highway corridor as a travel route between Anchorage and Seward. Floatplanes use area lakes. There is a floatplane base at Kenai Lake near Moose Pass.

The Alaska Railroad was started in 1902 and constructed from Seward to Fairbanks in 1915-1923. The railroad parallels the Steward Highway to Portage. Near Portage, the railroad leaves the highway and continues south to Moose Pass. There, it rejoins the highway and continues to Seward. It is adjacent to several of the heli-skiing units. In the winter there is an average of six freight trains each week. The railroad does not use passenger cars on this section of the railroad outside the summer season, except for the special cars to take skiers to Grandview in March.

To protect the highway and railroad, under permit to the Forest Service, the Department of Transportation and Public Facilities and the Alaska Railroad conducts avalanche control work, as needed, throughout the winter at +20 gun-mounted or truck-mounted sites. The Alyeska Winter Sports Area also uses explosives for avalanche control.

CPG has a State of Alaska permit to conduct snow-cat skiing and helicopter skiing activities on Alaska Department of Natural Resource lands in the Winner Creek area. This permit includes an authorization for the use of explosives for avalanche control. In 2000 CPG guided 200 cat-skiers and 151 heli-skiers under this permit. From 2000 to 2003 CPG guided an average of 205 cat-skiers* and an average of 200 heli-skiers.

* Average includes 0 cat-skiers in 2003, due to snow conditions.

About 82 percent of the Kenai Peninsula Geographic area is available for winter motorized recreation (USDA- Forest Service, 2002a). Various levels of snowmachine users can be found throughout these areas. Turnagain Pass and Lost Lake areas are popular snowmachine use areas. Snowmachines contributes to the over-all sound in the project area. Since 1996, Alaska has seen nearly a six-fold increase in the number of registered snowmachines. In 2004, Alaska had 90,827 registered snowmachines and Anchorage 23,755.

Cooper Landing (2002 population 375)

In the winter, there is three times less traffic on the Sterling Highway. Snowmachines are familiar sounds. There are 61 registered smomachines in Cooper Landing (Alaska Department of Motor Vehicles 2004). Cooper Landing has no significant industrial activity to generate sustained sound outputs.

Girdwood (2002 population 1,817)

In the winter the Girdwood Airstrip continues to be used, but at a reduced level. An average of six freight trains weekly passes by on the railroad. The thousands of summer visitors are replaced, in part, by the hundreds of winter visitors. Many of these visitors are down hill skiers, headed to the nearby ski area. Avalanche control explosions at the ski area and along the highway/railroad can be heard. Girdwood is closed to snomachines. Occasionally, they can be heard in the mouth of the valley. There are no other significant activities to generate sustained sound.

Hope (2002 population 155)

There would be little change in the natural quiet in Hope, although an occasional snowmobile could be heard.

Moose Pass area (2002 population 216)

In the winter, the floatplanes are gone and the level of overhead aircraft traveling to Seward is reduced. Helicopter used for emergency search and rescue, and law enforcement continue to use the valley as a flight path. Fixed-wing aircraft continue to fly to Seward. Private aircraft continue to use the Lowing airstrip at Mile 24. Nine airplanes are registered to residents of Moose Pass. It is not known where these planes are based or if they are flown in the winter. In the winter, an average of six freight trains passes by on the railroad, weekly. Occasionally, the sounds of avalanche control activities can be heard. There is six times less traffic on the Seward Highway. During the winter months of January, February and March, an average of 750 vehicles passes through the community (Alaska Division of Motor Vehicles. 2004). Snowmachines are familiar sounds. There are 44 registered snowmachines in Moose Pass. This is 50 percent greater than the state per capita average, and nearly three times that of Anchorage, and nearly twice that of Seward (Alaska Department of Motor Vehicles 2004). Moose Pass has no significant industrial activity to generate sustained sound outputs. Overall, there is a relative level of quiet.

Seward (2002 population 2,794)

In the winter the Seward Airstrip continues to be used, but at a reduced level. Three freight trains travel here weekly. They return to Anchorage the next day. The thousands of summer visitors are gone. However, the sounds of a busy seaport and supply center

continue. Sounds from snowmachines are fairly common. There are 298 registered snowmachines in Seward (Alaska Department of Motor Vehicles 2004).

Sunrise (2002 population 13)

There would be little change in the natural quiet in Sunrise, although an occasional snowmobile could be heard.

The helicopter sound from CPG's operations would be additive to the existing winter sound level. However, in most of the ski units there is little background sound, and therefore, the helicopter sound stands by itself, except for the sound of an occasional snowmachine, other aircraft, or avalanche control.

Air Quality

Effect of Alternatives

Under Alternative 1, No Action, CPG's permit would not be issued and there would be no effect to the ambient air quality from commercial heli-skiing. All of the action alternatives would have limited, short-term effect on the ambient air quality from aircraft emissions. The AStar A350 B2 helicopter (used by CGG) burns approximately 158 kilograms (351 pounds or 7 gallons) of fuel per hour, and emits the following: (1) 28 grams (.06 pounds) per hour of unburned hydrocarbons; (2) 744 grams (1.6 pounds) per hour of carbon monoxide; and (3) 982 grams (2.2 pounds) of nitric oxide).

Based on the proposed 127 day operating season and an average of 9 hours of flight time per day one helicopter would burn about 8,000 gallons of fuel and emits the following: (1) 68 pounds of unburned hydrocarbons; (2) 1,882 pounds of carbon monoxide; and (3) 2,515 pounds of nitric oxide. Actual use is estimated to be about 50 percent of the maximum use. The average annual emission of a passenger car is (1) 80 pounds of unburned hydrocarbons, (2) 606 pounds of carbon monoxide, and (3) 41 pounds of nitric oxide. Table 4-3 shows the estimated fuel used and emissions based on the number of helicopters operating and the client days served, by alternative.

Table 4-3 Maximum Estimated Fuel Use and Emissions

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 9
Fuel	0	12,000 gal	11,000 gal	8,000 gal	9,000 gal	6,000 gal
Hydrocarbons	0	100 lbs	90 lbs	70 lbs	75 lbs	50 lbs
Carbon monoxide	0	2,820 lbs	2,590 lbs	1,880 lbs	2,115 lbs	1,410 lbs
Nitric oxide	0	3,770 lbs	3,170 lbs	2,515 lbs	2,830 lbs	1,930 lbs

No significant impacts to air quality are anticipated from helicopter emissions under any of the action alternatives for several reasons: (1) the amount of daily emissions is small, (2) the emissions are of short duration, (3) they are localized and then spread out over a large area, and (4) are emitted at flight elevations.

Cumulative Effects

In the winter, emissions from vehicles bringing recreationist into these areas contribute to the overall diminishment of air quality. Snowmachines also degrade the air quality within localized areas. Localized short-term high concentrations of carbon monoxide and other pollutants occur where snowmobile use is concentrated such as in the Turnagain Pass and Lost Lake areas. As shown in Table 4-3, helicopter skiing would add a very small increment of pollutants to the existing air quality. Any cumulative effect would not be expected to substantially degrade long-term air quality.

Soil and Water Resources

While fueling helicopters there may be some slight spillage of fuel onto the ground. There is also a very slight risk of a major spill from fueling operations or from an accident involving the fuel truck. CPG would have standard fuel spill prevention, containment, and cleanup materials on hand at any fueling site and would maintain and follow a spill plan that includes spill prevention, containment, cleanup, and notification procedures. If fueling takes place within 50 feet of a wetland or water body, the fuel tank would be located within an impermeable containment basin.

Vegetation and Sensitive Plants

No vegetation would be affected by this proposal. The proposed activity would occur over snow and ice covered surfaces. Snow and ice cover would protect all potential sensitive plants and habitats from the proposed activities (see Appendix B).

Heritage Resources

Appendix B of the Programmatic Agreement between the Advisory Council on Historic Preservation, the State Historic Preservation Officer and the USDA Forest Service states that, "Activities taking place on glacial ice or permanent snow fields", or "Issuance of special use permits or other agreements where no more than one square meter of cumulative ground disturbance will occur and where no properties 50 years old or more are involved," have no potential to effect historic properties. Therefore, it is determined that the proposed heli-skiing proposal would have no effect to historic properties (USDA Forest Service 2002e).

Roadless Areas

Effects

Under Alternative 1, No Action, no permit would be issued to CPG and there would be no helicopter landing in inventoried roadless areas for heli-skiing. Under all action alternatives, heli-skiing would be authorized in inventoried roadless areas. Although heli-skiing would affect some wilderness values, such as solitude, sense of remoteness, primitive recreation, self-reliance, and untrammeled natural state, such impact would be temporary. Eliminating the use would reverse the impacts. Winter helicopter skiing would have little effect of character of the roadless environment. No facilities would be constructed and no tress would be cut. Heli-skiing would be a compatible use in inventoried roadless areas. Issuance of the proposed permit would not affect the status

of the inventoried roadless areas.

There would be no cumulative effects on roadless areas and their potential for wilderness classification because there would be no activities that would alter the physical setting or degrade wilderness values. The proposed helicopter use would not have a permanent effect on the physical environment nor preclude the areas from being considered in the future for inclusion in the National Wilderness Preservation System.

Wild and Scenic Rivers

Effects

Under Alternative 1, No Action, no permit would be issued to CPG and there would be no helicopter landing in any area recommended for Wild and Scenic River classification. Under Alternatives 2, 3, 4, 5, and 9, helicopters could land in the West Twentymile unit. Under Alternatives 2, 3 and 4, helicopters could land in the West Bench Peak unit. Under Alternatives 2, 3 and 5, helicopters could land in the Snow River unit. Helicopter landings would not affect the rivers outstandingly remarkable values nor affect their classification, if they were to be added to the National Wild and Scenic River System.

Economics

CPG estimates that one client day provides \$650 in revenues. By using the maximum client days available, gross revenues from commercially guided heli-skiing would vary from a high of \$1,560,000 under Alternative 2 to a low of \$520,000 under Alternative 9 (800 client days). Alternative 3 (2,200 client days) would generate \$1,430,000, Alternative 5 (1,800 client days) would generate \$1,170,000, and Alternative 4 would generate \$780,000 (1,200 client days). Based on their financial information, CPG believes they need a minimum of 1,200 client days to achieve a profit, while the optimum, without additional capital expenditures, would be in the 1,800 to 2,400 client day range (CPG 2003). Most of the expenditures would occur in the Anchorage-Girdwood area.

Other sources of income to the community of Girdwood include: temporary housing for guides, hotel and restaurant use by clients, and other purchases from both guides and clients. In 2003 nine CPG's heli-ski guides resided locally and two came from out-of-state. During the same year 33 percent of CPG's clients were local residents and 67percent came from out of state.

Environmental Justice

In accordance with Executive Order 12898, all action alternatives were assessed to determine whether they would have disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority or low-income populations. This assessment included any programs, policies, and activities being considered. No such impacts were identified during scoping or through the effects analysis.

Unavoidable Adverse Impacts

Potential adverse impacts are identified in this analysis. Most are minor, and could be mitigated through management and mitigation requirements. The exception is the impact of heli-skiing on some other backcountry recreationists, especially skiers. The other unavoidable impact specific to helicopter skiing is the sound of the helicopters. While the Kenai Peninsula is affected by numerous sound sources, the helicopters' sound would be a considerable impact to some recreations and local residences.

Irreversible and Irretrievable Commitment of Resources

No resources would be irreversibly committed under this proposal. The only irretrievable resource commitment under this proposal would be any forgone backcountry recreation opportunities that are replaced by heli-skiing. Since heli-skiing does not preclude any other recreational activity, no irretrievable commitment would be made by issuance of the permit.

Chapter 5: Draft Environmental Impact Statement

Public Involvement on the Draft EIS

A Draft EIS on Commercially Guided Helicopter Skiing on the Kenai Peninsula was released for public review and comment on January 23, 2004. Notification of the availability of the document was published in the Federal Register and the Anchorage Daily News. Over 250 copies were distributed. The document was also made available on the Chugach National Forest's web site. During the 1096 day review period (until May 10), 101 comment letters or e-mail responses were received.

As a follow-up, the community of Moose Pass hosted two meetings with members of the Interdisciplinary Team (ID Team). The purpose of these meetings was to allow concerned members of the Moose Pass community a chance to express their concerns specific to potential impacts to the Moose Pass community.

Comments on the Draft EIS and Forest Service Responses

Content Analysis

A systematic method of compiling, categorizing, and capturing the full range of public viewpoints and concerns about the DEIS, called *content analysis*, was used to review public comments. Content analysis helps the ID Team organize, clarify, analyze, and be responsive to information provided by the public. The content analysis process is not a vote counting process. The process is designed to read each response, capture the meaning of each individual comment within that response, and provide the ID Team and decision makers information about the issues in an understandable form.

Upon receipt of each response, the Forest Service assigned it an identifying number and entered it into an electronic database. The database identified such items as: type of response and text of each substantive comment. Substantive comments are those comments that address the adequacy of the DEIS, the merits of the alternatives or the analysis. Comments that simply state an opinion or were outside the scope of this analysis are considered non-substantive and are not responded to in the FEIS. Errors noted in the comments were corrected. About 225 substantive comments were identified. Substantive comments were reviewed and consolidated by the ID Team into 63 concerns to be addressed in the FEIS. For example, response number 11 had a substantive comment on air quality. It was the seventh substantive comment identified in the response. It is listed as: **Air Quality (Comment 11.07)**.

Comment Response

The ID Team reviewed the comments and evaluated whether they triggered a change in the alternatives, including the preferred alternative, required improving or modifying the environmental analysis. The ID Team then drafted responses to each comment. Some information in the DEIS was corrected or clarified based on public comment. In addition, information and recommendations provided by the ID Team were considered and incorporated into the final documents. Although only substantive comments are responded to in the FEIS, all comments are important to the decision makers because they provide information on the opinions and preferences of those who took time to comment.

Comment Categories

The following 18

comment categories were established for comments received on the DEIS. Within these comment categories, similar comments were identified and addressed collectively. For instance, if several people expressed concern about the potential for effects of helicopter noise on wolverines and brown bear, these comments were addressed by a single response. The number of concerns addressed under each comment categories is shown in prentices.

- Air Quality (1)
- Alternatives (3)
- Capacity Study (1)
- Community Impacts (4)
- Cumulative Impacts (3)
- Data (3)
- Disabilities (1)
- Economics (7)
- Flight Paths (3)
- Forest Designations (1)
- General (3)
- Miscellaneous (2)
- Monitoring (1)
- NEPA (4)
- Operating and Safety Plan (3)
- Recreation (6)
- Safety (4)
- Wildlife (13)

Government Letters

As required by NEPA, those letters from government agencies are shown in Appendix A.

Comments and Forest Service Responses

Following are the substantial comments received on the DEIS and the Forest Service responses:

Air Quality (Comment 11.07)

Comment: The analysis of the environmental consequences from helicopter emissions may not be adequate and consequently the conclusions regarding emissions are not accurate.

Response: The EIS has estimated the amount of fuel used and emissions generated under the various alternatives assuming a 127 day operating season and an average flight time of 9 hours. For the Preferred Alternative 3, it is about same as 1 car (hydrocarbons), 4 cars (carbon monoxide), and 50 cars (nitric oxide) yearly. The EIS analyzes the cumulative effects by examining two additional seasonal sources of air pollution; vehicles and snowmobiles. "In the winter, emissions from vehicles bringing recreationists into these areas contribute to the overall diminishment of air quality. Snowmobiles also degrade the air quality within localized areas." (*FEIS Chapter 4, Air Quality*). The EIS further explains that high concentrations of snowmobiles in the Turnagain Pass and Lost Lake areas results in

short-term high concentrations of carbon monoxide and other pollutants. (*FEIS Chapter 4, Air Quality, Chugach National Forest Revised Forest Plan p 3-9*).

Maximum use counts indicated a peak of 100 vehicles per day associated with snowmobile users. Generally, use was less than 50 vehicles on weekend days. Weekday numbers averaged around 10. (*FEIS Chapter 4, Air Quality, Chugach National Forest Revised Forest Plan p 3-9*). Although the Turnagain Pass and Lost Lake areas have high concentrations of snowmobile use, the FEIS concludes that helicopter skiing would add “a very small increment of pollutants to the existing air quality” and that “any cumulative effect would not be expected to substantially degrade long-term air quality.” (*FEIS Chapter, page 4-33*).

While no measurements of hydrocarbons, carbon monoxide or nitrogen oxides have been undertaken within the Chugach National Forest at any locations, there is no indication that the Chugach National Forest is approaching violation of any of the air quality standards. Furthermore, the cumulative effects of CPG operating under any of the alternatives would not constitute a violation of any of the requirements of the Clean Air Act or the Alaska’s State Implementation Plan due to the short term nature of the emissions, the relatively minor amount and localized nature of the emissions, and because the emissions occur at flight levels.

Alternatives (Comment 51.04, 63.02 and 71.07)

Comment: The Forest Service received comments suggesting specific changes to one or more alternatives to make them more acceptable. Specific comments include the following:

- All action alternatives—base the helicopter out of Girdwood, fly to the gravel pit near Granite Creek (Mile 62 gravel pit staging area, and bus clients to and from the gravel pit. Or, fly to Big Game Alaska and bus clients to and from Big Game Alaska.
- All action alternatives—permit the exploratory units on a yearly basis until impacts to resources can be monitored and evaluated.

Response: Under all action alternatives, CPG would be initially staging out of Girdwood and flying to helicopter-ski units. When utilizing Glacier/Winner and West and North Twentymile areas, CPG would stage strictly out of Girdwood, including transporting passengers and refueling. Past heli-ski use of these areas occurred an average of 80 percent of each season. When skiing in the Bench Peak units, CPG would fly the first load of clients with the lead guide out of Girdwood then bus the remaining clients to the Granite Creek Gravel Pit staging area. It would also be used for refueling of the helicopter. Big Game Alaska staging area would be used for support of East Twentymile, Placer/Skookum, Grandview, Bench Peak, and potentially East Moose Creek. As with the Gravel Pit, the first load of clients would fly out of Girdwood, and the remaining clients would be bused to Big Game. The helicopter would also refuel at the Big Game staging area. Kern Creek staging area would be used to access the Seattle Creek area. As a result of utilizing any one of these staging areas, CPG would only fly twice (in and out) of the Girdwood Valley.

One-year temporary use permits for the exploratory units will be considered by the District Rangers in making this decision.

Alternative, Range (Comment 4.09)

Comment: The Forest Service received a comment stating the range of alternatives was not adequate because Alternatives 1, 4, and 9 never had a chance of being selected.

Response: While the Draft EIS identifies Alternative 3 as the Forest Service Preferred Alternative, the Decision Makers could select any of the alternatives studied in detail for implementation. The reasons for selecting an alternative for implementation is detailed in the Record of Decision.

There were 101 comments on the DEIS. A large number of these comments supported the proposed action and the Forest Service's Preferred Alternative, Alternative 3. However, a substantial portion of the comments also identified that the Preferred Alternative would have negative community impacts, specifically in the Moose Pass area. Therefore, the ID Team was directed to conduct further monitoring and analysis of noise and visual impacts in the Moose Pass area. A simulation flight and monitoring study was conducted after release of the DEIS on April 14, 2004. The proponent's comments on the economic feasibility of the preferred alternative, was reviewed; specifically, the financial need of the proponent to utilize the North Bench Peak area on the weekends. Last, a number of public comments were received that desired a change in the helicopter use period in Seattle Creek so that backcountry skiers as well as helicopter skiers would have a more remote geographic area to ski at all times during the week. Based upon these public comments, it was determined that there was a need to modify the Preferred Alternatives to better address community concerns, economic feasibility and recreation opportunities.

Alternative, West Moose Creek (Comment 90.13)

Comment: The Forest Service received a comment from CPG that they would like the Forest Service to consider an alternative which eliminates the Moose Pass seen area from the West Moose Creek unit.

Response: Although the EIS describes that only a slight chance of helicopters being seen or heard in the West Moose Creek unit, we recognize the limitations of noise modeling as well as the strong feelings expressed regarding the noise and visual analysis. On April 14, 2004, CPG and the Forest Service conducted a test flight in the exploratory areas near Moose Pass. Landings and travel corridors were used in a similar pattern to what would be conducted during actual operations. Members from the Forest Service and the Moose Pass community monitored noise and visual impacts at six observation points along the Moose Pass community corridor from Mile 31.5 at the Trail Lake Hatchery to Mile 16 at Snow River Hostel. No visual or noise impacts were recorded. While this analysis was only a one-flight, one-time effort with potential limitations, it was an important step in validating the information in the DEIS.

Despite the results from the test flight, we do not feel we have enough information or monitoring results to respond to CPG's request to include a portion of West Moose Creek in the Preferred Alternative. Although helicopter activity this area could not be seen or heard in this area during the test flight, this area remains the closest in proximity to Moose Pass and has the highest potential for disturbance as described

in the *FEIS (Table 4-2)*. More monitoring information is needed from helicopter activity in the exploratory areas included in this decision, before activity in West Moose Creek would be considered

Capacity Study (Comments 5.01, 5.04, 9.03, 68.08, 68.15)

Comment: The Forest Service received comments requesting that the Forest Service determine the maximum capacity for helicopter-skiing in the various helicopter-ski units across all resources.

Response: The Chugach National Forest Revised Management Plan outlines the process and gives an indication of the capacity for recreating on the Chugach National Forest. Three primary information sources are used for data regarding recreation settings, capacity, and use levels on the Chugach National Forest. The overall dispersed recreation capacity is 30,313,013 PAOT (Persons at One Time) days. The PAOT capacity has not been approached at this time and the permitted number of client days will not exceed PAOT capacity for the Chugach National Forest. (It is less than .01 percent of the PAOT.)

NEPA requires that federal agencies determine and evaluate the environmental effects of alternatives including the proposed action. In this case, there is no indication that any of the alternatives will approach capacity for helicopter skiing, therefore a capacity study is not relevant or needed.

Community Impacts, Community Characteristics (Comment 5.12)

Comment: Moose Pass Community extends from Mile Post 15.5 to Mile Post 43. This area is not accurately reflected in the DEIS.

Response: All cited information and descriptions are from either the US Census Bureau or the Alaska Department of Commerce, Community and Economic Development databases.

The comment is correct if it asserts that the US Census Bureau information cited for Moose Pass in the DEIS applies to an area larger than that described in the DEIS. However, the Moose Pass census data place data applies to the census tracts located along the Seward Highway from Crown Point (approximately Mile Post 24) north along the Seward Highway to the junction of the Sterling Highway (approximately Mile Post 38); not from Mile Post 15.5 to Mile Post 43. In any case, this is not a legal boundary since the community is unincorporated and appears to be defined more by differing reference or opinion.

For the visibility/sound analysis, the Forest Service used six points in the community of Moose Pass—from Mile Post 35 to Primrose. The EIS also recognizes that residences and business are located beyond the actual community boundaries. Furthermore, there may be noise impacts to both residents and business within the community boundaries and impacts to residents and businesses beyond the actual community boundaries. However, those residents outside the boundaries of the actual communities are not analyzed because of their scattered nature.

Community Impacts, Community Values (Comments 17.03, 67.11, 13.03, 15.03, 17.05, 51.01, 89.04)

Comment: The DEIS fails to account for the values of communities in their decision making. The DEIS should consider the values of affected community members to ensure that the quality of life for these communities is not compromised.

Response: The EIS analyzes the values of the affected communities (Cooper Landing, Girdwood, Hope/Sunrise, Moose Pass, and Seward) primarily through the two use surveys conducted by the Alaska Pacific University (APU) in 1998 and 1999. The survey results provide some anecdotal insight into the attitudes and beliefs of residents of potentially affected communities, including how they might view the proposed helicopter skiing activity. The survey indicates that “[t]he quality of life in Chugach National Forest communities of interest is heavily influenced by factors that are related to public lands or affected by public land management activities” (*FEIS Chapter 3, page 3-34*). The 1999 survey also queried residents about their perception of change in the quality of life in their communities (*FEIS Chapter 3, page 33*).

Specific to helicopter skiing, the DEIS states that the “[o]f the 12 communities surveyed, respondents in Moose Pass (2.8) and Hope (2.8) were most opposed to helicopter skiing and hiking, followed closely by Cooper Landing (2.9).” (*Chapter 3 of the FEIS*). Residents of Seward were almost neutral (3.1). Residents of Girdwood were most supportive of helicopter skiing (3.5).

However, it is important to note that the survey results (1) are the average of attitudes of a number of residents in the communities and that there is no single characterization that exactly describes everyone (and therefore the community) and (2) the majority of attitudes do not necessarily constitute a coherent community response or recommendation.

This information will be used by the decision makers in making their decision.

Cumulative Impacts, Motorized/Non-Motorized Conflict (Comment 80.01)

Comment: The Forest Service has received a comment indicating that the recreation conflicts between motorized and non-motorized users should be analyzed in the cumulative effects section of the EIS.

Response: The EIS states “[t]he main user conflict existing in most areas open for motorized use is between motorized snowmachine users and non-motorized users. The allocation of areas open/closed to motorized/non-motorized user was made in the Revised Forest Plan. This decision will not be addressed in this document, as it does not pertain to the issues at hand except when analyzing cumulative effects of adding another different motorized activity into an area where user conflicts already exist.” See *EIS Chapter 3, Recreation*. The Revised Forest Plan made the decision which areas on the Forest would be available for motorized/non-motorized use. The EIS recognizes conflicts exist between motorized and non-motorized users and adding helicopter skiing may further exacerbate this conflict.

Community Impacts, Sound Impacts (Comments 5.13, 5.18, 8.02, 43.08, 51.03, 58.01, 64.01, 65.07, 67.09, 67.10, 68.09, 68.10, 71.03, 71.07, 83.05, 88.02, 90.1)

Comment: Comments were received indicating that the level of analysis completed

to assess sound impacts to communities is inadequate. Concerns were raised regarding the procedures used to analyze noise impacts; whether the analysis incorporated terrain, canopy, and snow or ice conditions; whether the cumulative effects of other sources of sound and helicopter-ski growth were adequately addressed; the locations of staging areas and their impacts to communities; and the effectiveness of CPG's sound reduction strategy for the West Moose Creek unit.

Response:

Procedure Used to Analyze Community Sound Impacts

Sound impacts to communities were evaluated in the EIS by examining roughly 400,000 acres, including 18 helicopter-skiing units, 7 staging areas, and 6 travel corridors (*EIS Chapter 4, Impacts to Communities*). The visibility of the helicopter and the potential sound from helicopter activity in the various helicopter-ski units, staging areas, and travel corridors were determined using the Grid Module of ArcINFO© GIS Software.

The source of information used for this analysis was that used in preparing the Revised Forest Plan and is consistent and replicable with the techniques used in the "Scenery Management System." Short of conducting on-site monitoring of helicopter noise with instrumentation, this approach is the best available approach given existing information. Sound dissipates predictably with distance so that the foreground, mid-ground, background, unseen area delineations in the analysis provide logical though not finely calibrated estimations of relative impact.

Terrain, Canopy, and Snow and Ice Effects on Sound

Sound may be attenuated or affected by more than distance, as stated in *the EIS Chapter 4, Impacts on Communities, General Effects*. However, modeling changes in decibel output as a measure of impact, for example, by alternative is complicated by the following factors: (1) existing available FAA helicopter sound models do not permit the needed open space operation analysis desired; (2) the precision if not availability of necessary elevation, terrain, vegetative cover, and micro-climatic conditions (snow, ice, wind, temperature) for the areas—let alone other human caused sounds such as motorized vehicles—is not sufficient to reliably model existing areas. Further, there is anecdotal corroboration from military sources that distance is likely the most reliable factor for modeling helicopter sound.

Cumulative Effects, Reasonably Foreseeable Growth

40 CFR 1508.7 requires that federal agencies evaluate the cumulative impacts to the environment. Some members of the public have requested that noise impacts to communities from future growth of the helicopter-ski industry be addressed in the EIS. This concern is possibly founded in the past permitting of CPG have recently increased from 800 client days in 2002 to 1200 client days in 2003/2004, and the tentative adoption of 2,200 client days under Preferred Alternative 3. In addition, there is some concern that another helicopter-ski company could request a special use permit, and thus two helicopter-ski companies would be operating on the Kenai Peninsula.

NEPA requires that reasonably foreseeable future actions (regardless of what agency undertakes these actions) be accounted for in an environmental analysis. Generally the factors an agency must consider when determining whether an action

is reasonably foreseeable include:

- (1) Level or degree of confidence the agency has in predicting the impact.
- (2) Information available to the agency that provides a basis for describing the impact in a manner meaningful to the decision maker.
- (3) Potential that the decision maker will meaningfully consider the effect at a later date without being obligated to continue the action because of past commitments

Further, the Council Environmental Quality (CEQ) provides guidance on considering cumulative impacts and the influence of scoping:

For cumulative effects analysis to help the decision-maker and inform interest parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties. (CEQ, Considering Cumulative Effects Under the National Environmental Policy Act, Chapter 1, Table 1.2 p. 8).

The Chugach National Forest has not received any proposals from additional helicopter-ski companies for use on the National Forest lands on the Kenai Peninsula. The probability of these events occurring is not certain or foreseeable at this time, and therefore not included in our cumulative effect analysis. Information on other noise levels during the winter season by affected community has been added to *FEIS Chapter 4, Impacts to Communities, Cumulative Effects*.

Locations of Staging Areas and their Impacts to Communities

The impacts from using staging areas under the various alternatives were similar to determining sound/visibility impacts from use of the helicopter-ski units. The percentage of the travel corridor within the “foreground”, “mid-ground”, and “background” visibility classifications is used to qualitatively characterize the visibility/noise impacts to affected communities.

CPG Noise Reduction Strategy

CPG has proposed a sound reduction strategy to mitigate sound impacts to the community of Moose Pass during their use of the West Moose Creek unit. They propose to move the unit boundary to the east to eliminate the area seen by Moose Pass residents. Test flight showed that helicopter in this area would not be seen or heard by Moose Pass residents. While there is no discussion of this sound reduction strategy in the EIS, the decision makers will consider this possibility when making their decision.

Additional information on the effects of sound has been included in *FEIS Chapter 3, Sound and in Chapter 4 Impact to Communities, Visibility and Sound and Cumulative Effects*.

Community Impacts, Sound Analysis (Comment 4.10)

Comment: Toklat Estates Subdivision near Moose Pass was not included in the sound analysis.

Response: The analysis included six points in the Moose Pass community—from Mile 35 to Primrose (*FEIS Chapter 4, Impacts on Communities, Visibility and Sound*). Talkat Estates Subdivision at Mile 34.5 is within the analysis area. CPG conducted impacts analysis at six observation points along the Moose Pass community corridor from the Trail Lake Hatchery to Mile 16 at Snow River Hostel. No visual or noise impacts were recorded.

Community Impacts, Weighted Populations (Comment 11.14)

Comment: The Forest Service has received a comment suggesting that the level of conflict is not related to the size of the community.

Response: The comment questions the determinations that “if a community is a smaller community, the level of conflict will be lower.” The EIS does not describe “conflict:” rather, it describes “visibility results in order to better understand the potential impact of activities on local communities” (*FEIS Chapter 4, Impacts to Communities*).

Potential impact is considered to be a function of area seen, at what distance the area(s) is, and how many people can see the area. The population weighting simply suggests that communities with higher populations would, with all considerations of visibility (area and distance) being equal, likely have proportionately more people who may be potentially impacted. This is not the same as implying that more affected people causes more “conflict” (whatever may be implied by use of the term): the level of satisfaction or dissatisfaction may be equal in populations with two very different populations. This is also not implying that less populated communities are considered less important than more populated communities in decision making. Further, this approach is not designed to compare alternatives by effect on specific communities, rather on total population affected regardless of distribution in any particular community. Lastly, weighting does not imply any value judgment. The wording in the FEIS has been clarified to how weighted populations were used (*FEIS, Chapter 4, Impact to Communities, weighted Communities*).

Cumulative Impacts, Growth in Helicopter-Ski (Comments 9.04, 11.06, 18.05, 59.02, 65.09, 68.06, and 68.07)

Comment: The Forest Service has received comments indicating that the cumulative impacts section of the EIS address foreseeable growth in the helicopter skiing industry. The comments specifically address growth in the number of client days allocated to CPG and growth in the number of helicopter skiing operators on the Kenai Peninsula.

Response: The impacts of increasing CPG’s client days of use are analyzed in this EIS. In addition, there have been no requests at this time by any additional helicopter skiing operations for a special use permit. Other increased client day allocations and increased number of helicopter skiing operators would be speculative at this point. Any future requests for helicopter supported recreation activities will be evaluated under NEPA requirements. (Also see our response to comments on Community Noise Impacts, Cumulative Effects Reasonable Foreseeable Growth.)

Cumulative Impacts, INHT (Comments 11.04 and 89.02)

Comment: The Forest Service has received several comments suggesting the EIS describe the cumulative impacts from the implementation of the Iditarod National

Historic Trail (INHT).

Response: The development and promotion of the INHT is expected to increase use in and around the INHT route, and potentially increase recreation conflicts. However, the environmental analysis concluded that there was extensive open space available for both motorized and non-motorized groups as specified in the Revised Forest Plan. This information has been updated in *FEIS Chapter 3, Background Information, Reasonable Foreseeable Actions and Chapter 4, Recreation Conflicts, Cumulative Effects*.

Cumulative Impacts, Summer/Winter Season (Comments 9.02, 11.05, 15.05, 17.01, 51.02, 68.02, 68.03, and 68.04)

Comment: The Forest Service has received several comments suggesting that the cumulative effects analysis consider noise impacts from helicopters and other associated noise occurring in both the summer and winter seasons.

Response: The cumulative impacts section of the EIS describes the potential activities that may cumulatively add to the impacts of helicopter skiing. Among these activities are other winter sources of noise, including snowmachines, road traffic, other aircraft, and other sources. Since the CPG proposal is limited to the winter season, there would be no cumulative effects to the noise during the summer season. This is in keeping with Council of Environmental Quality cumulative effects requirements (CEQ 1997).

Data, Actual Use (Comment 90.11)

Comment: The Forest Service received a comment from the proponent indicating that the usage figures on page 4-30 of the DEIS were not accurate. The usage figures overstate CPG's actual use due to dual reporting required by the Forest Service and DNR.

Response: CPG has provided actual use data. The actual use for DNR lands is reflected in the *FEIS Chapter 4, page 3-31*.

Data, General (Comment 59.03 59.06)

Comment: The Forest Service received a comment indicating a general lack of good data to support the EIS. They requested that baseline data be provided in the EIS.

Response: Baseline data for all affected resources is described in *Chapter 3 of the EIS, Affected Environment*. The EIS uses the best information available to describe the affected environment and the environmental consequences of the alternatives. *Chapter 6 in the FEIS* listed nearly 100 references that were used in this analysis.

Data, Recreation (Comments 7.04 11.12, 65.06, 80.02)

Comment: These comments question how recreation user data was collected and the legitimacy of this data. Several comments spoke to the need to collect scientifically sound data prior to issuing a permit.

Response: The recreation data used in this analysis is described in *FEIS Chapter 3, recreation, Background*. The combination of comments from scoping, the winter recreation use data, and knowledge of recreation use on the two

districts guided recreation specialists in identifying potential recreation conflict for various units. The current information was adequate to identify areas where recreation user conflict may occur and the level of the potential conflict (Low to High). Recreation use data was collected in winter of 2003-2004 and will continue to be collected this coming winter in an effort to better understand overall impacts of winter recreationists on wildlife. In addition, public scoping and analysis will begin in the fall of 2004 on the Kenai Forest Plan Amendment project to better understand the public's desires for motorized and non-motorized winter access for all areas south of Summit Lake area on the Seward Ranger District. These data collections and analysis will provide further information to base future decisions on the exploratory areas under this permit.

Data, Sound (Comment 90.11)

Comment: The Forest Service received a comment from the proponent indicating that the sound data for in *Table 4.1 Alternative 3* doesn't agree with the map, therefore the data must have been lumped into the same category. You can't see much of the West Moose Creek unit from the Moose Pass community.

Response: CPG is right in their assumption that the data was lumped for discussion and display in the EIS. The data was collected separately for each of the 18 proposed skiing units, 7 staging areas, and 6 travel corridors. Much of the seen area from the Moose Creek community is in the travel corridors (*Table 4.1*). The map shows that very little of the West Moose unit can be seen from Moose Pass.

Data, Wildlife (Comments 4.08, 5.05, 13.01, 15.01, 18.04, 80.04)

Comment: Comments indicated that the wildlife data used to describe the affected environment and environmental consequences is not accurate or inadequate. Several comments were received in which concerns were expressed that wildlife data (on brown bear, Dall's sheep, wolverines and birds) may be outdated and not a scientifically reliable source, therefore, not adequate enough to determine wildlife impacts, reliably mitigate impacts, and/or to make a scientifically based decision.

Response: We know of no inaccuracy in the information used in this analysis. The best information available was used to evaluate alternatives in the EIS. The scale of this project, in conjunction with current monitoring efforts, is appropriate to evaluate current proposals for helicopter proposals for helicopter activities, including all alternatives discussed in this EIS.

Additional monitoring and research is planned for the future. The final validation model for brown bears is scheduled to be completed in December 2004. ADFG and Forest Service biologists are continuing to monitor goat habitat with the analysis completion scheduled for 2005. Wolverines will be collared to track movement and wolverine density, with wolverine movement study results available in 2005. This information has been updated in the *FEIS Chapter 3, Wildlife, Individual Species, Brown Bears, Mountain Goat, and Wolverine*.

During winter of 2003-04 a project was implemented to collect spatially explicit data regarding the distribution of winter recreation activities across the eastern Kenai Peninsula and Upper Turnagain arm using aerials surveys, parking lot counts and numbers reported by special use operators. This project evaluates the entire spectrum of existing winter recreation and its overlap with mountain goats, denning

brown bears, and wolverines. This project includes a specific evaluation of recreation overlap with wildlife by analyzing flight lines recorded by GPS transmitters on board helicopters during the 2004 and 2005 seasons, as well as clearly defining use polygons and reported use numbers. Data collection will continue through spring of 2005 and final results from this study will be available fall of 2006. If additional information is found, it will be applied to the ongoing permit.

The mitigation measures are designed to be conservative enough to protect wildlife species from potential adverse impacts.

Data, Wildlife Data is Outdated (Comments 4.08, 5.05, 13.01, 15.01, 18.04, 60.02, 80.04)

Comment: Several comments were received in which concerns were expressed that wildlife data (on brown bear, Dall's sheep, wolverines and birds) may be outdated and not a scientifically reliable source, therefore, not adequate enough to determine wildlife impacts, reliably mitigate impacts, and/or to make a scientifically based decision. Based on our trapping experience the data relating on wolverine concentrations in the Sixmile Creek, Canyon Creek, and Resurrection Creek areas may not be accurate.

Response: The whole premise is that we are aware that site specific data is lacking. The mitigation measures are designed to be conservative enough to protect wildlife species from potential adverse impacts. While some individual animals may be affected, none of the alternatives, however, should have significant impacts to wildlife populations under the proposed mitigation measures. To supplement the current data, scientific studies of mountain goats, wolverines, and brown bears are ongoing. Wolverine information in the Sixmile Creek, Canyon Creek, and Resurrection Creek was based on a 1992 survey. Additional wolverine surveys were conducted 2004. See *EIS Chapter 3, Wildlife, Individual Species, Wolverine*. Since 1984, the annual trapping take of wolverines on the Kenai Peninsula ranged from 6 to 34 animals (an average about 15 wolverines/yearly). Although the take for 2003 was six animals, the information does not show a downward trend.

Disabilities (Comment 37.01)

Comment: The Forest Service received a comment requesting that Purpose and Need section of the EIS recognize that helicopter-skiing provides an opportunity to those without the ability to access ski terrain under non-motorized means.

Response: The *Purpose and Need section in Chapter 1* of the EIS addresses several factors that make guided helicopter-skiing a unique experience and an important part of the range of recreational opportunities available on the Chugach National Forest. Among these factors are the opportunities to enjoy the beauty, freedom, solitude, and untracked snow of the backcountry for those without the desire or physical ability to ski tour.

Economics, Break Even Point (Comments 5.16, 11.01)

Comment: The Forest Service has received comments requesting that the ID Team conduct an industry study to determine the break-even point for helicopter-skiing profitability.

Response: We know of no industry study to determine the profitability of heli-skiing. Each operation is unique. The Forest Service has collaborated with CPG to determine the number of client days and units necessary to ensure economic feasibility and sustainability and to achieve forestwide and regionwide desired conditions and goals. The number of client days for the break even point in this study is 1,200 client days and ensures that the Forest Service is permitting CPG with adequate client days to allow for:

- A high quality recreational experience to be provided on National Forest lands.
- Economic benefits to forest dependent communities associated with helicopter-skiing operations.
- The greatest opportunity for hiring operationally experienced guides, keeping helicopter equipment well maintained, and an overall safely provided recreational experience.

This purpose and need responds to forestwide desired conditions and goals to facilitate:

- A variety of businesses that provide or support recreational opportunities on the Forest under special use permit. (*Revised Forest Plan p. 3-14*)

This purpose and need also responds to regional emphasis areas to provide recreation and tourism:

- Which is ecologically sustainable and is an integral economic component of Southeast and South-central Alaska communities. (*R10 Emphasis Areas, January 2003, p. 9*)
- Enhance the health, stability, quality of life, economic vitality and adaptability of communities . . . throughout the State (*R10 Emphasis Areas, January 2003, p. 2*).

Economics, Client Day Fees (Comments 17.06, 17.07)

Comment: The Forest Service has received a comment suggesting that the rate of revenue to the Forest Service per client use day may not be sufficient to defray the cost of the administration and monitoring of the permit, and thus creates a subsidy for helicopter-skiing.

Response: The Alaska Region Interim Flat Fee Policy (ARIFFP) is used by the Chugach National Forest to determine the revenue to be paid to the Forest Service. The fee paid to the Forest Service is a function of the gross revenues. The current fee to be charged to helicopter-ski operations will continue to follow the interim policy until another method is adopted. There is no direct correlation between special use fees and Forest Service costs. Most special use fees go to the U.S. Treasury. Administration and monitoring costs are part of the annual Forest Service budget as allocated by Congress.

Economics, Client Day Viability (Comment 90.01)

Comment: The Forest Service has received comments indicating that the selection of Alternative 4 or Alternative 9 would not provide a sufficient number of client days to CPG to ensure a viable operation.

Response: Alternative 4 would provide 1200 client days—CPG's break even point. Alternative 9 with 800 client days is below this level. The Preferred Alternative (Alternative 3 Modified) would provide 2,200 client days.

Economics, Competitive Bid (Comments 5.02, 5.17)

Comment: The Forest Service has received comments indicating that a competitive bid system should be implemented to determine the minimum number of days necessary for a viable helicopter-ski operation.

Response: The Forest Service requires that only those proposals that are technically and economically feasible be analyzed for acceptance as a proposal for a special use permit (36 CFR 251.54). Further, the Forest Service on occasion, will use the competitive bidding process to identify new outfitting opportunities or to select an outfitter to fill a vacancy.

Since 1997 CPG is the only helicopter-ski operator who has submitted a proposal for a special use permit for the Kenai Peninsula region, a competitive bid system is not appropriate. A competitive bid system or prospectus is used primarily to select an outfitter guide among several outfitter guides.

Economics, Cost Benefit Analysis (Comment 11.02)

Comment: A comment has suggested that a benefit/cost analysis be added to the EIS. The comment recommends a benefit/cost analysis generally indicates that the community receives only minimal economic benefits from the helicopter landing tours. Specifically some comments indicate that the economic contributions from helicopter-skiing do not compensate for the impacts on the community; and the DEIS conclusions are based on insufficient economic data.

Response: An economic analysis is not needed to support a reasoned decision in this case. The primary impacts and issues are wildlife, recreation, and social issues, not economic, and the additional information provided by a benefit/cost analysis would not add appreciably to what is already know about the impacts of the helicopter-skiing on communities or resources. However, the EIS does contain a brief discussion of the economic impacts to the community of Girdwood and the required number of client days to maintain a viable operation in Chapter 4, Economics.

Economics, Economic/Environmental Parity (Comment 4.06)

Comment: The Forest Service received a comment suggesting that the DEIS recognize economic/environmental parity between the affected communities.

Response: The Forest Service recognizes that some communities are more heavily impacted by the operation of helicopter-skiing than others. For instance the *EIS p. 4-33* recognizes that the community of Girdwood would receive more of an economic benefit from helicopter-skiing than the communities of Moose Pass, Sunrise, Hope, Cooper Landing, or Seward. The *Impacts to Affected Communities section of the EIS Chapter 4, Impacts to Communities, Effects of Alternatives* also recognizes that there would be disparate social impacts to the affected communities. For example, those communities such as Moose Pass and Girdwood are located closer to staging areas will be more exposed to noise from helicopter-skiing than those communities located farther away.

Economics, North Bench Peak (Comments 26.03, 43.02 43.07,49.01, 90.02, 90.05 90.07)

Comment: The Forest Service has received several comments indicating the economic necessity of the North Bench Peak unit. The North Bench Peak unit, under the proposed action, is restricted to helicopter skiing Friday, Saturday, and Sunday. The Forest Service has also received comment indicating that the loss of the North Bench Peak unit may increase the cost of helicopter-skiing any units south of North Bench Peak, effectively eliminating these units from helicopter-skiing use.

The Forest Service also has received a comment indicating that the motorized recreation access prescription recommended for the North Bench Peak unit is evidence that helicopter skiing should be permitted in this unit without timing restrictions because of inconsistency with the Revised Forest Plan.

Response: In response to public comments, the timing restriction on the North Bench Peak unit has been removed. This will give CGPG a more economically viable operation by providing week-long heli-skiing in this unit. It will also bring the North Bench unit in line with Forest Plan direction which provides for helicopter skiing.

Flight Paths, Girdwood (Comment 71.02)

Comment: The Forest Service has received a comment that the flight path over the western fringe of Girdwood Valley may disturb recreationists using the Beaver Pond Trail, as well as, the residents located on the west side of the valley. The commenter suggested a new route when going out the valley to the south, it includes CPG flying low over Glacier Creek and then veering east halfway out the valley where there are no residential areas.

Response: Flight paths from the Girdwood airport have been chosen to minimize noise impacts to Girdwood residents and nearby recreationists and to meet safety requirement for the helicopter. Where possible, flight paths follow highways and roads and minimize impacts to residents and recreationists. CPG has agreed to fly the suggested route in addition to their current route. Based on future community comments or complaints, if any, the new route could be utilized exclusively.

Flight Paths, Seattle Creek (Comment 71.06)

Comment: The Forest Service has received a comment suggesting that when CPG is staging out of Ingram Creek and using the Seattle Creek units that the flight path fly low along the inlet to the north side of Pyramid and to access Bench Peak units through the south end of the Seattle Creek units.

Response: CPG will follow these flight paths when using the Seattle Creek and Bench Peak units. However, use of Ingram Creek as a staging area to access Seattle Creek would be limited. When possible, Kern Creek staging area would be utilized to access Seattle Creek, as it would minimize potential conflicts with use of Ingram Creek staging area and it provides a more efficient route to the area.

Flight Paths, Turnagain Pass (Comments 71.05, 83.06 83.07)

Comment: The Forest Service has received a comment indicating that the flight path used to access the units south of Placer Skookum may adversely affect the non-motorized users along the east side of Turnagain Pass

Response: The travel corridor from the East Twentymile area to the Placer Skookum area has been designed to mitigate most impacts to non-motorized winter users on the east side of Turnagain Pass. The Forest Service recognizes that the east side of Turnagain Pass is heavily used by non-motorized winter users. The Glacier Ranger District has compiled statistics from 1999 through 2003 for non-motorized use in this area. One of the mitigation measures for community impacts and recreation conflicts to alleviate impacts in this area is that CPG will not fly over the east side of Turnagain Pass. All mitigation measures are incorporated as requirements under the terms of the special use.

Forest Designation, Roadless/Wilderness (Comments 11.16, 11.17, 11.18)

Comment: The Forest Service has received comments indicating that issuing a five year permit to CPG may alter the characteristics of the roadless areas or prevent recommended Wilderness areas from inclusion into the National Wilderness Preservation System.

Response: Under all action alternatives, helicopter-skiing would be authorized in inventoried roadless areas. As described in the *EIS, Chapter 4, Roadless Areas*, although helicopter-skiing would affect some wilderness values, such as solitude, sense of remoteness, primitive recreation, self-reliance, and untrammelled natural state, such impact would be temporary. However, no facilities would be constructed nor would trees be cut. Helicopter-skiing is a compatible use in the inventoried roadless areas, and is not an irretrievable commitment of any wilderness resource. Helicopter skiing would not preclude future Wilderness classification. (Also, see *Revised Forest Plan FEIS p 3-400, 3-450*).

General, Client Days (Comment 14.01)

Comment: The Forest Service has received a comment generally indicating that the proposal for doubling the number of client days and helicopter-ski units is an excessive expansion of their operation.

Response: As noted in the *Purpose and Need section Chapter 1 of the FEIS* the Forest Service is required to provide a range of recreational opportunities on the Chugach National Forest. The objectives of this project are to:

1. Provide helicopter skiing recreation opportunities on Kenai Peninsula geographic area consistent with the Revised Land and Resource Management Plan
2. Provide viable opportunities for businesses that in turn supply safe, high quality recreational offerings for the public

The Forest Service developed a range of alternatives to achieve these objectives. Included in this range of alternatives is Alternative 4 which is identical to 2003/2004 allocation. All alternatives are given appropriate analysis and consideration. The

modified Alternative 3 was selected as the most appropriate way to achieve these objectives.

General, Noise Impacts (Comments 7.07, 7.09, and 15.04)

Comment: The Forest Service has received comments generally stating that permitting helicopter skiing would increase noise impacts to wildlife, recreationists, and communities.

Response: Noise impacts across these resources are described in the FEIS in Chapter 4, Environmental Consequences. See Response to Comments on Community Impacts, Noise Impacts.

General, Resources (Comments 20.01, 22.01, 26.01, and 66.03)

Comment: The Forest Service has received several comments generally pertaining to resource impacts from helicopter skiing. These comments range from general concern to resources from helicopter skiing to statements of minimal impact to resources from helicopter skiing.

Response: *Chapter 4 of the FEIS* discloses and evaluates the impacts to resources under each of the alternatives.

Miscellaneous, Historic Uses (Comment 90.06)

Comment: The Forest Service has received a comment suggesting that the information in *DEIS Chapter 3, p 3-2* is not accurate with respect to the first approval for helicopter-skiing on the Chugach National Forest. The commenter states that helicopter-skiing was first approved on the Chugach National Forest in 1974 and later in 1977 and believes this information is important in establishing historical use of helicopter-skiing on the Chugach National Forest.

Response: This change has been reflected in the FEIS.

Miscellaneous, Staging Area Authorizations (Comment 5.15)

Comment: The Forest Service has received comments requesting that CPG receive approval to use staging areas located on private land prior to the Record of Decision.

Response: The Forest Service requires that all alternatives are technically and economically feasible. CPG's acquisition of the authority to utilize staging areas located on private land does not appear questionable at this time, although no official authorization has been granted. Written authorization from private landowners must be provided prior to issuance of the permit.

Monitoring (Comments 4.04, 5.07, 13.02, 14.04, 41.01, 58.04, 64.02, 67.12, 68.13, 68.14, 100.02)

Comment: Several comments have been received indicating that the Forest Service lacks the appropriate means to monitor the impacts of the affected environment and to ensure that CPG is adhering to the terms of the special use permit and mitigation measures. Some comments recommend that the Forest Service specify the corrective actions that may be taken against operators who fail to comply with their permit requirements, and some suggest that permits be revoked for non-compliance.

Several comments were received regarding the Table 3-2 in Chapter 3 which reveals that CPG reported using more client days than they were allocated in 2001 and 2002.

Response: Special use permits include stipulations that establish minimum flight buffers over, for example wildlife, wildlife habitat, and no-fly zones. Some specific stipulations include:

- CPG will be required to provide the Glacier Ranger District a copy of their run log every two weeks.
- CPG will use a GPS data logger to track their flights, and provide data to the Glacier Ranger District once every two weeks.
- Helicopters will maintain a ½ mile horizontal or 1,500 Above Ground Level from all observed wildlife.
- Helicopters will not hover, circle, or harass any species of wildlife in any way.
- CPG will adhere to the No-Fly Zones, which identify mountain goat and Dall's sheep concentration areas.
- Helicopters will not land above, nor will CPG ski onto an avalanche path above any observed backcountry skier.
- Helicopters will not fly over the east side of Turnagain Pass.
- All helicopter-skiing will take place between 8:30 a.m. and 7:00 p.m.

CPG did exceed their permitted client days and the non-compliance was reflected in their yearly performance evaluations. Any future non-compliance would result in a range of ratings from Needs Improvement to Probationary to Unacceptable. Under certain circumstances, the Forest Service has the authority to revoke, suspend, or terminate a permit.

NEPA, Consecutive 1-Year Permits Process (Comments 4.01 and 4.05)

Comment: The Forest Service has received a comment indicating that an EIS should have been completed in the years between 1996 and 2003. Specifically, the comment suggests that the issuance of consecutive one-year permits has the effect of issuing a multi-year permit.

Response: Per CEQ regulations, which were promulgated pursuant to NEPA, each agency is directed to identify "categorical exclusions" which are categories of actions which do not, individually or cumulatively, have a significant effect on the human environment and therefore, do not require an EA or EIS. 40 C.F.R. § 1508.4. Consistent with the CEQ regulations, the Forest Service promulgated a series of categorical exclusions, which are set forth in the Forest Service Handbook. 1909.15, 31.1b & 31.2. Exclusion 8 provides that "approval, modification, and continuation or minor, short-term (one-year or less) special uses of National Forest System lands" are excluded from NEPA review. Because of the possible impacts of heli-skiing, the Chugach National Forest prepared a comprehensive Environmental Assessment (EA) in 1999. This EA was used and updated to make the annual decisions on heli-skiing. At that time, the Forest also committed to complete an EIS for any multi-year heli-skiing permits on the Kenai Peninsula after the Forest Plan was revised. This EIS fulfills this commitment.

NEPA, Modeling (Comments 5.09, 15.02)

Comment: The Forest Service has received comments expressing the concern over using models to predict impacts and the adequacy of modeling.

Response: The use of models to determine impacts from proposed actions is an accepted method under NEPA. Models are not realistic information, but are used to generalize reality. Although modeling has some short comings, the use of models is considered “reasonable” under NEPA (CEQ 1977).

NEPA, Scoping (Comment 4.02)

Comment: The Forest Service has received comments indicating that the public has been denied an opportunity to participate in the Forest Service decision making for past temporary special use permits granted to CPG.

Response: The Forest Service has previously authorized temporary special use permits to CPG through Environmental Assessments and Categorical Exclusions. The Forest Service initiated public scoping for the Environmental Assessments and Categorical Exclusions from 1996 through 2003. In addition, 221 people responded our scoping letter and 101 people responded to the Draft EIS. Eight public meetings were conducted in the preparation of this EIS.

NEPA, Supplemental DEIS (Comment 11.15)

Comment: The Forest Service has received a comment generally indicating that an inadequate analysis of helicopter-ski impacts has been completed and a Supplemental DEIS should be issued as opposed to a FEIS. Specific comments on the DEIS include the following:

- Inadequate assessment of the environmental and social impacts of the proposed action, including noise impacts to residents, wildlife, and outdoor recreationists.
- Incomplete discussion of the mitigation measures.
- Failure to adequately identify and address issues of noise, economics, safety, and irretrievable and irreversible commitment of resources.
- Insufficient information to assess compliance with the Forest Plan Standards and Guidelines.
- Failure to meet NEPA mandate to assess cumulative impacts because insufficient data were collected and presented.

Response: While additional information has been added to the FEIS to address many of these points, we believe that the effects analysis is accurate and uses the best available information. There have been non substantial changes in the proposed action that are relevant to environmental concerns or significant new circumstances or information relevant to the environmental concerns or have a bearing on the proposed action or its impacts. Therefore, a Supplemental DEIS is not necessary (CEQ 1977).

Operating and Safety Plan, Litter (Comments 27.02, 41.03, 58.02, 95.01)

Comment: The Forest Service has received comments expressing concern over the amount of litter generated by helicopter-skiing.

Response: The EIS contains a mitigation measure to ensure that all litter is removed from the permit areas. In addition, at the end of the season, CPG shall ensure that all helicopter landing area improvements are removed. The Forest Service will monitor this requirement to ensure all litter is removed.

Operating and Safety Plan, Safety (Comments 4.03, 5.14, 5.15)

Comment: The Forest Service has received comment suggesting the Forest Service address the issues of public safety, particularly the adequacy of CPG's operating and safety plan.

Response: Chapter 2, Mitigation Measures address CPG's operating and safety plan. CPG is required to submit an operating and safety plan to the Glacier and Seward Ranger Districts every season that, at a minimum, includes:

- Avalanche safety (addressing client safety as well as safety of other backcountry users in the area).
- Helicopter safety.
- Emergency rescue procedures.
- Guide requirements.
- A system for resolving complaints from the public.

Operating and Safety Plan, Vegetation (Comment 11.08)

Comment: A comment was received indicating that the Forest Service has not addressed the impacts from the possibility of fuel spills on vegetation.

Response: *DEIS Chapter 2, Mitigation Measures* states that CPG will have standard fuel prevention, containment, and cleanup materials on hand at any fueling site and will maintain and follow a spill plan that includes spill prevention, containment, cleanup, and notification procedures. Further, the *Mitigation Measures* section states that if fueling takes place within 50 feet of a wetland or water body, the fuel tank will be located within an impermeable containment basin. All mitigation measures are assumed to be in place in the *Environmental Consequences section in Chapter 4*.

Recreation, Activities: (Comments 5.06)

Comment: This comment noted several other recreationists who might be impacted by heli-ski operations.

Response: This information was added to *the FEIS in Chapter 3, Background Information, Recreation* section.

Recreation, Changes to timing restriction on East Seattle Creek unit: (Comment 83.03)

Comment: Skiers enjoy Monday-Thursday in the East Seattle Creek unit as there are fewer motorized users during the week. Adding heli-skiing during this time would unbalance the situation and create noise the whole week.

Response: Alternative 3 was modified to have the Mid Seattle Creek and East Seattle Creek units available for heli-skiing activities Friday, Saturday and Sunday when snowmachine traffic is highest level, leaving the weekdays as an opportunity for skiers to potentially have less motorized noise.

Recreation, Changes to timing restriction on North Bench Peak unit: (Comment 29.01, 32.02, 43.01, 43.06, 50.01, 56.01, 56.02, 90.04, 90.06, 90.12)

Comment: Several comments included questions about the need to have North Bench Peak restricted to Monday – Thursday only. Several folks stated that muscled powered skiers rarely get in that far from the road because North Bench Peak has low potential for recreation conflicts and wildlife impacts. The proponent also stated they had not seen skiers in the Divide Creek area as it is too far to ski in a day.

Response: Alternative 3 was modified to have North Bench Peak available all days of the week for CPG to use.

Recreation, Conflicts (Comments 2.01, 3.02, 5.03, 5.06, 7.03, 7.04, 10.02, 11.13, 11.19, 14.02, 16.02, 16.03, 16.04, 18.03, 27.03, 29.01, 32.02, 43.01, 48.01, 50.01, 52.01, 53.01, 54.01, 55.02, 56.01, 65.03, 65.04, 65.05, 67.06, 71.04, 80.03, 81.02, 83.03, 83.10, 87.01, 90.04, 90.06, 98.02)

Comment: Several comments noted concerns about user conflicts with heli-skiing activities from both non-motorized and motorized recreation users in and around or near heli-skiing units. The comments indicate that the noise impairs the quality of the recreation experience, and that the helicopters are intrusive and disruptive across the landscape. Several comments asked to see analysis of displacement of non-motorized users. Additional comments addressed the concern that using Ingram Creek as a staging area to access Seattle Creek would result in conflicts with non-motorized users of this area.

Response: The heli-skiing units where potential conflict was mentioned in the comments were Skookum Glacier, East Seattle Creek, West Bench Peak, and Mount Ascension. In addition several other areas outside of the units were mentioned. These included Mile 12 area near the Mount. Ascension and Snow River units, and Ingram Creek staging area near East Seattle Creek area. The FEIS recognizes there is a higher level of potential user conflict in the units mentioned above (*FEIS, Chapter 2, Table 2-1; Chapter 4, Recreation Conflicts section, and Appendix H* for several of the alternatives. The FEIS now includes discussion of areas outside of the heli-skiing units where potential conflict could arise.

Several of the comments also questioned the low potential conflict rating and if it was tied to low number of people using the units. *Chapter 4 of the FEIS* addresses how the ratings were developed. The low number of users is only part of the rating. The anticipated level of heli-skiing activity (core area vs. exploratory) as well as timing restrictions were part of the rating system. The rating also does not tell the actual conflict which might occur because user conflict is variable based on the individual, the circumstances and environment. Some individuals may experience extreme conflict in a situation where another individual in the same situation does not. The rating describes the potential for conflict. The FEIS recognizes that certain alternatives will have more potential for user conflict given higher levels of heli-skiing across more area. The FEIS also recognizes that conflict can still occur in a unit with a low potential conflict rating (*FEIS Chapter 4, Recreation Conflicts*).

The FEIS also addresses the displacement potential for non-motorized users in various areas in *Chapter 4, Recreation Conflicts*.

Under the modified Preferred Alternative 3, all aspects of the FEIS alternative remain the same except:

1. The timing restriction on East Seattle Creek was changed from Monday through Thursday as opposed to Friday through Sunday. Heli-skiing activities can occur in this unit only on Friday, Saturday and Sunday.
2. The same timing restriction was placed on the Mid Seattle unit.
3. The timing restriction on North Bench Peak was removed.

The above modifications to Alternative 3 are a response to the recreation conflicts and concerns about community impacts, and public comments on the DEIS. These modifications will help minimize recreation user conflicts. The timing restriction changes give muscle-powered skiers a more remote geographical area to ski at all times. Muscle powered skiers who desire to ski in a more remote geographic areas could ski East Seattle Creek during the week and West Bench Peak on the weekends. Further, lifting the timing restrictions in North Bench Peak would concentrate heli-skiers in a unit that is more difficult for muscle powered skiers to access due to distance from road system. In addition to the modifications of Alternative 3, the continued use of the “heli-ski hotline” will help mitigate recreation conflicts by providing the public with advance knowledge of where CPG intends to operate.

As a result of comments regarding use of Ingram Creek as a staging area, CPG has stated that they would only use Ingram when weather conditions preclude their use of Kern Creek staging area. CPG prefers Kern Creek to Ingram Creek as it provides a more efficient access to the Seattle Creek area.

Recreation, Kenai Amendment: (Comment 12.01, 16.04, 65.03)

Comment: These comments state that the cumulative impacts of increasing snow machine use and potential heli-skiing to the people who pursue backcountry skiing and other non-motorized activities has not been thoroughly analyzed.

Response: The Revised Forest Plan EIS analyzed the motorized/non-motorized use. The Forest Service will be initiating an analysis (Kenai Amendment) which will be re-evaluating the winter motorized and non-motorized allocation that was made in the Revised Forest Plan and will include all areas south of Summit Lake on the Seward Ranger District. Many of the proposed heli-skiing exploratory areas are within this area and will be re-evaluated.

Recreation, Mitigation - Snow River: (Comment 90.05)

Comment: The proponent states that the mitigation measure to avoid flying within 5 miles of south fork of Snow River will not be feasible when CPG uses the mile 12.4 staging area.

Response: The mitigation measure in the FEIS has been changed to reflect this comment in *Chapter 2; Mitigation Measures; Recreation Conflicts and Community Impacts*.

Safety, CPG Rescue (Comments 20.02 and 27.01)

Comment: The Forest Service has received comments indicating that permitting

CPG would aid in backcountry rescue operations and is thus increases the safety of all users of these areas.

Response: While it an added bonus to have CPG's helicopters available in the area in case of an emergency, there are many days they are not in operation. Then backcountry uses are dependent on others, such as Alpine Air's helicopter at Girdwood or helicopters from Anchorage.

Safety, Danger to Other Users (Comments 67.04, 67.05, and 83.04)

Comment: The Forest Service has received several comments indicating that CPG's helicopter-ski operation may expose other backcountry users, including snowmachiners and skiers, to avalanche danger, because CPG would typically be skiing above other winter recreationists.

Response: Chapter 2 of the FEIS *Mitigation Measures* states that CPG's helicopters will not land above, nor will CPG ski onto an avalanche path above any observed backcountry user.

Safety, North Bench Equals Safety (Comments 1.01, 6.01, 6.02 26.02, 35.01, 43.03, 43.05, 56.03, 73.04, 78.01, and 90.09)

Comment: Several comments have been received suggesting that CPG be granted access to various exploratory units because it will aid in the determination of snow stability and therefore increase the safety of their operation.

Response: Safety of CPG's operation is a major concern to the Forest Service. The safety of CPG's operation is evaluated by the Forest Service through the annual Safety and Operating Plan. While increasing the areas available would give CPG more flexibility with changing weather and snow conditions, we believe CPG will provide a safe operation without regard to the size of their permitted area.

Safety, Highway Staging Areas (Comments 7.05, 7.06)

Comment: A comment has been received by the Forest Service indicating that staging areas located near highways may create distractions for motorists and therefore decrease the safety of motorists along the highway.

Response: While this may be true, there are many things along the highway that may distract a driver. We do not believe it is a significant problem.

Wildlife, Impacts (Comments 8.01, 17.02, 18.01, 58.03, 59.04, 59.05, 60.01, 67.13, 97.01)

Comment: Permitting helicopter-skiing may result in significant adverse impacts to mountain goats, Dall's sheep, and other various species of wildlife. In addition, noise generated by helicopters used to support the skiing activity may adversely impact wolverines, bears and other wildlife. Permitting helicopter-skiing in the Snow River, Moose Creek, Ptarmigan Lake, and Paradise Valley areas may adversely affect sheep, goats, moose, brown bears, and wolverines.

Response: *EIS, Chapter 4, Wildlife*, discloses the affect of helicopter skiing on mountain goats, Dall's sheep, and other wildlife. The following mitigation measures will be implemented:

Mitigation Measures

Mitigation measures were developed from review of public and agency comments, analyses of previous CPG operations, and the analyses completed for the Revised Forest Plan (USDA Forest Service 2002b). In addition, US Forest Service and ADFG wildlife personnel reviewed the project to develop a series of design features to be incorporated as part of the authorization to operate, and are intended to minimize effects to wildlife. (USDA, Forest Service 2003a, p 5). Mitigation measures designed to address wildlife impact issues are listed below (*DEIS pp 2-29 – 2-30*).

1. Helicopters will maintain a 1/2-mile horizontal or 1,500 feet AGL from all observed wildlife.
2. Helicopters will not hover, circle, or harass any species of wildlife in any way.
3. CPG will adhere to the No-Fly Zones, which identify mountain goat and Dall's sheep concentration areas (See No-Fly Zone Maps, Appendix B). No-Fly Zones are based on a separation distance of 1,500 feet from important habitat. The ADFG will be consulted before any alteration of zone boundaries to less than 1,500 feet.
4. CPG will provide mountain goat, Dall's sheep, and other wildlife sightings to the Glacier Ranger District. The District will provide CPG with incidental wildlife observation forms to be filled out daily. These forms are to be submitted annually upon completion of the permit season. Unique wildlife sightings, such as wolves, wolverines, or brown bears, will be reported during the next business day.
5. If a brown bear or wolverine den is located (either by CPG or during wildlife observation flights), CPG will maintain a 1/2 mile horizontal or 1,500 AGL separation during their operations.
6. CPG will not ski or conduct any activity within 330 feet of known bald eagle nests.
7. Helicopter flights will not fly within 1/4-mile horizontal distance or 1,500 AGL of any active bald eagle or goshawk nest. When it is not known whether the nest is active, helicopter flights will avoid the nest. The Glacier Ranger District will provide CPG an updated bald eagle and goshawk nest map prior to each season.

Note: Helicopters may fly less than the minimum required distance when flight safety may be compromised, and helicopters may fly less than the minimum required distance when (1) shuttling passengers from the bottom to the top of a run, (2) during landing and takeoffs, (3) flying over major highway corridors, and (4) when safety may be compromised.

With the implementation of these mitigation measures, while there may be some disturbance to individual animals, none of the alternatives should have significant impacts to wildlife populations.

Wildlife, Cumulative Impacts (Comments 11.03, 68.01)

Comment: The Forest Service may not have adequately addressed the cumulative impacts of other helicopter and snowmachine activity on wildlife.

Response: Cumulative effects are addressed in the FEIS p 4-3. “Abundance and distribution of the many species discussed in this EIS have been most influenced by alterations of their habitats and by disturbance from activities, such as past mining and timber harvest, past and current residential and commercial developments, past and current outdoor recreational activities, and for some species, hunting and trapping (USDA-Forest Service 2002b). Any action that results in more people in the backcountry or more disturbances of natural habitats in or near the permit area has the potential to cause cumulative impacts to wildlife.

The proposed helicopter-skiing operation would add cumulatively to the human disturbances [motorized and non-motorized recreation] of wildlife populations. General road traffic, snowmachines, other aircraft, and avalanche control for the ski area, highway, and railroad also contributes to the noise disturbance of wildlife. However, with the required mitigation in place, the generally small incremental increase attributable to helicopter-skiing would not trigger any qualitative increase in impacts.

Wildlife, Denning Wolverines (Comments 5.13, 11.11, and 60.03)

Comment: Helicopter-skiing may adversely affect denning wolverines and their kits, since the proposed ski season and ski run locations coincides with the time and location female wolverines give birth to their kits. Further, due to inadequate monitoring and weak design features, helicopter-skiing activities may adversely impact wolverines. In addition, the Forest Service didn’t consider the potential impacts from the actual helicopter-skier to denning wolverines.

Response: The direct effects on denning wolverines are disclosed on page 4-8 of the FEIS. There is evidence that wolverines “may tolerate human intrusion poorly, particularly when the disturbance is near reproductive denning sites. Denning females could be displaced by helicopter skiing activities occurring in denning areas and could abandon their den sites.”

“Denning females could be displaced by helicopter skiing activities occurring in denning areas and could abandon their den sites. ... Wolverine tracks were located in Seattle Creek, Bench Peak, Moose Creek, Ptarmigan, Snow River and Mt. Ascension. Placer-Skookum, Grandview, and units north of the Turnagain Arm were not surveyed. Helicopter-skiing in remote areas has the potential to displace wolverines, or disrupt foraging or travel patterns. Wolverine may abandon dens after human disturbance (Heinemeyer et al 2001). Den abandonment can lead to reduced reproduction or lower kit survival (Magoun and Copeland 1998).” (FEIS p 4-8).

Under all action alternatives, helicopter-skiing operation may affect individual wolverine. However, helicopters must maintain a 1,500 feet AGL at all times except shuttling passengers from the bottom to the top of a run, during landing and takeoffs, and if safety would be compromised. If a wolverine den is located (either by CPG or during wildlife observation flights), then CPG would maintain a 1/2 mile horizontal or 1,500 AGL separation during their operations. Helicopters may not hover, circle, or harass wolverine in any way. Skiers must maintain a 1/2 mile distance from know den locations. Therefore, it is unlikely that any action alternative would have a

substantial effect on wolverine or impact wolverine populations or viability.” (FEIS p 4-9).

Wildlife, Habitat (Comment 67.02)

Comment: Winter habitats of bears, lynx, wolverines and wolves are unknown, therefore, impacts cannot be determined.

Response: Mitigation measures as listed in the EIS Chapter 2 were designed in coordination with ADFG and with the intent to minimize effects to wildlife. Also see Comment Wildlife, Data for information related to brown bear and wolverine.

Canada Lynx “Lynx are most likely found within the project area in relative low numbers. Lynx use a variety of habitat, including spruce and hardwood forest. They require a mosaic of conditions, including early successional forests for hunting and mature forests for denning (Koehler and Brittell 1990). The most current research suggests that lynx utilize large blocks of connected forest habitat, generally dominated by spruce/fir, white fir, Douglas fir, and aspen, with a mosaic of age classes (Seidel et al. 1998). Lynx seem to prefer areas of low topographic relief (Apps 2000).” (FEIS p 3-12).

In Alaska, lynx habitat occurs where fires or other factors create and maintain a mixture of vegetation types with an abundance of early successional growth. Lynx tend to use elevations ranging from 300-1,075 meters (approximately 1,000-4,000 feet), and seldom use unforested alpine slopes. Lynx habitat closely matches that of the snowshoe hare, its primary prey species. Mating occurs in March and early April and kittens are born 63 days later under a natural shelter such as a windfall spruce or a rock ledge (Berrie 1973, Berrie et al. 1994).

Gray Wolf “Wolves are found in the project area in low numbers. Wolves are habitat generalists. Wolves prey mainly on ungulates year-round (Mech 1970). During the winter wolves are found at lower elevations in forested or woodland areas (Stephenson 1994). Wolves are highly social animals and usually live in packs that include parents and pups of the year. Pack size usually ranges from 2 to 12 animals. In Alaska, the territory of a pack varies from 300 to 1,000 square miles of habitat with an average of about 600 square miles. Wolves normally breed in February and March and the pups are born in May or early June (Stephenson 1994). Wolves have been documented as sometimes abandoning a den and moving pups to an alternative den if disturbed by humans (Mech et al. 1991). There are approximately 10-11 wolf packs on the Seward Ranger District (Ted Spraker, personal communication) and another 2 packs range across the Placer Valley, Turnagain Arm, and Portage Valley on the Glacier Ranger District (Cliff Fox, personal communication).” (FEIS p 3-12.)

Wildlife, Migratory Birds (Comments 11.09 65.01)

Comment: The question was asked why a list of migratory birds that may occur in the project area during March and April was not included in the EIS. Helicopter-skiing may adversely affect the migration of birds in the Portage Pass and Portage Valley area.

Response: The EIS on page 3-14 mentions migratory birds of concern that may occur in the project area during the helicopter-skiing operating season are listed in

the *Wildlife Specialist Report, Appendix B*. Copies of the report are available upon request. “There would be *negligible* effects on migratory birds and they will not be discussed further in this document.” (FEIS p 4-11.)

Wildlife, Mountain Goats (Comment 65.02)

Comment: Frequent or cyclical mountain goat displacement may occur if helicopter-skiing is permitted.

Response: “Preliminary data analyses found that over 90 percent of all disturbance reactions were short term in nature (< 2 min) and that experimental helicopter overflights did not appear to affect the amount of time goats spent in maintenance behaviors (*USDA Forest Service 2003b*). Data from 347 helicopter overflights at four geographic areas in Alaska were analyzed in response to distance and angle from helicopter to mountain goat, reproductive class, season, and area of study. Mountain goats remained in a disturbed state for an average of 30.7 seconds (Goldstein et.al. 2004).

Wildlife, North Bench Peak (Comment 90.08)

Comment: North Bench Peak may not have concentrations of mountain goats and thus may be an ideal location for minimizing wildlife impacts from helicopter-skiing.

Response: Thank you for the input. We will assess impacts inside and away from heli-skiing areas and seek locations that minimize impacts from CPG operations. North Bench Peak, without any timing restrictions, is included in the Modified Preferred Alternative 3.

Wildlife, 3-Year Study (Comments 5.10, 7.09, 67.03, 81.01)

Comment: Authorizing the exploratory areas without an extensive wildlife study would result in a disregard of Alaska Department of Fish and Game’s recommendation for a 3-year wildlife study of the exploratory areas.

Response: Response: We confirmed with ADFG the comments made in the letter from Jessy Coltrane, Wildlife Biologist, Division of Wildlife Conservation, Region II, ADFG on 14 May 2003. The primary reason for this concern was to ensure that the permit would be adaptable to new scientific information that becomes available. We have several ongoing studies that are within and beyond the borders of the exploratory areas. The studies are discussed in our response to Data, Wildlife and in Chapter 3, Wildlife. If new information is found, it will be applied to the ongoing permit.

Wildlife, Wolverine Mitigation (Comment 41.02)

Comment: The mitigation measure requiring ½ mile horizontal and 1,500 feet AGL from any located den may not mitigate the impact to wolverines because the impact will have occurred before the den is observed.

Response: Although it is true that some individual wolverine may be disturbed by helicopter skiing or other winter recreation activities, we believe that such incidental disturbance will not affect wolverine populations. Our wolverine sample unit grid surveys, our collaring efforts, and information from overflights may provide us known den locations which we can then protect with spatial buffers.

Wildlife, Foreseeable Future Impacts (Comment 68.05)

Comment: Foreseeable future impacts to wildlife as a result of the growth of the helicopter-skiing industry and other industries using helicopters may not have been addressed in the DEIS.

Response: All reasonably foreseeable projects which may have cumulative effects with this project have been included and analyzed in this EIS. If other helicopter supported activities are proposed, they will be analyzed in compliance with NEPA requirements.

Wildlife, Mitigation Measures (Comments 4.04, 9.01, 11.1)

Comment: Self-monitored helicopter distance requirements from wildlife may not be sufficient to protect wildlife populations. The assumption made might be valid if the wildlife mitigation measures were known to be effective. Because helicopters may fly less than the minimum required distance when (1) shuttling passengers from the bottom to the top of a run, (2) during landing and takeoffs, (3) flying over major highway corridors, and (4) when safety may be compromised, there is no real mitigation.

Response: In addition to routine monitoring and inspection of the helicopter-skiing operations which is a part of administering the special use permit, a permit stipulation has been designed specifically to help ensure CPG's compliance of the separation distances from wildlife requirements. The stipulation requires CPG to use a GPS data logger to track their flights. In addition, CPG is to provide the data to the Glacier Ranger District once every two weeks (FEIS p 2-29). The daily flight lines are then analyzed in relation to important wildlife habitats using Arc GIS. If any non-compliance with use restrictions are identified, CPG is notified and required to take immediate action to ensure the activity doesn't happen in the future. If violations continue, the permit could be cancelled.

Wildlife mitigation measures come from several sources. They are based on research, studies, and agreements with other agencies. They have also evolved over the last eight years while administering a heli-ski permit.

The only exception to wildlife mitigation measures for minimum distance is flight safety (FEIS, Chapter 2, Mitigation Measures, Wildlife). This exception does not apply to all wildlife mitigation measure, only those which are identified with a *.

Wildlife, Modeling (Comments 5.11, 15.02)

Comment: Modeling may not be an accurate means of determining wildlife impacts.

Response: Modeling is an acceptable tool for assessing wildlife impacts. Results of modeling wildlife responses can only be as good as the inputs used to construct the algorithms. For mountain goats, we have chosen a model fitting procedure that we feel is objective, repeatable, and minimizes the chances that we settle upon a spurious model. We have chosen a small pool of variables to include *a priori*, and then allowed the data to select the relationship between these variables to include in the final model. For brown bear dens, we chose a multivariate distance estimator, and then used resource selection functions to determine which variables guided the equations. Also see our response to Comment NEPA, Modeling.

Wildlife, Habitat Monitoring (Comment 94.01)

Comment: Habitat exposure should be evaluated on an annual basis in order to ascertain effects over the course of time, which helps determine the impacts of helicopter-skiing to wildlife habitat.

Response: 36 CFR 219.11 Requires a national forest to monitor and evaluate their forest plan. Routine implementation monitoring is part of the administration of a special use permit. As described in *FEIS Chapter 3, Wildlife*, several wildlife studies are on-going (brown bear, mountain goat, and wolverine). We feel a five-year permit is more appropriate than to continually issue annual permits. This will allow CPG to make investment and business decisions needed to provide a viable, safe, and high quality recreation experience (*FEIS Chapter 1, Purpose and Need*).

Chapter 6: Lists

List of Recipients

Copies of the Final Environmental Impact Statement, Commercially Guided Helicopter Skiing on the Kenai Peninsula, Chugach National Forest were sent to the following, federal, state and local agencies, organizations, businesses, and individuals.

Federal, state and local agencies

BLM State Office
Department of the Interior
Federal Aviation Administration
Federal Highway Administration
Kenai Peninsula Borough
National Marine Fisheries Service
National Park Service
State of Alaska DOT
US Army Engr. Northwestern Division
US Coast Guard
US Department of the Interior--Office of Environmental Policy and Compliance
US EPA Region 10

Organizations

Alaska Center for the Environment
Alaska Citizens for the Chugach
Alaska Mountain Wilderness Huts Assoc.
AQRC
Cascadia Wildlands Project
Chugach Powder Guides
High Mountain Heli-Skiing
Sierra Club Alaska Chapter
Snow Dynamics Avalanche Safety Program
Snow River Hostel
Summit Lake Lodge
Target Sport Adventures
Turnagain Arm Conservation League
Wilderness Society

Individuals

Paul Allred
Eugene Anderson
Hans Arnett
Marty Arnoldy
Ronnie Barnes
Gabrielle Barnett
Denny Bartlett
Erin Bashaw
Daniel Bevington
Per Bjorn-Roli
Dan Brokaw
Gary Bucy
Ryan Burnard
Rusty Carr
Sky Carver
Bill Claridge
Michael Cooney
Sean Dewalt
Jerry Dixon
Victor Duncan
Mark and Dawn Ernst
Terry and Jeff Estes
Jeanne Follett
Paul Forman
Louis Garding
John and Ann Gaule
Kevin Getz
Jon Gianulias
Ben Gilbert
Ben Gilbert
John Glynn
Robert Gonzalez
Joe Greaney
Steven Gruhn
Melissa Guernsey
Dave Hamre
Trisha Herminghaus
Stephen Hmurciakova
Connie Hubbard
Eleanor Huffines
Bruce Jaffa
Rachel James
Lara Jesic
Lana Johnson
Tom Kain
Bruce Kiessling
Kitty Kinkaid
Erin Knotek
Erin Knotek
Steve Kruse
Jason Kwiatkowski
John and Elna Lennon

David Lindquist
Irene Lindquist
Tom and Heater Lindquist
Philip and Diana Livingston
Mairo Lobo
Hal Lyons
Robert Mann
Lisa Maserjian
Julian Mason
Doug McRae
Brad Meiklejohn
Apryl Milam
Jeff Mitchell
Peter Mjos
Susan Negus
Sean Norton
Sean Norton
Bjorn Olsen
Beth Overcast
David Pettry
Clarence Petty
Phil Plunkett
Marianne Profita
R. Mike Rawson
John Rightor
Dan Schilling
Ernst Schlogelhofer
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Jon Shick
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Tom Sullivan
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Thomas Warborg
Kathy Wells
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List of Preparers

Interdisciplinary Team

Contributor	Education & Experience	Contribution
Teresa Paquet ID Team Leader	BS Natural Resource Mgmt., 15 yrs USDA-FS	EIS Preparation
Karen Kromrey Recreation Staff	BS Forest Management 18 yrs USDA-FS	Recreation Analysis
Tim Charnon Recreation Staff	MS Forest Science 14 yrs USDA-FS	ROD Preparation
Mike Goldstein Wildlife Biologist	PhD Wildlife Ecology, MS Envir. Toxicology, BS Wildlife Biology 3 yrs USDA-FS, 16 yrs Other	Wildlife Analysis
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Glossary

Activities table: A tabular display of typical activities that may or may not be permitted in a given management area in the Forest Plan.

Airshed: Geographical areas, which because of topography, meteorology, and climatic conditions, share the same air mass. Air is managed by airsheds.

Alternative: An option for decision-making.

Backcountry recreation: People who use undeveloped land for various forms of winter recreation, including, cross-country skiing, snowshoeing, snowboarding, ski touring, snowmachine use, and helicopter skiing. The term should not be applied to any of these subgroups, but only to the group as a whole.

Backcountry skiers: Includes those skiers who travel away from the highway system and seek steeper terrain to telemark, alpine ski, and snowboard.

Class II areas (air): Geographic area having air quality exceeding the National Ambient Air Quality Standards, which is designated for a moderate degree of protection from future air quality degradation. Moderate increases in pollution may be permitted.

Client day: A term used in special use permits; a day when the permitted provides commercial services to one person. A client day is equivalent to one paying client being on the Forest for any part or all of a 24-hour day.

Core units: Areas historically authorized for commercially guided helicopter skiing operations.

Cross-country skiers: People skiing flat or gently sloping terrain using free-heel, cross-country or touring equipment. This group generally does not use the same terrain as helicopter skiers.

Cumulative impact: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future action regardless of what agency or person undertakes such other actions.

Endangered species: Any plant or animal species that is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified and defined in accordance with the 1973 Endangered Species Act and published in the federal Register.

Exploratory Units: Areas historically not authorized for commercially guided helicopter skiing operations. The exception to this is the Moose Creek exploratory unit that was authorized for temporary use in 1997 and 1998.

Forest Plan: A USDA-Forest Service document required for each forest. Source of management direction specifying activity and output levels for a 10-15 years developed to meet the requirements of 36CFR 219. Management direction in the plan is based on the issues identified at the time of the plan's development.

Helicopter skiers: (Heli-skiers): One category of backcountry winter recreationists. These people are delivered to drop-off points on ridges or peaks by helicopter, gathered at pickup points after skiing down, and are ferried back to drop-off points. Most use alpine equipment, but telemark, touring, snowboards gear is also used.

Inventoried roadless area: Areas identified in a set of inventoried roadless maps, contained in the Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2 dated November 2000.

Management area: A specific area of the Forest identified in the Forest Plan. Management areas were assigned a prescription that includes specific direction for managing various resources within the management area. Each management area prescription included the theme, management intent, activities table and standards and guidelines.

Management Indicator Species (MIS): Species with habitat requirement, both specific and general, to service to indicate the outcome of management plan options for many species with similar habitat. MIS species are identified in the Forest Plan.

Management Intent: A summary of the desired conditions for ecological and social systems of a management area in the Forest Plan.

Model: An idealized representation of reality developed to describe, analyze, or understand it; a mathematical representation of the relationship under study (e.g. mountain goat winter habitat model).

Motorized recreation: Recreation activities involving motorized methods for access and transport or in support of an activity (e.g. snowmachine use, helicopter skiing).

National Forest System (NFS) lands: National Forests, National Grasslands, and other related lands for which the Forest Service is assigned administrative responsibilities.

No-Action Alternative: An alternative required by NEPA in an environmental analysis, which is defined as the situation which would exist if the action being considered, or an action alternative to it, were not take.

No-fly Zones: Areas delineated where high value wildlife habitat has been established. Permitted helicopter operations are restricted from flying in these areas by the USDA Forest Service and the Alaska Department of Fish and Game.

Nonmotorized winter recreation: Recreation activities involving non-motorized methods for access and transport (e.g.: skiers, snowboarders, and snowshoers).

Non-motorized users: People that use non-motorized methods for access and transportation for winter activities such as skiing, snowboarding, and snowshoeing).

“Open to All Motorized Uses” in the winter (December 1 through April 30). “These areas are designed to allow a full spectrum of opportunities for winter motorized recreation. Both snow machines and helicopters are permitted in these areas during the winter season. Site specific or other closures may be implemented to avoid resource damage, wildlife conflicts, or safety issues.

Permit area: This is the area defined in the special use permit as available to the permittee to conduct the authorized use.

Planning record: The information used to assemble an environmental document, such as project-specific reports and related information, field investigations, other sources, and information resulting from public involvement

Population: The actual number of animals or plants present in an area at a certain time that share a common gene pool.

Population viability: Probability that a population will persist for a specified period of time across its range despite normal fluctuations in populations and environmental conditions.

Record of Decision: A document prepared within 30 days after the Final EIS is issued which states the agency’s decision and the rationale for it, what factors entered into the decision, and whether all practicable means to avoid or minimize environmental harm has been adopted.

Scoping: A process that determines the issues, concerns, and opportunities which should be considered in analyzing the impacts of a proposal by receiving input from the public and affected agencies. The depth of analysis for these issues identified is determined by scoping.

Sensitive species: Plant or animal species, which are susceptible or vulnerable to habitat alterations or management activities, resulting in a viability concern for the species long-term persistence. Sensitive species may be those species under consideration for official listing as endangered or threatened species, that are on a official state list, or are recognized by the Regional Forester as needing special consideration to assure viable populations and prevent their being placed on federal or state lists.

Ski tourers: People who ski steep, upper elevation terrain using climbing skins and free-heel, randonee or alpine equipment. This group is most likely to share terrain with heli-skiers.

Snowboarders: People who use snowboards (a single piece of equipment to which both feet are attached) to descend slopes after ascending on foot. Some use climbing skins or snowshoes. Those using split boards and skins may use the same terrain as heli-skiers.

Snowmachine users: People who use over-the-snow machines to travel on snow.

Snowshoers: People who travel in the winter backcountry using snowshoes to support them on the snow surface. They typically do not slide down slopes or use the same terrain as ski tourers and heli-skiers.

Special Use Permit: A special use authorization that provides permission, without conveying an interest in land, to occupy and use National Forest System land or facilities for a specified purpose. Authorization permits are revocable, terminable, and non-compensable.

Species of special interest (SSI): Plant and animal species either because their habitat requirements are too narrow to be covered by course filter analysis or because of the concern by the public or land managers. SSI were identified in the Forest Plan.

Species of concern: Plant and animal species that may be affected by the proposal identified by the public or the interdisciplinary team.

Standards and Guidelines: Specific management direction for conditionally allowed management activities in a Forest Plan.

Tiering: Elimination of repetitive description on the same issue by incorporating, by reference, the general description in an environmental impact statement.

Theme: A short description of a management scenario or philosophy of a management area in the Forest Plan

Threatened species: Plant or animal species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified and defined in accordance with the 1973 Endangered Species Act and published in the federal Register.

Touring skiers and skate skiers: Includes people who utilize skate skis and traditional Nordic skis, and who are away from the highway system but seek flatter terrain (i.e. valley bottoms, trails, etc).

Units: Are subunits of the permit area.

Wilderness: Areas that Congress has designated as part of the National Wilderness Preservation System.

Winter Motorized users: People that use motorized equipment for access and transport for winter activities such as heli-skiing and snowmachining.

Yurt: A semi-permanent winter tent structure.

List of Acronyms

ADFG	Alaska Department of Fish and Game
ANCSA	Alaska Native Claims Settlement Act
AWMHA	Alaska Wilderness and Mountain Hut Association
CEQ	Council of Environmental Quality
CNF	Chugach National Forest
CO	carbon monoxide
CPG	Chugach Powder Guides
CZMA	Coastal Zone Management Act
DLP	defense of life and property
Draft EIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
Final EIS	Final Environmental Impact Statement
Forest Service	United State Department of Agriculture-Forest Service
HC	hydrocarbons
NEPA	National Environmental Policy Act
NF	National Forest
NFS	National Forest System
NO	nitric oxides
NPS	National Park Service
Revised Forest Plan	Chugach National Forest Revised Land and Resource Management Plan
ROD	Record of Decision
USDA	United State Department of Agriculture
USFWS	United States Fish and Wildlife Service

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