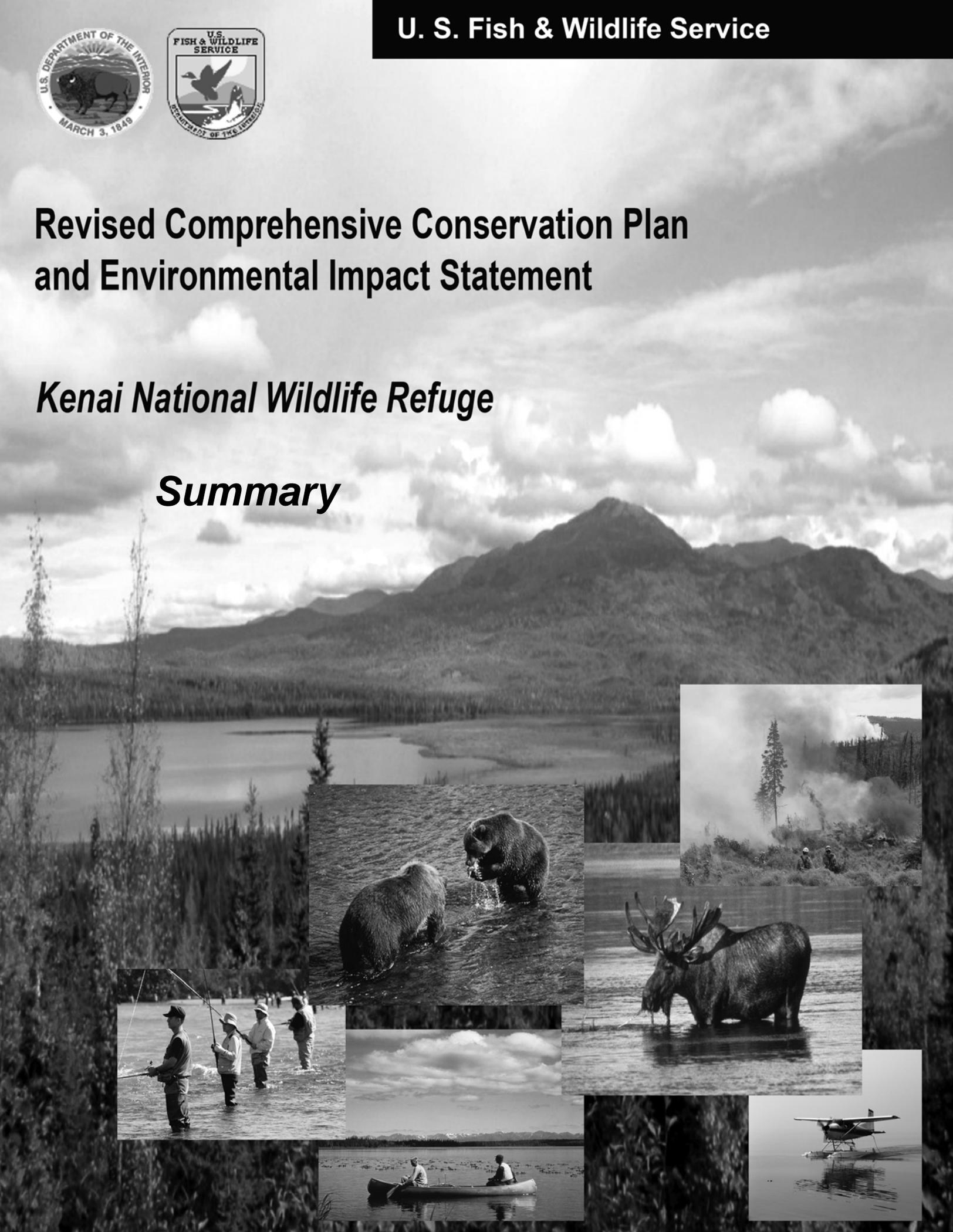




Revised Comprehensive Conservation Plan and Environmental Impact Statement

Kenai National Wildlife Refuge

Summary





U.S. Fish and Wildlife Service Mission Statement

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.



National Wildlife Refuge Mission Statement

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

—National Wildlife Refuge System Improvement Act of 1997

The comprehensive conservation plan details program planning levels that are substantially greater than current budget allocations and, as such, is for strategic planning and program prioritization purposes only. This plan does not constitute a commitment for staffing increases or funding for future refuge-specific land acquisitions, construction projects, or operational and maintenance increases.

Cover photos from Kenai National Wildlife Refuge Image Library

Summary

Final Revised Comprehensive Conservation Plan and Environmental Impact Statement

Kenai National Wildlife Refuge

August 2009

Prepared by:

U.S. Fish and Wildlife Service

Region 7

**Kenai National Wildlife Refuge
2139 Ski Hill Road
P.O. Box 2139
Soldotna, Alaska 99669-2139**

**Alaska Regional Office
Division of Conservation Policy & Planning
1011 East Tudor Road, MS-231
Anchorage, Alaska 99503**

This page intentionally left blank.



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Regional Office, National Wildlife Refuge System-Alaska
Division of Conservation Planning & Policy
1011 East Tudor Road
Anchorage, Alaska 99503
(907) 786-3357

Dear Reader:

This is a summary of the Revised Comprehensive Conservation Plan (Plan) and Environmental Impact Statement (EIS) for the Kenai National Wildlife Refuge that will guide management of the Refuge for the next 15 years. The Plan revises the Refuge's original comprehensive conservation plan prepared in 1985. It outlines five management alternatives, including our preferred alternative, addresses issues raised during public scoping, and presents our evaluation of the impacts associated with implementing each alternative.

The Plan was published in two volumes. Volume one contains the background, issues, and analysis. Volume two contains the supporting appendices.

The Plan incorporates changes based on comments received on the Draft Plan. Those comments and our responses are presented in Volume 2 Appendix D. Most comments required only that we clarify or make minor corrections to the text. Others were more involved. For example Objective 2.9 was re-written to remove the population objectives for Dall sheep and mountain goats in response to concerns expressed by the State of Alaska. Another change was to propose a change in regulations to allow the Refuge Manager to grant special use permits, for airplane access to normally closed lakes, to successful applicants in the State's limited drawing hunt program.

Most people will be unaffected by changes in Refuge management. For example, there will be no changes to how dog mushing activities can be performed on the Refuge.

Public involvement in the planning process is essential for development of an effective plan. While there will be no formal public review of this final Plan and EIS, comments on the plan will be considered until October 19, 2009. Comments should be specific, addressing merits of the alternatives and adequacy of the analysis. We will consider these comments as we prepare the Record of Decision. The Record of Decision will complete the comprehensive conservation planning process for Kenai National Wildlife Refuge.

You may view the Plan or the Summary of the Plan online at:

<http://www.r7.fws.gov/nwr/planning/plans.htm> or obtain a compact disk with both versions.

Comments and requests for copies of the Plan, the Summary, or a compact disk with both should be directed to:

Peter Wikoff, Planning Team Leader
U.S. Fish & Wildlife Service
1011 E. Tudor Road, MS-231
Anchorage, AK 99503
Phone: (907) 786-3357
Email: fw7_kenai_planning@fws.gov

Requests for further information about the Refuge should be directed to:

Refuge Manager
Kenai National Wildlife Refuge
2139 Ski Hill Road
P.O. Box 2139
Soldotna, Alaska 99669-2139
Phone: (907) 262-7021
Email: kenai@fws.gov

*Thank you for participating in our planning process!
Your comments will help us prepare a better plan for the future of Kenai Refuge.*

This page intentionally left blank.

Table of Contents

1.	Introduction.....	1
1.1.	Planning for the Future	1
1.2.	What is a Comprehensive Conservation Plan?.....	1
1.3.	Plan Contents	1
1.4.	Planning Context.....	2
1.4.1	The National Wildlife Refuge System.....	2
2.	Kenai National Wildlife Refuge	3
2.1.	Roots in History	3
2.2.	“Alaska in Miniature”	3
2.2.1	Physical Environment	3
2.2.2	Biological Environment	3
2.2.3	Human Uses	4
2.2.4	Special Resource Values.....	5
2.2.5	Special Designated Areas	6
2.3.	Refuge Vision, Purposes, Goals, and Objectives.....	13
2.3.1	Vision Statement.....	13
2.3.2	Refuge Purposes.....	13
2.3.3	Refuge Purposes, Goals, and Objectives	14
3.	The Planning Process.....	29
3.1.	Preplanning	29
3.2.	Initiate Public Involvement and Scoping.....	29
3.3.	Determine Significant Issues	29
3.4.	Develop and Analyze Alternatives	30
3.5.	Prepare Draft Plan and Environmental Impact Statement	30
3.6.	Prepare and Adopt a Final Plan and Environmental Impact Statement.....	30
3.7.	Implement Plan, Monitor, and Evaluate	30
3.8.	Review and Revise Plan	30
4.	Significant Planning Issues	31
4.1.	Issue 1 – How will the Refuge address large-scale habitat changes and the use of fire?.....	31
4.2.	Issue 2 – How will the Refuge manage existing facilities for public use while ensuring natural resource protection?.....	31
4.3.	Issue 3 – How will the Refuge enhance wildlife-dependent recreation opportunities?.....	31
4.4.	Issue 4 – How will the Refuge manage increasing public use to ensure protection of resources and visitor experience?.....	31
4.5.	Issue 5 – How will the Refuge balance motorized access with protection of resources and visitor experiences?.....	32
5.	Alternatives	33
5.1.	Elements Common to All Alternatives.....	33
5.2.	Management Direction Common To All Alternatives	33
5.2.1	Beetle Kill Trees/Fire Safety	33
5.2.2	Cultural Resources Management	33
5.2.3	Existing Oil and Gas Units	33

5.2.4	Integrated Research and Monitoring.....	34
5.2.5	Kenai River Scenic Float Trip Guides	34
5.2.6	Land Management Training Facility	34
5.2.7	Law Enforcement.....	34
5.2.8	Moose Range Meadows Non-Development Easement.....	34
5.2.9	Skilak Wildlife Recreation Area.....	34
5.2.10	Subsurface Entitlements to Minerals	34
5.2.11	Visitor Center.....	35
5.2.12	Wildlife/Habitat Restoration.....	35
5.3.	Alternative A. Current Management	35
5.3.1	General Management Direction.....	35
5.3.2	Management Categories.....	47
5.3.3	Management Direction Identified By Issue	48
5.3.4	Funding and Personnel Requirements	52
5.4.	Alternative B.....	54
5.4.1	General Management Direction.....	54
5.4.2	Management Categories.....	54
5.4.3	Management Direction Identified By Issue	54
5.4.4	Funding and Personnel Requirements	64
5.5.	Alternative C.....	69
5.5.1	General Management Direction.....	69
5.5.2	Management Categories.....	69
5.5.3	Management Direction Identified By Issue	69
5.5.4	Funding and Personnel Requirements	73
5.6.	Alternative D.....	74
5.6.1	General Management Direction.....	74
5.6.2	Management Categories.....	74
5.6.3	Management Direction Identified By Issue	74
5.6.4	Funding and Personnel Requirements	82
5.7.	Alternative E — The Preferred Alternative	83
5.7.1	General Management Direction.....	83
5.7.2	Management Categories.....	83
5.7.3	Management Direction Identified By Issue	83
5.7.4	Funding and Personnel Requirements	90
6.	Environmental Consequences.....	92
6.1.	Introduction.....	92
6.2.	Definition of Terms	92
6.2.1	Impact Type	92
6.2.2	Duration of Impact.....	93
6.2.3	Intensity of Impact	93
6.2.4	Context or Scale of Impact	93
6.3.	Key Indicators and Assumptions	94
7.	Evaluation of the Alternatives	97
7.1.	Evaluation Criteria.....	97
8.	Summary of Public Comment.....	99
8.1.	Summary of Issues.....	99

8.1.1	Climate	99
8.1.2	Cultural Resources	99
8.1.3	General Ecological.....	99
8.1.4	Fisheries/Aquatics.....	100
8.1.5	General (No Natural Resource)	100
8.1.6	Geology and Minerals.....	100
8.1.7	Infrastructure.....	100
8.1.8	Legal and Regulatory (Incl. Process).....	101
8.1.9	Land Designation and Management	101
8.1.10	Recreation	102
8.1.11	Socioeconomics	102
8.1.12	Soil Resources.....	103
8.1.13	Transportation	103
8.1.14	Vegetation and Fire.....	104
8.1.15	Wildlife and Wildlife Habitat	105
8.1.16	Water Resources	106
8.2.	Geographic Representation.....	106
8.3.	Organizational Affiliation.....	106
8.4.	Response Type.....	107
8.5.	Response to Comments.....	107
9.	References.....	108

List of Figures

Figure 1.	National Wildlife Refuges in Alaska.....	2
Figure 2.	Location of Kenai National Wildlife Refuge	9
Figure 3.	Special Resource Values	10
Figure 4.	Special Designated Area.....	11
Figure 5.	Alternative A (Current Management) - Management Categories	55
Figure 6.	Alternative A (Current Management) - Fire Management.....	56
Figure 7.	Alternative A (Current Management) - Airplane Access to Lakes in Designated Wilderness North of the Sterling Highway.....	57
Figure 8.	Alternative A (Current Management) - Airplane Access to Lakes in Designated Wilderness South of the Sterling Highway.....	58
Figure 9.	Alternative A (Current Management) - Airplane Access to Chickaloon Flats	59
Figure 10.	Alternative B - Management Categories	65
Figure 11.	Alternative B - Fire Management.....	66
Figure 12.	Alternative B - Aircraft Access to Lakes in Designated Wilderness North of the Sterling Highway.....	67
Figure 13.	Alternative B - Aircraft Access to Chickaloon.....	68
Figure 14.	Alternative C – Fire Management	75
Figure 15.	Alternative C – Airplane Access to Lakes in Designated Wilderness North of the Sterling Highway.....	76
Figure 16.	Alternative C – Airplane Access to Lakes in Designated Wilderness South of the Sterling Highway.....	77
Figure 17.	Alternative D - Fire Management.....	85

Figure 18. Alternative D - Airplane Access to Lakes in Designated Wilderness
North of the Sterling Highway..... 86

Figure 19. Alternative D - Airplane Access to Lakes in Designated Wilderness
South of the Sterling Highway..... 87

Figure 20. Alternative D - Chickaloon Flats Airplane Access 88

List of Tables

Table 1. Comparison of the Alternatives Identified by Issue and Management Action..... 36

Table 2. Differences Between Traditional and Minimal Management Under
Alternative A..... 48

Table 3. Summary Comparison of the Effects of Implementing the Alternatives..... 95

Table 4. Evaluation of the Alternatives Based on Significant Planning Issues 98

Table 5. Geographic Representation of Response by State 106

Table 6. Number of Responses/Signatures by Organizational Affiliation 107

Table 7. Number of Responses/Signatures by Response Type..... 107

1. Introduction

1.1. Planning for the Future

This is a summary of the Final Revised Comprehensive Conservation Plan (Plan) for the Kenai National Wildlife Refuge (Kenai Refuge, the Refuge). The Refuge's original Plan, developed in 1985, provided broad policy guidance and established long-term goals for U.S. Fish and Wildlife Service (Service) management of the Refuge. As directed by Section 304(g) of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA), the Refuge System Administration Act of 1966 (as amended by the National Wildlife Refuge System Improvement Act of 1997), and the National Environmental Policy Act of 1969 (NEPA) as amended, Kenai Refuge's Plan is being revised to guide the management direction of the Refuge for the next 15 years. Revising the Plan allows us to incorporate changing public interests, new scientific information, and revised management direction.

1.2. What is a Comprehensive Conservation Plan?

In general, a comprehensive conservation plan serves to do the following:

- Ensure that the purposes for which the refuge was established and the mission of the Refuge System are being fulfilled
- Ensure that national policy is incorporated into the management of the Refuge
- Provide continuity in refuge management
- Ensure that opportunities are available for interested parties to participate in the development of management direction
- Provide a systematic process for making and documenting refuge decisions
- Establish a long-term vision for the refuge
- Establish management goals and objectives
- Define compatible uses
- Provide a basis for evaluating accomplishments
- Provide a basis for budget requests

1.3. Plan Contents

The Kenai Refuge's Plan describes current management (Alternative A) plus four additional alternatives including the Service's Preferred Alternative (Alternative E) for managing the Refuge. Each alternative describes how it would address management concerns and public issues. The Plan includes a description of the Refuge's existing physical, biological, and socioeconomic environments, and an assessment of the environmental consequences of implementing each of the alternatives.

1.4. Planning Context

The mission of the U.S. Fish and Wildlife Service is:

Working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

1.4.1 **The National Wildlife Refuge System**

The National Wildlife Refuge System (System, Refuge System) comprises more than 96 million acres of Federal lands, which encompass more than 545 national wildlife refuges, thousands of small wetlands, and other special management areas. Alaska contains 16 national wildlife refuges (Figure 1). These refuge lands contain a wide range of habitats with varied terrain that includes mountains, glaciers, tundra, grasslands, wetlands, lakes, woodlands, and rivers. Together, the 16 refuges comprise 76.8 million acres and constitute about 80 percent of the Refuge System.

The mission of the National Wildlife Refuge System is:

To administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Administration Act, as amended).



Figure 1. National Wildlife Refuges in Alaska

2. Kenai National Wildlife Refuge

2.1. Roots in History

Franklin D. Roosevelt established the Kenai National Moose Range (Moose Range) on December 16, 1941, for the purpose of “...*protecting the natural breeding and feeding range of the giant Kenai moose on the Kenai Peninsula, Alaska, which in this area presents a unique wildlife feature and an unusual opportunity for the study, in its natural environment, of the practical management of a big-game species that has considerable local economic value...*” (Executive Order 8979).

ANILCA substantially affected the Moose Range by modifying its boundaries and broadening its purposes from moose conservation to protection and conservation of a broad array of fish, wildlife, habitats, other resources, and educational and recreational opportunities. ANILCA also redesignated the Moose Range as the Kenai National Wildlife Refuge (Figure 2), added nearly a quarter of a million acres of land, and established the 1.32-million acre (534,349 hectare) Kenai Wilderness.

2.2. “Alaska in Miniature”

2.2.1 *Physical Environment*

The Kenai Mountains within the eastern third of the Refuge vary in elevation from 3,000 to 6,600 feet (914–2,012 meters) and are heavily glaciated in many of the higher elevation areas. The largest glaciated area, the Harding Ice Field, covers more than 1,100 square miles (2,849 square kilometers) and lies within the boundaries of both the Refuge and adjoining Kenai Fjords National Park. Located within the icefield, and on the Refuge, is Truuli Peak, the highest peak on the Kenai Peninsula at 6,600 feet (2,012 meters).

The Kenai Lowlands make up approximately two-thirds of the Refuge and contain thousands of lakes and boreal forest covering low hills, ridges, and muskeg. The largest two lakes on the Kenai Peninsula, Tustumena (73,000 acres [29,542 hectares]) and Skilak (25,000 acres [10,117 hectares]) are on the Refuge.

The Kenai River is the dominant river system on the Refuge and drains about 2,148 square miles (5,563 square kilometers). Approximately 54 percent of its watershed is on the Refuge, with 37 percent on the Chugach National Forest and the remainder on State of Alaska or private land. The four major tributaries providing the most water volume and fish habitat to the Kenai River system are the Funny, Moose, Killey, and Russian rivers. The Chickaloon, Swanson, and Kasilof rivers are three other significant systems contained wholly or mostly within the Refuge.

2.2.2 *Biological Environment*

More than 175 species of mammals and birds occur on the Refuge during at least part of the year. ANILCA mandated the conservation of all fish and wildlife populations and habitats in their natural diversity but made specific mention of moose, bear (brown, grizzly, and black bear), mountain goats, Dall sheep, wolves and other furbearers, salmonids and other fish, and

waterfowl and other migratory and nonmigratory birds. Bald eagles, trumpeter swans, and common loons are frequently observed bird species on lakes and rivers of the Refuge. Slate-colored junco, myrtle warbler, orange-crowned warbler, Swainson's thrush, boreal chickadee, ruby-crowned kinglet, gray jay, alder flycatcher, and American robin are common breeding landbirds in Refuge forests. Twenty species of fish are documented on the Refuge with salmon (Chinook, coho, sockeye, and pink) being most important from ecological, recreational, and off-Refuge commercial viewpoints. Anglers travel from all around the world to the Kenai area each year to fish for salmon, trout, and Dolly Varden. No reptiles and only one species of amphibian is found on the Kenai: the hardy wood frog, which survives long winters by burrowing into mud that will ultimately freeze for many months before spring thaw.

Vegetation on the Refuge is diverse and rich, with 484 vascular plants, 97 fungal, 35 lichen, and 90 moss species catalogued to date. Most of the vegetation falls into a few land cover types; including alpine tundra, estuarine or riparian areas, black spruce forest and peat bog, hardwood and mixed spruce-hardwood forest, black spruce forest, and white spruce forest. Wildfire is an important natural landscape process in forests dominated by black spruce. Spruce bark beetle and, to a lesser extent, wildfire, are important natural processes in forests dominated by white spruce. Avalanches on steep slopes of the Kenai Mountains, receding glaciers, and drying wetlands in the Kenai Lowlands also continue to influence the Refuge's natural landscape.

2.2.3 Human Uses

Approximately 1.2 million people travel through the Kenai Refuge each year on the Sterling Highway, and an estimated 300,000 visitors spend extended periods of time on the Refuge enjoying a variety of outdoor activities, including fishing, camping, hunting, hiking, wildlife viewing and photography, and canoeing. There are now also more than 50,000 year-round residents on the Kenai Peninsula.

As the seasons change, so do the dominant human uses of the Refuge. Intense visitation from visitors enjoying fishing, hiking, sightseeing, and camping is most obvious in spring, summer, and fall. Hunting occurs throughout the year but is predominantly a fall activity. When winter snows come, Refuge users turn to crosscountry skiing, snowshoeing, trapping, ice fishing, and snowmachine travel once portions of the Refuge have been opened to such use. Regulations allow for more than half of the Refuge to be opened to snowmachine use from December 1 through April 30 each winter, once the Refuge manager has determined adequate snowfall exists to protect underlying vegetation and soils.

Hundreds of individuals make a portion of their livelihood directly off the Refuge, predominantly by being permitted guides or outfitters. Thousands of other Alaskans benefit indirectly as they take advantage of the economic input of the Refuge's many visitors. Still others, such as those in the commercial fishing industry, benefit from the Refuge providing the majority of the critical salmon spawning and rearing habitat for Upper Cook Inlet salmon. Finally, oil and gas development within the Refuge has provided a

significant number of jobs and economic stability to the Region for nearly five decades.

2.2.4 Special Resource Values

Public comments received during scoping indicated that people value the Refuge's wilderness character, its accessibility, and the role it plays in conserving fish, wildlife, and their habitats. Some people also mentioned specific places that they valued (Figure 3), including:

Chickaloon River Watershed and Estuary

The Chickaloon watershed and associated estuary, located on the Turnagain Arm of upper Cook Inlet, is the major waterfowl and shorebird migratory staging area on the Kenai Peninsula and the only estuary on the Refuge. Protection of the Chickaloon Flats was the major reason the Refuge's northeastern boundary was extended to include most of the Chickaloon and Indian Creek watersheds.

Harding Icefield

The Harding Icefield is one of four major ice fields in the United States. Its glaciers continue to carve valleys through the Kenai Mountains and feed rivers throughout the Peninsula; as a result of global climate change; however, the icefield is receding.

Kenai River and its Tributaries

The Kenai River, together with its tributaries—the Moose, Funny, Killey, and Russian rivers—is the largest drainage system on the Kenai Peninsula. The Kenai River is important to the entire Refuge ecosystem, including the Cook Inlet salmon fishery. The Kenai River provides priceless spawning and rearing habitat for millions of salmon.

Lowland Lakes System

The numerous lakes located throughout the northern lowlands are a unique geologic feature that provides a variety of aquatic habitats for Refuge wildlife. The Swanson River and Swan Lake canoe routes are the only nationally designated trails in the Alaska refuge system and annually provide thousands of Refuge visitors the opportunity to enjoy this mix of forest and wetland habitats and their associated wildlife.

Skilak Wildlife Recreation Area

The Skilak Loop area was first recognized as a unique recreation destination in 1958 when it, along with the Chickaloon Flats and Skilak-Tustumena Benchland, was removed from potential oil and gas leasing. Today, the Skilak Wildlife Recreation Area—which contains a variety of habitats, wildlife species and scenic vistas that are road accessible to Refuge visitors—is recognized as a special area that provides opportunities for wildlife viewing, environmental education, interpretation, photography, and other non-conflicting wildlife-dependent recreation activities.

Tustumena Lake and its Watershed

Tustumena Lake is the largest lake on the Kenai Peninsula and the fifth largest lake in Alaska. This immense glacial lake encompasses approximately 73,000 acres (29,542 hectares), and its Kasilof River drainage is second only to the Kenai River drainage in size. Rich in fisheries, wildlife, wilderness, and historical values, Tustumena Lake is popular with boaters and campers and provides a gateway, via several Refuge trails, for wilderness hikers and hunters to the scenic glacier flats and tundra benchlands located nearby. Historic cabins remain along the lakeshore as a reminder to earlier years of gold mining and trapping in the area. Tustumena Lake and its tributaries are significant contributors to Cook Inlet area commercial, recreation, and personal use sockeye salmon fisheries. Whether visited via boat, horse, airplane, or snowmachine in winter, the Tustumena Lake area provides scenic outdoor wilderness experiences to thousands of Refuge visitors each year.

Tustumena-Skilak Benchlands

This unique ecological area lies between Tustumena and Skilak lakes. It consists of alpine plateaus on the west side of the Kenai Mountains and is home to Dall sheep, caribou, mountain goat, brown and black bear, and moose. It is encompassed by the Andrew Simons Research Natural Area and lies within the Kenai Wilderness established by ANILCA in 1980.

2.2.5 Special Designated Areas

In addition to refuge status, the “special” status of lands within individual refuges may be recognized by additional designations, either legislatively or administratively. Special designation may also occur through the actions of other agencies or organizations. The influence that special designations may have on the management of lands and waters within refuges may vary considerably. Kenai Refuge contains a number of special designated areas (Figure 4).

Legislative Designations

Kenai National Moose Range State Game Refuge

Alaska Statute 16.20.030 provides that “The land areas now included in the National Wildlife Refuge System that are cited in this subsection are designated a State game refuge, and the board shall assign them appropriate names . . . (8) Kenai National Moose Range. . . .” This legislative action has resulted in no specific regulations or follow-up actions.

Kenai River Special Management Area

The Kenai River Special Management Area (KRSMA) was formed as a unit of the Alaska State Parks System by legislative action in 1984. KRSMA encompasses those State lands and waters within the Kenai River watershed from Kenai Lake to Cook Inlet. KRSMA is managed by the Alaska Department of Natural Resources’ Division of State Parks; management includes administering public uses and facilities within the area. Managers issue permits to guides, operate campgrounds and boat launches, and develop and enforce regulations to ensure environmental protection and public safety.

KRSMA borders the Refuge and shares with the Refuge many of the same management objectives and public use responsibilities. While some jurisdictional issues remain unresolved between the Refuge and the KRSMA, a cooperative working relationship between staffs has proved successful in resolving potential management conflicts. The Refuge has a seat on the KRSMA board, which is an advisory body on State Park management issues that reports to the director of State Parks and to the Commissioner of Natural Resources. KRSMA is managed consistent with a management plan that was first completed in 1986 and revised in 1997.

Kenai Wilderness Area

The 1.32 million acre (534,348 hectare) Kenai Wilderness, which was originally designated by Congress through the passage of ANILCA in 1980, consists of three units: the Dave Spencer Unit (187,228 acres [75,768 hectares]), which includes the Swanson River and Swan Lake National Recreation Canoe Trails; the Mystery Creek Unit (46,086 acres [18,649 hectares]); and the Andrew Simons Unit (1,087,094 acres [439,931 hectares]). The Kenai Wilderness is administered in accordance with applicable provisions of the Wilderness Act, ANILCA, and other laws and regulations governing management of the National Wildlife Refuge System.

National Recreation Canoe Trail System

The Kenai Refuge Canoe Trail System was originally constructed in the 1960's for the enjoyment of recreationists seeking a remote wilderness experience. As use increased in the 1970's, the need was recognized to formally set aside the system as a unit of the National Wilderness Preservation System, not only for wilderness recreation, but also to protect the habitat for wilderness wildlife including trumpeter swans, loons, wolves, and brown bears. In 1980, the ANILCA created a new wilderness unit encompassing the Refuge Canoe Trail System. In 1981, the system received national recognition becoming part of the National Recreation Trails System. The Kenai Refuge Canoe Trail System is separated into two areas: the Swanson River and Swan Lake Routes. Both are located in the Refuge's northern lowland spruce and birch forest habitat. These canoe routes consist of lakes and rivers connected by water or land portages creating a variety of trip options.

Research Natural Areas

The Service administers 210 Research Natural Areas (RNAs) on refuges nationwide, comprising a total of 1,955,762 acres. Kenai Refuge administers 5 of the 16 RNAs designated in Alaska, including the 830,000-acre Andrew Simons, 10-acre Bedlam Lake, 20-acre Bottinentnin Lake, 20-acre Nikolai Bay, and 20-acre Skilak Lake units. The current status of the Bottinentnin RNA is unclear; it may have been partially destroyed or degraded when the Sterling Highway was realigned.

Administrative Designations

Moose Research Center

The Kenai Moose Research Center (MRC) is a world-renowned, one-of-a-kind facility and continues to play an important role in the understanding of the nutritional, physiological, and ecological aspects of moose and other ungulates. The facility was established in 1966 as a joint effort by the U.S. Fish and Wildlife Service (Service) and the Alaska Department of Fish and Game (ADF&G). The original memorandum of agreement, signed in 1966, was updated in 2004.

The MRC is located in the Kenai Lowlands in the northern part of the Kenai Refuge and consists of four one-mile square enclosures, two residence cabins, a workshop, a generator shed, a gas shed, a small field laboratory, and a barn and animal handling facility. The MRC was originally established to conduct research on the nutritional carrying capacity of typical Kenai Peninsula moose ranges and included research on the nutritional requirements and physiology of moose, the effects of habitat manipulation and browsing on moose-range carrying capacity, and the development of methods for measuring and monitoring moose-habitat carrying capacity.

Research has since broadened to include the development and testing of new immobilizing drugs on moose, the testing of moose capture and handling techniques, development of physical and physiological indices of moose condition and health, and the assessment of the genetic variability and heritability of physical traits (e.g., antler conformation) of moose. The MRC has also expanded its nutritional and physiological research to include caribou and now supports a research herd of approximately 25 animals derived from Nelchina caribou herd stock.

Skilak Wildlife Recreation Area

The Skilak Loop area was first recognized as a unique recreation destination in 1958 when it, along with the Chickaloon Flats and Skilak-Tustumena Benchlands, was removed from potential oil and gas leasing. Today, the 44,000 acre Skilak Wildlife Recreation Area is one of the most heavily used areas, if not the most heavily used area, of the Refuge due to its close proximity to population centers, easy access, and diversity of public use facilities provided in a natural setting abundant with wildlife. Consumptive and nonconsumptive recreational opportunities are managed for including camping, cross-country skiing, environmental education, hiking, hunting, nature photography, sportfishing, and snowshoeing; and the Refuge's first administratively designated wildlife travel corridor is found within the area along the north shore of Skilak Lake. This one-half mile wide corridor, from Lower Skilak Lake Campground to the outlet of the Kenai River into Skilak Lake, will be free of development except for the existing Lower Skilak Lake Campground and Upper Skilak Lake Campground which will remain as currently designed, and maintained to facilitate continued public use. See the Kenai National Wildlife Refuge Skilak Wildlife Recreation Area Revised Final Management Plan for more information...

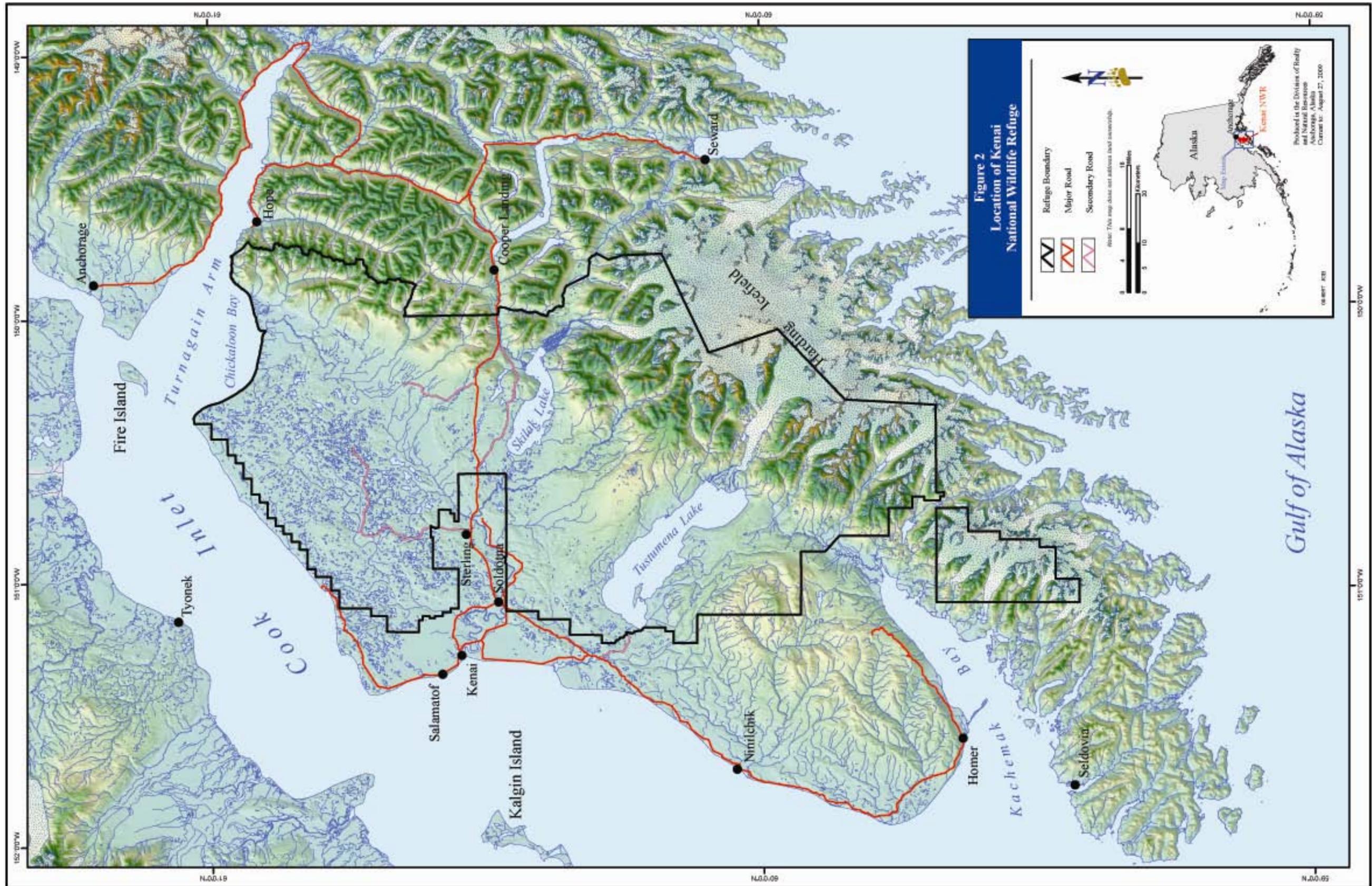


Figure 2: Location of Kenai NWR

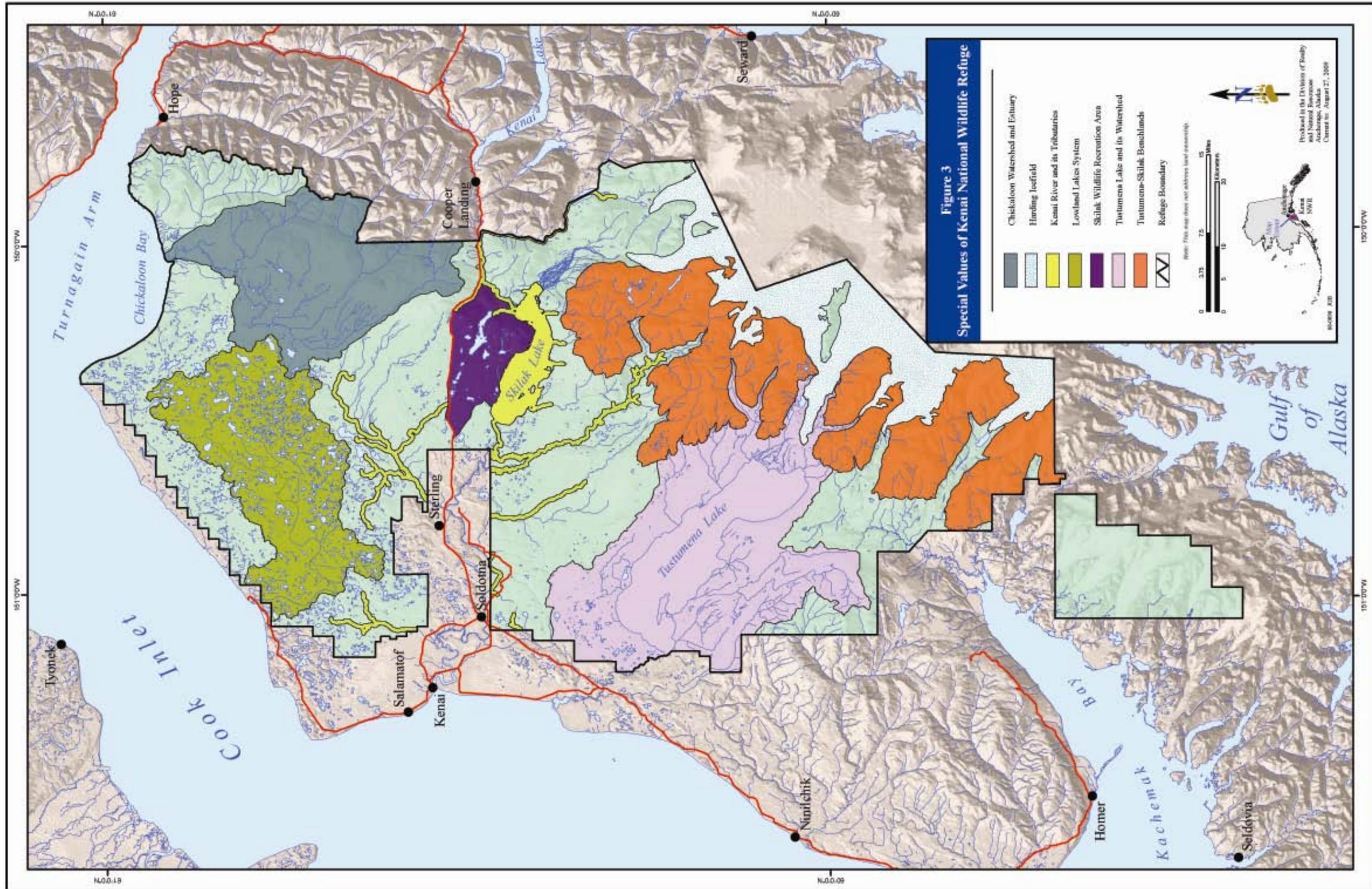


Figure 3: Special Values

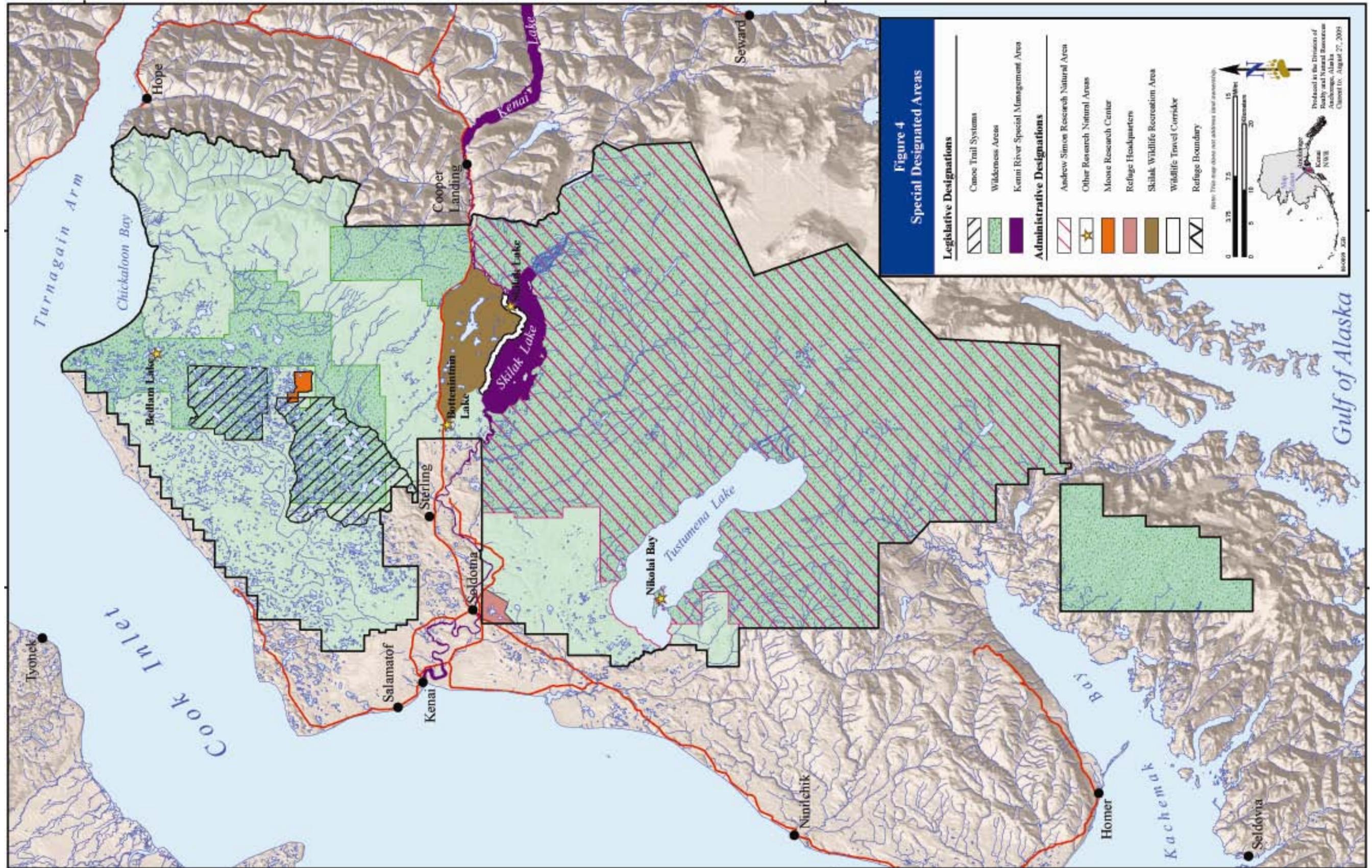


Figure 4: Special Designated Areas

Back of figure 4

2.3. Refuge Vision, Purposes, Goals, and Objectives

2.3.1 Vision Statement

Kenai Refuge staff developed the following statement about what they believe the Refuge will be in the future, considering the mission of the Refuge System, the specific purposes of the Refuge and Wilderness Act, and other relevant Service mandates:

Vision Statement

The Kenai National Wildlife Refuge will serve as an anchor for biodiversity on the Kenai Peninsula despite global climate change, increasing development, and competing demands for Refuge resources. Native wildlife and their habitats will find a secure place here, where Refuge staff and partners work together using the best science and technology available to ensure that biological health is maximized and human impacts are minimized.

Visitors will feel welcomed and safe by means of a wide variety of wildlife-dependent recreation opportunities, facilities, and interpretive and educational programs that encourage informed and ethical use of the Refuge's natural resources. The Refuge will achieve excellence in land, water, and Wilderness stewardship; and—with careful planning, forethought, and human determination—an enduring legacy of abundant plant, fish, and wildlife populations will be ensured for people to enjoy today and into the future for this phenomenal land we call "The Kenai."

2.3.2 Refuge Purposes

ANILCA sets out some of the purposes for each national wildlife refuge in Alaska. It's purposes for the Kenai Refuge are described in Section 303(4)(B) of the Act. These purposes set the management priorities for the Refuge.

ANILCA purposes for the Refuge are as follows (unless otherwise noted):

- (i) to conserve fish and wildlife populations and habitats in their natural diversity, including but not limited to moose, bears, mountain goats, Dall sheep, wolves and other furbearers, salmonoids and other fish, waterfowl and other migratory and nonmigratory birds;
- (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
- (iii) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge;
- (iv) to provide in a manner consistent with subparagraphs (i) and (ii), opportunities for scientific research, interpretation, environmental education, and land management training; and

(v) to provide, in a manner compatible with these purposes, opportunities for fish and wildlife-oriented recreation.

The Wilderness Act of 1964 (Pub. L. 88-577) provides the following purposes for the Kenai Wilderness Area:

- (i) to secure an enduring resource of wilderness;
- (ii) to protect and preserve the wilderness character of areas within the National Wilderness Preservation System; and
- (iii) and to administer [the areas] for the use and enjoyment of the American people in a way that will leave them unimpaired for future use and enjoyment as wilderness.

2.3.3 ***Refuge Purposes, Goals, and Objectives***

Purpose (i): To conserve the fish and wildlife populations and habitats in their natural diversity, including but not limited to moose, bear, mountain goats, Dall sheep, wolves and other furbearers, salmonoids and other fish, waterfowl and other migratory and nonmigratory birds.

GOAL 1: Research—Increase the Service’s knowledge of fish and wildlife populations, their habitats, and their interrelationships.

Objective 1.1: Natural Processes/Disturbance Regimes—Continue long-term monitoring of vegetative responses to fire at: Hakala plots (every 5 years), Fire Monitoring Handbook plots (every 3–5 years), and Forest Inventory and Analysis plots (every 10 years).

Objective 1.2: Capacity Building—Continue to support the research plans identified and/or developed by the Interagency Brown Bear Study Team (IBBST).

Objective 1.3: Natural Processes/Disturbance Regimes—Continue annual monitoring of snowshoe hare populations on five established sites.

Objective 1.4: Capacity Building—Actively seek to fund at least one cooperative fire research project every three to five years on the Refuge to maintain established working relationships with the fire science community (universities, research stations and other agencies) and to improve the working knowledge of Refuge fire managers and ecologists in boreal ecosystems.

Objective 1.5: Biological Inventories—Within two years of the Plan’s approval, complete the ongoing population assessment of steelhead trout in the Kasilof River watershed.

Objective 1.6: Natural Processes/Disturbance Regimes—Within two years of Plan’s approval, establish five permanent stations in peatlands to measure the annual accumulation rate of peat moss.

Objective 1.7: Supporting Geographic Information System (GIS) Databases—Within two years of Plan’s approval, develop a supervised

classification of vegetation communities on the Kenai Peninsula from LANDSAT imagery (30-meter resolution).

Objective 1.8: Supporting GIS Databases—Within two years of Plan’s approval, complete the archiving of all historical fisheries and limnological information in a database that will be compatible with the Refuge’s GIS.

Objective 1.9: Capacity Building—Within two years of Plan’s approval, enhance the Peninsula-wide meteorological station network by increasing the number and quality of stations in cooperation with interagency partners.

Objective 1.10: Capacity Building—Within two years of Plan’s approval, develop a Research Natural Area Management Plan. The plan will include discussions of related policy and law and identify goals and objectives to incorporate the designated areas on the Refuge into an integrated ecological monitoring and research program.

Objective 1.11: Supporting GIS Databases—Within three years of Plan’s approval, complete fuels classification mapping to meet national fire plan goals for the LANDFIRE, Fire Regime/Condition Class (FRCC), and Fire Program Analysis (FPA) projects.

Objective 1.12: Biological Inventories—Within three years of Plan’s approval, complete a population assessment of rainbow trout in the Kenai River below Skilak Lake.

Objective 1.13: Natural Processes/Disturbance Regimes—Within five years of Plan’s approval, improve precision by 25 percent on estimates of historical wildfire rates in black and white spruce.

Objective 1.14: Natural Processes/Disturbance Regimes—Within five years of Plan’s approval, improve precision by 25 percent on estimates of historical bark beetle outbreaks in white and Lutz spruce.

Objective 1.15: Supporting GIS Databases—Within five years of Plan’s approval, complete a high-resolution Digital Elevation Model (DEM) of the Refuge.

Objective 1.16: Capacity Building—Within five years of Plan’s approval, re-establish a remote-sensing, lightning detection capability for the Kenai Peninsula.

Objective 1.17: Biological Inventories—Within seven years of Plan’s approval, complete a population assessment of lake trout in Hidden Lake.

Objective 1.18: Biological Inventories—Within 10 years of Plan’s approval, complete a comprehensive inventory of vascular flora, vertebrate fauna, and selected invertebrate taxa as part of the Long-Term Ecological Monitoring Program (LTEMP).

Objective 1.19: Capacity Building—Within 15 years of Plan’s approval, establish a nonprofit research institute to establish and manage research opportunities on the Refuge.

Objective 1.20: Supporting GIS Databases—Within two years of funding, convert all historic aerial photography into geo-referenced, orthorectified digital images.

Objective 1.21: Supporting GIS Databases—Within two years of funding, complete a spatially-explicit soil survey.

Objective 1.22: Natural Processes/Disturbance Regimes—Within two years of funding, initiate research to estimate annual variation in marine-derived nutrient input and assess effects on terrestrial wildlife and habitat.

Objective 1.23: Biological Inventories—Within four years of funding, enter into cooperative studies, with ADF&G, that may remain necessary to assess populations of early-run Chinook salmon in the Kenai River. Some of these tasks are underway or have been completed.

Objective 1.24: Biological Inventories—Within five years of funding, initiate four weir projects to enumerate anadromous fish populations returning to the Swanson River, Chickaloon River, Big Indian Creek, and Little Indian Creek.

Objective 1.25: Natural Processes/Disturbance Regimes—Within five years of funding, estimate new rate trajectories for the wildfire regime, spruce bark beetle outbreaks, wetland drying, water budget, carbon budget, and biota redistribution in response to climate change predictions during the next 50 to 200 years.

Objective 1.26: Data Sharing — Within two years of Plan approval complete a list of opportunities for sharing survey and research data with university, State, and other partners.

GOAL 2: Conservation and Management—Ensure natural diversity and viability of species, habitats, and ecosystems.

Objective 2.1: Habitat and Population Management—Continue to develop and maintain partnerships with the public, other governmental agencies, and private organizations to increase the ability of the Refuge and those agencies with management responsibilities that overlay the Refuge to conserve fish, wildlife, and their habitats.

Objective 2.2: Habitat and Population Management—Continue cooperative and independent efforts to protect and restore riparian habitats along the Kenai River (including addressing human waste).

Objective 2.3: Habitat and Population Management—Continue to maintain a rehabilitation program for injured bald eagles, owls, and other raptors.

Objective 2.4: Monitoring—Continue contributions to regional and national monitoring efforts, including but not limited to the Christmas Bird Count (CBC), Alaska Landbird Monitoring System (ALMS), and Breeding Bird Survey (BBS).

Objective 2.5: Habitat and Population Management—Continue to work with the oil and gas industry to remediate and restore well pads, pipeline corridors, and roads to their natural condition within two years of well plugging and abandonment.

Objective 2.6: Monitoring—At five-year intervals after Plan’s approval or after a significant natural perturbation, monitor landscape changes of both vegetation and physical features using pixel-by-pixel change analysis (30-meter resolution) from supervised classification of LANDSAT imagery.

Objective 2.7: Monitoring—At five-year intervals after Plan’s approval, assess and report fire occurrence, fire cause, fire behavior, and fire effects trends using the best available technology to provide fire managers the information necessary to revise the Refuge’s Fire Management Plan.

Objective 2.8: Habitat and Population Management—Maintain caribou populations at or below two caribou per square kilometer for 10 years after Plan’s approval.

Objective 2.9: Monitoring—Maintain Dall sheep and mountain goat their natural diversity, consistent with natural habitat changes and natural variation within three count areas (Twin Lakes 355, Indian Creek 356, and Tustumena Glacier 357)] within Refuge boundaries. The Refuge will coordinate the establishment of sheep and goat population goals with ADF&G. In addition, the Refuge will work cooperatively with Chugach National Forest, Kenai Fjords National Park, and ADF&G to ensure that a Peninsula-wide survey is completed every three years.

Objective 2.10: Habitat and Population Management—Within one year of Plan’s approval, initiate a rulemaking process to clearly describe prohibited actions and any exceptions to the non-development easement held on much of the Kenai riverfront property in the Moose Range Meadows Subdivision.

Objective 2.11: Monitoring—Within two years of Plan’s approval, develop an interagency program to monitor population trends and/or health of wolves, wolverines, and brown and black bears on the Peninsula.

Objective 2.12: Habitat and Population Management—Within two years of Plan’s approval, revise the 1995 Fisheries Management Plan.

Objective 2.13: Habitat and Population Management—Within two years of Plan’s approval, revise the 1996 Moose Management Plan.

Objective 2.14: Habitat and Population Management—Within two years of Plan’s approval, evaluate historical, current, and potential distributions of marten and red fox populations in the absence of active management, and identify possible actions to enhance habitats or populations on the Refuge.

Objective 2.15: Habitat and Population Management—Within three years of Plan’s approval, complete a Wildfire Monitoring Plan that will include monitoring purposes, goals, objectives, and proposed activities for wildfire, prescribed fire, use of wildland fire, mechanical treatments, hazard fuels, and

wildland-urban interface projects. This monitoring plan will become an amendment or an appendix to the Refuge Fire Management Plan.

Objective 2.16: Habitat and Population Management—Within three years of Plan’s approval, initiate development of a restoration and recreation plan for oil and gas units on the Refuge identified in this and other planning processes.

Objective 2.17: Habitat and Population Management—Within five years of Plan’s approval, complete the development of a Terrestrial and Aquatic Invasive Species Management Plan.

Objective 2.18: Habitat and Population Management—Within five years of Plan’s approval, use prescribed fire or mechanical treatments to maintain (condition class 1) or improve (condition class 2 or 3) the condition class on 2,000 to 4,000 acres of non-Wilderness per year in at least three out of the five years. Use of prescribed fire or mechanical treatments will continue at that rate until the 1996 Moose Management Plan is revised.

Objective 2.19: Monitoring—Within two years of funding, further expand the Long-Term Ecological Monitoring Program (LTEMP) to detect spatial and temporal changes in selected biota, including but not limited to vascular plant community, breeding landbirds, mesocarnivores, selected insect assemblages and exotic, invasive, and injurious species.

Objective 2.20: Climate Change—Within one year of Plan adoption, develop internal policies to emphasize long-term management needs associated with climate change.

GOAL 3: Resource Assessment—Ensure that the integrity of ecological systems is protected and unimpaired for future generations.

Objective 3.1: Resource Assessment—Continue and expand research on abnormal wood frogs to understand the potential cause(s) of their abnormalities.

Objective 3.2: Resource Assessment—Continue and expand research on local bird populations to understand the potential cause(s) of bill abnormalities.

Objective 3.3: Resource Assessment—Continue to work with Alaska Department of Environmental Conservation (ADEC) and industry to monitor, assess, and remediate contaminated sites in existing oil and gas units.

Objective 3.4: Resource Assessment—Within two years of Plan’s approval, evaluate current management practices and infrastructure improvements to ensure that the ecological integrity of the five designated Research Natural Areas on the Refuge are not compromised.

Objective 3.5: Resource Assessment—Within two years of Plan’s approval, complete the development of landscape models at two scales (Refuge-wide

and Peninsula-wide) to evaluate the cumulative effects of natural processes and anthropogenic perturbations on wildlife habitat.

Objective 3.6: Resource Assessment—Within two years of Plan’s approval, complete a Wildlife Inventory and Monitoring Plan that will include statistical benchmarks and/or management action threshold for trust, harvested, and indicator species that are currently monitored. Trust species include but are not limited to fish, wildlife, and plants on Service lands. Indicator species include those specifically highlighted in ANILCA and those chosen for specific research and monitoring programs.

Objective 3.7: Resource Assessment—Within one year of completing an inventory, develop statistical models to explain how biotic and abiotic factors affect the distribution of species and communities at the landscape level.

Objective 3.8: Resource Assessment—Within five years of Plan’s approval and after completion of a Refuge-wide fuels assessment (fire regime and condition class), develop a project plan to evaluate the fire suppression history of the Refuge and adjacent lands on the Kenai Peninsula with emphasis on the suppression of natural ignitions in Wilderness and Limited Fire Management Option areas.

Objective 3.9: Resource Assessment—Within one year of funding, establish one air quality monitoring site within designated Wilderness to measure the concentration of fine (PM 2.5) particles for mass, optical absorption, major and trace elements, organic and elemental carbon, and nitrate; and measure the concentration of PM 10 particles for mass. Equipment and protocols should be consistent with the Interagency Monitoring of Protected Visual Environments (IMPROVE) program.

Objective 3.10: Resource Assessment—Within one year of funding, initiate research to determine the effects of roads within and/or adjacent to the Refuge on local moose, caribou, and brown bear movements and survival—specifically, to identify important crossings and/or high collision areas and recommend appropriate mitigation and management measures.

Objective 3.11: Resource Assessment—Within two years of funding, determine baseline levels of selected contaminants, specifically organochlorines, organophosphates, and heavy metals that may have originated from the nonrenewable resource extraction, long-range atmospheric deposition, and/or past management practices.

Objective 3.12: Resource Assessment—Within two years of completing baseline contaminant assessment, initiate research to evaluate uptake of identified contaminants by selected indicator species (e.g., brown bears, black bears, sculpins, salmonids).

Refuge Purpose (ii): To fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats.

GOAL 4: International Treaties—Ensure that Refuge management practices affecting bird species contribute to the successful implementation of the Migratory Bird Treaty Act.

Objective 4.1: International Treaties—During the 15 years after Plan approval, continue to seek guidance and context for Refuge management and scientific actions from regional, national, and international programs and plans (including but not restricted to the North American Bird Conservation Initiative [NABCI] and the Conservation of Arctic Flora and Fauna [CAFF], Area V).

Objective 4.2: International Treaties—Continue to participate in and support international, national, and regional scientific information sharing, including making data available on the Refuge Web site, presenting papers at conferences, and publishing journal articles.

Objective 4.3: International Treaties—Continue to provide information and permitting services to the public for Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) protected species.

Refuge Purpose (iii): To ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and necessary water quantity within the Refuge.

GOAL 5: Water Resources—Ensure natural function and condition of water resources necessary to conserve fish and wildlife populations and habitats in their natural diversity.

Objective 5.1: Water Resources—Within two years of Plan’s approval, evaluate the need to increase the number of U.S. Geological Survey (USGS) stations in cooperation with interagency partners.

Objective 5.2: Water Resources—Within two years of Plan’s approval, develop a prioritized list of culverts, bridges, and other river and/or stream structures that need to be replaced or modified to restore fish passage and normal stream function.

Objective 5.3: Water Resources—Within two years of funding, design and implement a groundwater monitoring program.

Objective 5.4: Water Resources—Within two years of funding, design and initiate a water quality monitoring program for waters within the Refuge, including the Kenai and Swanson River watersheds.

Objective 5.5: Water Resources—Within five years of funding, develop a water budget and hydrologic models for the Refuge’s 10 major watersheds.

Refuge Purpose (iv): To provide, in a manner consistent with subparagraphs (i) and (ii), opportunities for scientific research, interpretation, environmental education, and land management training.

GOAL 6: Environmental Education and Training—Natural resource professionals, students, and the public value opportunities to increase their knowledge of Refuge ecosystems, issues, and management practices.

Subgoal 6.1: Environmental Education and Interpretation—Diverse audiences will have equal opportunity to understand and appreciate all management programs and support the Refuge’s efforts to maintain and enhance wildlife populations and habitats.

Objective 6.1.1: Effective Environmental Education Programming—Continue to maintain and develop the partnership with Alaska Natural History Association (ANHA) and/or other cooperating associations to provide interpretive and environmental sales products on the natural and cultural history of Kenai Refuge and surrounding public lands.

Objective 6.1.2: Effective Environmental Education Programming—Continue cooperative efforts with area educators to increase the number of effective resource conservation education programs focusing on key Refuge resource issues.

Objective 6.1.3: Effective Environmental Education Programming—Within six months of the Plan’s approval and annually thereafter, conduct a review of the Visitor Service’s operating procedures, outreach information, and program content.

Objective 6.1.4: Effective Environmental Education Programming—Within one year of Plan’s approval, develop and make accessible for public use a Web-based information system that hosts current and comprehensive information about the Refuge, its regulations, safety tips, and recreation opportunities.

Objective 6.1.5: Effective Environmental Education Programming—Within one year of Plan’s approval, work with The Friends of Kenai National Wildlife Refuge to define annual goals and objectives.

Objective 6.1.6: Effective Environmental Education Programming—Within two years of the Plan’s approval, hire a permanent seasonal employee to assist the education specialist and Student Conservation Association (SCA) conservation associate at the Environmental Education Center and the Outdoor Education Center.

Objective 6.1.7: Effective Environmental Education Programming—Within two years of Plan’s approval, curate objects from historic cabins, and catalog and manage them properly (including interpretation of the objects).

Objective 6.1.8: Effective Environmental Education Programming—Within two years of Plan’s approval, develop an interpretive strategy for including cultural heritage in the Refuge’s interpretive efforts.

Objective 6.1.9: Effective Environmental Education Programming—Within three years of Plan’s approval, develop and increase by 30 percent outreach materials on Refuge resources that reflect the importance of responsible management practices.

Objective 6.1.10: Effective Environmental Education Programming—

Within three years of Plan's approval, review all interpretive, educational, and information materials, and update them utilizing state-of-the-art media.

Objective 6.1.11: Effective Environmental Education Programming—

Within three years of Plan's approval, form partnerships with the Kenaitze Indian Tribe and Cook Inlet Region, Inc., (CIRI) to interpret their cultural history.

Objective 6.1.12: Effective Environmental Education Programming—

Within three years of Plan's approval, establish a formal relationship with the Kenaitze tribe by supporting the Kenaitze Indian Tribe's Susten Camp.

Objective 6.1.13: Effective Environmental Education Programming—

Within five years of the Plan's approval, provide the opportunity for at least 50 percent of central Peninsula kindergarten through sixth grade students to participate in at least one of the current environmental education programs focusing on key Refuge resource conservation issues.

Objective 6.1.14: Effective Environmental Education Programming—

Within five years of Plan's approval, increase wildlife interpretive programs such as guided hikes, campfire programs, and wayside exhibits by 50 percent.

Objective 6.1.15: Effective Environmental Education Programming—

Within five years of Plan's approval, record the Refuge's human history, including but not limited to the Swanson River and Beaver Creek oil and gas fields and the Russian River Ferry area by finalizing the oral history collection currently underway.

Objective 6.1.16: Effective Environmental Education Programming—

Within 10 years of the Plan's approval, provide a larger variety of environmental education opportunities, including but not limited to day camps and after school programs, through the environmental education program.

Objective 6.1.17: Effective Environmental Education Programming—

Within 15 years of the Plan's approval, provide the opportunity for at least 20 percent of students in grades 7 through 12 from the central Peninsula schools to participate in at least one environmental education program on the Refuge as part of their school's curriculum.

Subgoal 6.2 Land Management Training—Land managers, scientists, and other partners learn practices and techniques to study, manage, and monitor the boreal forest biome.

Objective 6.2.1: Land Management Training—When nominations are again accepted, establish the Refuge as a designated National Wildlife Refuge System *Fulfilling the Promises* Land Management Research Demonstration Site (LMRD).

Objective 6.2.2: Land Management Training—Annually survey Refuge staff to identify and nominate potential candidates for the national Technical Fire Management (TFM) program, a two-year continuing education and career development program that provides sufficient college credits within a natural science and fire curriculum to qualify the student in the 0401 job series (general biology/fire management).

Objective 6.2.3: Land Management Training—Annually, to the extent practicable, host and/or conduct interagency fire management training (wildfire, prescribed fire, use of wildland fire, and fire aviation) in conjunction with fire management projects and/or wildland fire incidents when possible.

Objective 6.2.4: Land Management Training—Within two years of Plan’s approval, develop a program that establishes the Refuge as a boreal forest biome regional training facility.

Objective 6.2.5: Land Management Training—Within three years of Plan’s approval, develop a step-down management plan for the Stepanka (Skilak Outlet) Archaeological District to mitigate damage to cultural resources.

Objective 6.2.6: Land Management Training—Within four years of Plan’s approval, identify priority areas to survey and begin to support fieldwork in cooperation with the University of Alaska tribes and other cooperators conducting cultural resource related studies.

Objective 6.2.7: Land Management Training—Within five years of Plan’s approval, develop a step-down management plan for the Sqilantnu (Russian River) Archaeological District to mitigate damage to cultural resources.

Objective 6.2.8: Land Management Training—Within five years of Plan’s approval, develop interagency agreements with universities and agencies to use the Refuge as a designated center for research on boreal forest ecology and management (including global climate change), recreational use of boreal forest, wildlife, and habitats, and wilderness management.

Refuge Purpose (v): To provide, in a manner compatible with these purposes, opportunities for fish and wildlife-oriented recreation.

GOAL 7: Wildlife-Oriented Recreation—Visitors of all skills and abilities enjoy wildlife-oriented recreation opportunities in safe and secure settings.

Objective 7.1: Wildlife-Oriented Recreation—Continue to meet annually with ADF&G to review State and Federal regulations that affect Refuge users and to identify actions that may improve opportunities for wildlife-dependent opportunities.

Objective 7.2: Wildlife-Oriented Recreation—Annually develop a trail maintenance plan to review current visitor use and identify maintenance needs of all foot, ski, water, and horse trails.

Objective 7.3: Wildlife-Oriented Recreation—Annually review the Kenai Law Enforcement Plan and institute necessary revisions within one month of review.

Objective 7.4: Wildlife-Oriented Recreation—Within two years of Plan’s approval, patrol and maintain the Canoe Trails Systems weekly during the intensive visitor use period of May through October.

Objective 7.5: Wildlife-Oriented Recreation—Within two years of Plan’s approval, organize the Visitor Services program into three districts (north, central, and south) for operational efficiency.

Objective 7.6: Wildlife-Oriented Recreation—Within three years of plan’s approval, develop a Trail Needs Assessment by reviewing current and projected visitor use patterns and other appropriate information.

Objective 7.7: Wildlife-Oriented Recreation—Within three years of Plan’s approval, make available 75 percent of visitor services staff for full implementation and operation of all interpretation, education, information, and recreation programs identified in this plan.

Objective 7.8: Wildlife-Oriented Recreation—Within three years of Plan’s approval, place information materials at all trailheads, boat ramps, and campgrounds, including but not limited to current use regulations; “Leave No Trace” recreation practices; and bear awareness, fire prevention, and backcountry safety topics.

Objective 7.9: Wildlife-Oriented Recreation—Within three years of Plan’s approval, repair or replace Refuge directional, regulatory, and location signs as necessary. Signs will be inspected on an annual basis.

Objective 7.10: Wildlife-Oriented Recreation—Within five years of Plan’s approval, increase patrol intervals on the Kenai River and all backcountry areas so that 25 percent of Refuge visitors report seeing and/or talking with a Refuge employee.

Objective 7.11: Wildlife-Oriented Recreation—Within five years of Plan’s approval, post boundary signs every 1,000 feet within one mile of all roads, trails, winter routes, and right-of-ways within or adjacent to the Refuge. Boundary signs will be inspected every two years and replaced as needed.

Objective 7.12: Wildlife-Oriented Recreation—Within 10 years of Plan’s approval, improve overall recreation-related visitor satisfaction in the Skilak Wildlife Recreational Area to 90 percent or higher. Recreationists surveyed will include but not be limited to wildlife viewers, photographers, campers, and hikers.

Objective 7.14: Wildlife-Oriented Recreation—Implement Executive Order 13443 to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Objective 7.13: Wildlife-Oriented Recreation—Within 10 years of Plan’s approval, implement the Refuge’s approved law enforcement deployment

model. Enforcement officers will patrol frontcountry and backcountry areas 365 days a year.

GOAL 8: Facilities—Visitors and Refuge personnel value and enjoy safe, well-maintained facilities and quality programs.

Objective 8.1: Facilities—Continue to manage hazardous forest fuels, especially in the wildland-urban interface where beetle kill trees and other fuel hazards increase the threat of wildfire to communities or private lands. Adjacent private lands, inholdings, and Refuge structures will continue to receive the maximum possible fire protection through interagency agreements.

Objective 8.2: Facilities—Continue to ensure fulfillment of obligations associated with maintaining the Moose Research Center as specified in the 2004 Memorandum of Understanding between ADF&G and the Refuge.

Objective 8.3: Facilities—Continue monthly and annual meetings with industry, ADEC, and Bureau of Land Management (BLM) to plan plugging and abandonment of wells; removal or abandonment of pipelines; remediation of known contaminant sites; and identification of potential contaminated sites on existing oil and gas units.

Objective 8.4: Facilities—Within two years of Plan’s approval, implement the programmatic agreement for managing historic cabins.

Objective 8.5: Facilities—Within two years of Plan approval, complete a wildfire hazard and risk assessment for known historic cabins and cultural sites; then develop and implement a strategic 10-year plan to mitigate identified hazardous fuel conditions around cabins and sites where full protection is selected as the appropriate management option.

Objective 8.6: Facilities—Within three years of Plan approval, construct two six-bed cabin kits for additional educational group housing at the Outdoor Education Center.

Objective 8.7: Facilities—Within three years of Plan approval, develop a Kenai Refuge Sign Plan. The plan will contain location and graphic information for every sign used on the Refuge and will establish maintenance and replacement schedules and procedures.

Objective 8.8: Facilities—Within three years of Plan’s approval, complete and submit to the State Historic Preservation Officer the nomination form to have the Stepanka Archaeological District listed on the National Register.

Objective 8.9: Facilities—Within five years of Plan’s approval, service all campground restrooms at least once a week.

Objective 8.10: Facilities—Within five years of Plan’s approval, begin to patrol, service, and/or restock all frontcountry trailheads with appropriate information materials daily by Refuge staff.

Objective 8.11: Facilities—Within five years of Plan’s approval, begin to check, service, maintain, and/or restock all backcountry facilities and trails with information materials as needed by assigned backcountry staff.

Objective 8.12: Facilities—Within five years of Plan's approval, develop and implement best management practices to reduce waste, pollution, and energy inefficiency by 50 percent across all Refuge programs.

Objective 8.13: Facilities—Within five years of Plan’s approval, upgrade (as appropriate) and increase maintenance of Refuge roads, including but not limited to grading, snow removal, vegetation and invasive species control, dust control, and culvert replacement.

Objective 8.14: Facilities—Within five years of Plan’s approval, construct facilities to house up to 60 summer interns, volunteers, and seasonal employees, including Kenai Fish and Wildlife Field Office (KFWFO).

Objective 8.15: Facilities—Within seven years of Plan’s approval, construct a new visitor center with capacity for 150 visitors.

Objective 8.16: Facilities—Within seven years of Plan’s approval, complete a 6,000-square-foot warehouse for storage of Refuge equipment.

Objective 8.17: Facilities—Within one year of funding, renovate the Refuge laboratory and equip it with new facilities and analytical equipment.

The Wilderness Act Purpose for the Kenai Wilderness Area: To secure an enduring resource of wilderness, to protect and preserve the wilderness character of areas within the National Wilderness Preservation System, and to administer [the areas] for the use and enjoyment of the American people in a way that will leave them unimpaired for future use and enjoyment as wilderness.

GOAL 9: Wilderness Stewardship—Preserve and where necessary, restore the character and integrity of Wilderness for present and future generations.

Objective 9.1: Wilderness Stewardship—Immediately following Plan’s approval, develop a Wilderness Stewardship Plan for the Refuge.

Objective 9.2: Wilderness Stewardship—Immediately following Plan’s approval, begin conducting Minimum Requirements Analyses on all administrative activities in designated Wilderness.

Objective 9.3: Wilderness Stewardship—Within three years of Plan’s approval, initiate a program to assess and model the natural soundscape of designated Wilderness and other areas.

Objective 9.4: Wilderness Stewardship—Within five years of Plan’s approval, initiate research to assess and model motorized and non-motorized human-wildlife interactions as a result of recreational activities, including snowmachines, boats, road traffic, campgrounds, and trail use in Wilderness.

Objective 9.5: Wilderness Stewardship—Within five years of Plan’s approval, develop a model that evaluates human-caused disturbances on wilderness character.

Objective 9.6: Wilderness Stewardship—Within 15 years of Plan’s approval, identify or purchase inholdings from willing sellers to minimize landowner conflicts, protect Refuge resources, and provide for priority recreation activities.

3. The Planning Process

The process being used to revise the Plan contains eight steps.

3.1. Preplanning

The first step in the planning process helps the planning team decide whether the original Plan should be revised or a new Plan developed. For the Kenai Refuge planning effort, a number of preplanning meetings were held throughout 2004.

Based on the assessment conducted during preplanning, the team determined that a revision was necessary and that the Revised Plan would focus on specific issues that need to be addressed rather than on developing a new Plan. It was also concluded that new and amended laws (e.g., Refuge System Improvement Act) and new or revised regulations and policies needed to be included in the Refuge's management policies and guidelines.

3.2. Initiate Public Involvement and Scoping

The purpose of this step was to let people know that the planning process was beginning and to solicit ideas on what issues should be addressed in the Revised Plan. Formal scoping began with publication of a notice of intent to prepare an EIS, which was published in the *Federal Register* on November 26, 2003 (Volume 68, Number 228, pp. 66476-66478).

In December 2003, a planning update, which announced the planning effort and solicited comments from the public, was mailed to more than 3,100 individuals; local businesses; local, State, and Federal agencies; and organizations nationwide. This mailing contained information about the Refuge, the planning process, and some preliminary issues identified by Refuge staff. The mailing included an optional issues workbook to make it easier for people to identify their issues and concerns.

Five public open house meetings were held, four in communities on the Kenai Peninsula and one in the city of Anchorage. One hundred people attended the meetings. A total of 313 written or telephone responses were received during the scoping period (December 2003–May 2004). The responses were reviewed, coded, and analyzed over a three-month period in spring 2004. More than 50 separate concerns were identified, grouped, and categorized into six topic areas.

3.3. Determine Significant Issues

To determine the significant planning issues being addressed in the draft Plan, the planning team reviewed the concerns identified by the public along with management concerns identified by Refuge staff and those submitted by the State of Alaska and Federal agencies. Significant planning issues are those issues for which multiple approaches to resolving the issue will be evaluated as part of the planning process.

3.4. Develop and Analyze Alternatives

The fourth step is to develop alternative approaches to the issues. These alternatives meet the Refuge's purposes and goals and comply with the Service and Refuge System mission. The planning team developed a range of alternatives that respond to the significant planning issues and eliminated alternatives that did not meet Refuge purposes or that were outside of the Service's ability to implement.

In March 2005, approximately 2,700 postcards were mailed to individuals, organizations, businesses, and local, State, and Federal government agencies on the Kenai mailing list to notify them that draft alternatives were available for public review and comment via the Internet.

The draft alternatives were refined based on comments received from the planning update. The environmental effects of the alternatives were analyzed, and the results were presented in chapter 4 of the draft. We evaluated the alternatives against a set of criteria and presented that discussion in chapter 5 of the draft.

3.5. Prepare Draft Plan and Environmental Impact Statement

The purpose of the fifth step was to produce the draft document. The draft Plan and EIS contained five management alternatives, including one that described the continuation of current management (No-Action Alternative) and one that is currently the Service's Preferred Alternative (Alternative E).

3.6. Prepare and Adopt a Final Plan and Environmental Impact Statement

In the sixth step, comments received on the draft Plan and EIS were reviewed and analyzed. (These comments and our responses to them are presented in Appendix D of the Plan.) The draft Plan and EIS was modified as needed, including refining the Preferred Alternative, after which this Final Revised Comprehensive Conservation Plan (Plan) and EIS was published. A 30-day comment period follows publication, then the Service's regional director will issue a Record of Decision (ROD) that describes the alternative that will be implemented.

3.7. Implement Plan, Monitor, and Evaluate

After the ROD and Revised Plan are distributed, Refuge staff will begin to initiate any changes called for in the Plan.

3.8. Review and Revise Plan

Agency policy directs that the Plan be reviewed annually to assess the need for changes. The Plan will be revised when significant new information becomes available, ecological conditions change, or the need to do so is identified during the annual review. If major changes are proposed, public meetings may be held, or new environmental assessments and environmental impact statements may be necessary.

4. Significant Planning Issues

Five significant planning issues were identified for consideration during revision of this draft Plan.

4.1. Issue 1 – How will the Refuge address large-scale habitat changes and the use of fire?

Members of the general public and the planning team expressed concerns about the state of the Refuge's ageing forests and the impacts associated with beetle kill. Numerous people noted that wildfire was being suppressed on the landscape and that prescribed fire was being inadequately used as a management tool to enhance wildlife habitat. In some cases, prescribed fire was advocated as a tool to protect life and property by reducing hazardous fuels.

4.2. Issue 2 – How will the Refuge manage existing facilities for public use while ensuring natural resource protection?

Members of the general public, the State of Alaska, and the planning team raised concerns about trails, highway pullouts and rest stops, and oil and gas field infrastructure. Trail-related comments focused on the need for additional planning, design, and maintenance. The State of Alaska is specifically interested in developing trails to lakes that support sportfish. Comments related to highway pullouts and rest stops focused on the need for additional parking and related rest stop facilities along the Sterling Highway. Comments related to oil and gas field infrastructure focused on future public use and restoration of associated roads, bridges, buildings, and pads after operations close.

4.3. Issue 3 – How will the Refuge enhance wildlife-dependent recreation opportunities?

Members of the general public, the State of Alaska, and the planning team identified opportunities to improve wildlife-dependent recreation activities.

4.4. Issue 4 – How will the Refuge manage increasing public use to ensure protection of resources and visitor experience?

Members of the general public and the planning team raised concerns about increasing public use of Refuge resources. There is a sense that Refuge use has grown substantially since the development of the 1985 Plan and that such use has affected Refuge resources and visitor experiences. The Kenai River corridor and the Swanson River and Swan Lake Canoe System were specifically identified by the public as areas in need of additional management. The State of Alaska supports the need for additional development of public use facilities along the Kenai River to address resource impacts and to minimize public conflicts associated with crowding.

4.5. Issue 5 – How will the Refuge balance motorized access with protection of resources and visitor experiences?

Members of the general public, the State of Alaska, and the planning team raised concerns about various motorized access issues on the Refuge. Comments focused on snowmachines and aircraft. Snowmachine-related concerns focused on impacts on Refuge resources and visitor experiences, although a number of stakeholders stated their interest in maintaining access without additional restriction. Aircraft-related concerns focused on visitor experience impacts, although some stakeholders and the State of Alaska stated their interest in modifying the availability of landing sites in the Chickaloon Flats and Kenai Wilderness of the Refuge.

5. Alternatives

This section of the Summary presents five alternatives for managing Kenai Refuge, including continuation of current management (Alternative A) and the Service's preferred alternative (Alternative E).

5.1. Elements Common to All Alternatives

This section identifies some of the key elements that will be included in the Comprehensive Conservation Plan regardless of the alternative selected. Each of the alternatives would do the following:

- Contribute to achieving the purposes for which the Refuge was established, as set forth in Executive Order 8979 (December 16, 1941), and section 303(4)(B) of ANILCA
- Ensure that rural residents have access to and priority use of Refuge resources for the purposes of subsistence, as determined by law
- Ensure that Refuge management complies with all other Federal laws and regulations that provide direction for managing units of the National Wildlife Refuge System
- Protect and maintain fish and wildlife in their natural diversity
- Maintain opportunities to pursue traditional subsistence activities; scientific research; and hunting, fishing, and other wildlife-dependent recreation activities
- Maintain most of the Refuge in a relatively undeveloped state
- Minimize disturbances to fish and wildlife habitats and populations
- Allow public use of the Refuge using traditional access methods, provided use remains compatible with the purposes of the Refuge

5.2. Management Direction Common To All Alternatives

The following management direction will be implemented regardless of which alternative is ultimately selected:

5.2.1 ***Beetle Kill Trees/Fire Safety***

Spruce bark beetle outbreaks will not be managed. However, the Refuge will continue its collaborative interagency efforts to promote wildfire safety and implement wildfire mitigation principles on Refuge lands, especially in wildland urban interface areas.

5.2.2 ***Cultural Resources Management***

Cultural resources management will be enhanced through cooperative research, planning and education efforts, and increased law enforcement presence.

5.2.3 ***Existing Oil and Gas Units***

Industrial facilities will operate under current State and Federal regulations. Facility operators will prevent, to the maximum extent possible, releases of hazardous materials and substances, crude oil, and produced water. Each facility will have a current oil discharge prevention and contingency plan outlining procedures for accidental releases. Sampling, remediation, and

restoration of contaminated sites will be the responsibility of the company operating the facility and will occur in consultation with the Service and ADEC. All sites no longer being used by industry will be sampled for contaminants to ensure proper disposal of material and to ensure that Refuge staff or visiting public are not exposed to contaminants if re-use is planned.

5.2.4 *Integrated Research and Monitoring*

An integrated research and monitoring program will provide opportunities for scientific research. An enhanced informational infrastructure will be developed, including a state-of-the-art Geographic Information System, an enhanced air and water quality and meteorological monitoring network, permanent research study sites, and a multi-species landscape-level inventorying and monitoring program. Collaborative research and monitoring opportunities will be pursued through the development of a Boreal Forest Research, Monitoring, and Management Training Program (see section 5.3.6 Land Management Training Facility).

5.2.5 *Kenai River Scenic Float Trip Guides*

Kenai River scenic float trip guides will continue to be limited to no more than nine permits issued through a competitive bid process, and of which no more than four would be high volume businesses as described in the prospectus. Numbers of permits and conditions to reduce crowding would be reviewed and revised annually before each open bid process. Incidental use permits for scenic float trips, similar to sportfishing incidental use permits, would continue to be issued (to include blackout dates and quotas to avoid crowding during high use periods).

5.2.6 *Land Management Training Facility*

A Boreal Forest Research, Monitoring, and Management Training Facility will be developed that provides classroom and field opportunities to learn state-of-the-art monitoring and management methodologies. The facility will be available for use by Service personnel and other Federal and State agencies, organizations, and academic institutions. A nonprofit research institute will be created to promote and coordinate research efforts.

5.2.7 *Law Enforcement*

Law enforcement presence will be increased Refuge-wide by implementing the Service's deployment model.

5.2.8 *Moose Range Meadows Non-Development Easement*

Regulations will be developed to provide landowners with a clear description of the affected lands, concise definitions of the easement and its conditions, and unambiguous language relating to non-development restrictions.

5.2.9 *Skilak Wildlife Recreation Area*

The 44,000-acre Skilak Wildlife Recreation Area, where special restrictions on hunting and trapping apply, will be managed to provide enhanced opportunities for wildlife viewing, environmental education, interpretation, and photography.

5.2.10 *Subsurface Entitlements to Minerals*

Any new development where subsurface entitlements exist or in the Birch Hill Oil and Gas Unit would be designed and constructed to have the least

negative environmental impact possible. Once exploration and/or production ceases, all industrial roads, pipelines, and other related facilities will be completely removed and the area restored.

Industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to remediate and restore the sites as necessary. Remediation and/or restoration would be to standards agreed upon by ADEC, BLM, Service, and the site owner or operator.

5.2.11 Visitor Center

A visitor center with the capacity to serve 150 visitors will be constructed in the headquarters area.

5.2.12 Wildlife/Habitat Restoration

Ongoing methods for assessing the distribution and status of multiple species at the landscape level to ensure against local extirpation of wildlife will continue. New trajectories for species distributions and abundance due to global climate change and changes in natural processes (wildfire and spruce bark beetle rates) will continue to be modeled. Exotic, injurious, and invasive species will be eliminated, controlled, or minimized through development of a comprehensive step-down management plan. Research will be promoted that evaluates possible endemism in flora and fauna, particularly brown bear and wolverine. Marten and red fox populations will continue to be evaluated in the absence of active management, and restoration opportunities will be identified and implemented as appropriate.

5.3. Alternative A. Current Management

This alternative, the “no-action alternative,” describes current and future management of the Refuge assuming present actions and initiatives are carried forward. It provides the baseline against which to compare the action alternatives (Alternatives B–E).

5.3.1 General Management Direction

Management of the Refuge would continue to follow the 1985 Kenai National Wildlife Refuge Comprehensive Conservation Plan (USFWS 1985a) and Record of Decision (USFWS 1985b) as amended by subsequent step-down management plans. The majority of the Refuge (76%) would continue to be managed to protect wilderness values. This includes the 66.4% of the Refuge which is designated Wilderness and the 9.7% of the Refuge which is classified Minimal management. The lands in Minimal management have been recommended for Wilderness designation. Fish and wildlife management outside Wilderness would continue to focus on species of special interest such as moose, wolves, trumpeter swans, and salmon. Populations of predators would be maintained at relatively natural levels in relation to prey. Hunting, fishing, and trapping would continue to be allowed consistent with State and Federal regulations.

Table 1. Comparison of the Alternatives Identified by Issue and Management Action

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Issue 1: How will the Refuge address large-scale habitat changes and the use of fire?					
Management Categories:					
Intensive Management	54,500 acres (2.7%) ¹	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A
Moderate Management	179,000 acres (9.1%)	204,000 acres (10.3%)	Same as Alternative A	49,450 acres (2.5%) in Mystery Creek area retained during the life of the Alaska Pipeline project. These lands would convert to the Minimal management category after the life of the project	Same as Alternative D
Traditional Management	189,000 acres (9.6%)	0	Same as Alternative B	Same as Alternative B	Same as Alternative B
Minimal Management	196,000 acres (9.7%)	360,000 acres (18.1%)	385,000 acres (19.3%)	514,550 acres (25.9%) during the life of the Alaska Pipeline project; 564,000 acres (28.4%) after the life of the project.	Same as Alternative D
Designated Wilderness	1,320,500 acres (66.4%)	Same as Alternative A	Same as Alternative A	Same as Alternative A	Same as Alternative A
Use of Fire as a Management Tool:					
	Use of fire allowed to improve habitats for select wildlife species. Prescribed fire allowed in the Intensive, Moderate, Traditional, and	Use of fire allowed as the principle management tool to improve wildlife habitats, reduce hazardous accumulations of wildland	Use of fire allowed as the principle management tool to improve wildlife habitats, reduce hazardous accumulations of wildland	Use of fire allowed as the principle management tool to improve wildlife habitats, reduce hazardous accumulations of wildland	Same as Alternative D

¹

Note: Acreage percentages are based on Service lands within the Refuge Boundary. State and private ownership within the Refuge is approximately 2.5%.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
	<p>Minimal management categories, though its use would be limited in the Minimal management category. Use of wildland fire allowed in the Moderate, Traditional, Minimal, and Wilderness management categories.</p>	<p>fuels, and maintain or restore natural fire regimes. Prescribed fire allowed in the Intensive and Moderate management categories. Use allowed in the Minimal management category but only on lands not adjoining designated Wilderness. Use of wildland fire allowed in the Minimal and Wilderness management categories.</p>	<p>fuels, and maintain or restore natural fire regimes. Prescribed fire allowed in the Intensive, Moderate, and Minimal management categories. Use of wildland fire allowed in the Intensive, Moderate, Minimal, and Wilderness management categories, but use would be emphasized in the Minimal management category and the default management action in designated Wilderness.</p>	<p>fuels, and maintain or restore natural fire regimes. Prescribed fire allowed in the Intensive, Moderate, Minimal, and Wilderness management categories, though its use in Wilderness would only be allowed under specific conditions. Use of wildland fire allowed in the Intensive, Moderate, Minimal, and Wilderness management categories, but use would be the default management action in the Minimal and Wilderness management categories.</p>	

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Issue 2: How will the Refuge manage facilities for public use while ensuring natural resources protection?					
Swanson River Oil and Gas Unit:					
	Most industrial roads would be removed and the sites restored, though some may be retained for possible public and administrative uses. Most facilities would be removed and the sites restored, though some would be retained for possible public and administrative uses. Camping facilities would not be provided, and bicycles would not be allowed.	All industrial roads (except Swanson River Road) would be removed and the sites restored. All pipelines and associated fixtures would be removed and the sites restored. All facilities would be removed and the sites restored. Camping facilities would not be provided, and bicycles would not be allowed.	Some industrial roads would be removed and the sites restored, though most would be converted to trails for pedestrian and horse use. All pipelines and associated fixtures would be removed and the sites restored. All facilities would be removed and the sites restored. Up to five primitive camping facilities would be provided for walk-in use only, and bicycles would not be allowed.	Some industrial roads would be removed and the sites restored, though most would be retained and maintained for public and administrative uses. Most pipelines and associated fixtures that have not adequately revegetated would be removed and the sites restored. In cases where more environmental damage would occur by removing pipelines than by leaving them in place, pipelines would be cleaned, capped, and left in place. Most facilities would be removed and the sites restored, though some would be retained for administrative uses. Up to two developed campgrounds would be provided, and bicycles would be allowed on roads and trails.	Same as Alternative D
Beaver Creek Oil and Gas Unit:					
	Most industrial roads would be removed and the sites restored, though some may be retained for possible public and administrative uses. Most facilities would be removed and the sites restored, though some would be retained for possible	All industrial roads (except Marathon Road) would be removed and the sites restored. All pipelines and associated fixtures would be removed and the sites restored. All facilities would be removed and the sites restored. Camping facilities	Some industrial roads would be removed and the sites restored, though most would be converted to trails for pedestrian and horse use. All pipelines and associated fixtures would be removed and the sites restored. All facilities would be removed	Some industrial roads would be removed and the sites restored, though most would be retained and maintained for public and administrative uses. Most pipelines and associated fixtures that have not adequately revegetated would be removed and the	Same as Alternative B

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
	public and administrative uses. Camping facilities would not be provided, and bicycles would not be allowed.	would not be provided, and bicycles would not be allowed.	and the sites restored. Up to two primitive camping areas would be provided for walk-in use only, and bicycles would not be allowed.	sites restored. In cases where more environmental damage would occur by removing pipelines than by leaving them in place, pipelines would be cleaned, capped, and left in place. Most facilities would be removed and the sites restored, though some would be retained for administrative uses. Up to one developed campground would be provided, and bicycles would be allowed on roads and trails.	

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Contaminated Sites:					
	Industrial facilities would be required to operate in compliance with all applicable Federal and State environmental statutes and regulations. Known contaminant releases are to be cleaned up in a timely manner, and areas no longer in use are to be restored .	Same as Alternative A, plus industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to remediate and restore the sites as necessary to acceptable standards agreed upon by ADEC, BLM, the Service, and the site owner or operator.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Mystery Creek Access Road and Alaska Pipeline Corridor:					
	Maintenance of the unimproved access road would be conducted by ENSTAR during the life of the pipeline project. Public use registration would not be required. Public vehicle use of the access road and pipeline corridor north to Chickaloon Bay would be allowed from start of moose hunting season (approximately August 9) until snow cover. Pedestrian, horse, and snowmachine use would be allowed. Bicycle use would be allowed approximately August 9 until snow cover. After the life of the project, the access road and pipeline corridor would be restored.	Maintenance of an improved access road would be increased and conducted by ENSTAR during the life of the pipeline project. Road improvements would facilitate public access, enhance public safety, and ensure environmental protection. Public use registration would be required at points of entry. Public vehicle use of the access road and pipeline corridor north to Chickaloon Bay and southwest to the East Fork of the Moose River would be allowed from July 1 through November 30. Pedestrian, horse, and snowmachine use would be allowed. Bicycle use would be allowed generally from	Maintenance of an improved access road would be conducted by ENSTAR during the life of the pipeline project and would continue to provide for a backcountry experience. Road improvements would be limited to those necessary for public safety and environmental protection. Public use registration would be required at points of entry. Public vehicle use of the access road and pipeline corridor north to Chickaloon Bay and southwest to the East Fork of the Moose River would be allowed from August 9 through November 30. Pedestrian, horse, and snowmachine use would be allowed. Bicycle use would	Maintenance of the unimproved access road would be conducted by ENSTAR during the life of the pipeline project. Public use registration would not be required. Public vehicle use of the access road and pipeline corridor would not be allowed. Pedestrian, horse, and snowmachine use would be allowed. Bicycle use would not be allowed. After the life of the project, the access road and pipeline corridor would be restored, and a trail would be provided for pedestrian and horse use only.	Same as Alternative C except after the life of the project, the access road and pipeline corridor would be restored, and a trail would be provided for pedestrian and horse use only.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
		May 1 through November 30. Public use and/or restoration opportunities would be re-evaluated after the life of the project.	be allowed approximately August 9 through November 30. Public use and/or restoration opportunities would be re-evaluated after the life of the project.		
Trail Maintenance and Planning:					
	The development of new trails would be allowed in all management categories except Wilderness. Maintenance decisions would continue to be driven by availability of funding.	In addition to those conditions in Alternative A: Develop a trail needs assessment that identifies and prioritizes construction and/or maintenance needs and construction standards for a variety of trails.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Ski Hill Road:					
	Maintenance of the graveled road conducted by ADOT&PF. Pedestrian, bicycle, and vehicle use allowed.	Maintenance of the graveled road conducted by the Service. Pedestrian, bicycle, and vehicle use allowed.	Maintenance and road improvements conducted by the Service. The northern section of the road would remain graveled and open to pedestrian, bicycle, and emergency vehicle use only. The southern section of the road would be improved and hard-surfaced, and open to pedestrian, bicycle, and public vehicle use.	Maintenance and road improvements conducted by the Service. The northern section of the road would remain graveled and open to pedestrian, bicycle, and emergency vehicle use only. The southern section of the road would be improved and hard-surfaced for public vehicle use, and a trail would be constructed in the road right-of-way for pedestrian and bicycle use.	Same as Alternative D.
Sterling Highway Pullout (milepost 62.5):					
	Maintenance not conducted, and public use facilities not provided.	Develop a formal rest stop at MP 62 through a cooperative effort with ADOT&PF.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Issue 3: How will the Refuge enhance wildlife-oriented recreation opportunities?					
Personal Collection of Natural Resources:					
	Personal collection of berries, mushrooms, and other edible plants, and/or the collection of shed antlers would not be allowed.	Personal collection and use of unlimited quantities of berries, mushrooms, and other edible plants; and up to eight naturally shed moose or caribou antlers per person per year would be allowed.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Christmas Tree Harvesting:					
	Harvesting one black or white spruce tree no larger than 20 feet in height per family per year between Thanksgiving and Christmas Day for personal use would be allowed upon general announcement.	Amend Refuge-specific regulations to allow for harvesting one black or white spruce tree no larger than 20 feet in height per family per year between Thanksgiving and Christmas Day for personal use.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Issue 4: How will the Refuge manage increasing public use to ensure resource and visitor experience protection?					
Swanson River / Swan Lake Canoe System:					
	Public use registration would be required. Maximum group size would be limited to 15 individuals without a special use permit. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period.	Public use registration would be required, and enforcement would be increased. Maximum group size would be limited to 15 individuals without a special use permit. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period. Conduct a Limits-of-Acceptable Change (LAC) framework with stakeholders to guide future management actions.	Public use registration would be required. Maximum group size would be limited to 15 individuals without a special use permit. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period. Dispersed campsites would be monitored and evaluated regularly using standard protocols. Management actions may be implemented as needed. Regulations	All visitors would be required to register via a reservation system. Maximum group size would be limited to 15 individuals without a special use permit. Camping would be allowed in designated sites only. Regulations requiring the use of outhouses provided at designated campsites would be adopted.	Same as Alternative C.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
			requiring appropriate disposal of human waste would be adopted.		
Upper Kenai River (Russian River to Skilak Lake):					
	<p>Non-guided public use would be allowed without restriction. Sportfishing guides would be required to have special use permits. Permits would be limited to 20 issued. Each permit would allow 10 starts per week with no more than 4 starts per day. Additional restrictions may be imposed if demand for commercial recreational services increases. State-licensed sportfishing guides not having Refuge special use permits may be issued incidental use permits for as many as three trips per year subject to quotas and blackout dates. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period. Camping would not be allowed within one-quarter mile of the Sterling Highway.</p>	<p>Work cooperatively with stakeholders to modify, as needed, existing management agreements or plans (or develop new ones) to address Upper Kenai River crowding issues related to non-guided public use. Sportfishing guides would be required to have special use permits. Permits would be limited to 20 issued. The timing of boats and starts for each permit would be managed beyond current levels. State-licensed sportfishing guides not having Refuge special use permits may be issued an incidental use permit for as many as one trip per year subject to quotas and blackout dates. Dispersed camping within 100 yards of the Kenai River would be limited to 24 hours within any 14-day period. Camping would not be allowed within one-quarter mile of the Sterling Highway.</p>	<p>Implement a public process to restrict or redirect non-guided public use for the Upper Kenai River if more than 25% of anglers surveyed (outside of the confluence area) report difficulty in finding an uncrowded fishing spot. Sportfishing guides would be required to have special use permits. Permits would be reduced to 18 through attrition and issued competitively. Each permit would allow 10 starts per week with no more than 4 starts per day. Additional restrictions may be imposed if demand for commercial recreational services increases. State-licensed sportfishing guides not having Refuge special use permits may be issued incidental use permits for as many as three trips per year subject to additional quotas and blackout dates beyond current levels. Dispersed camping within 100 yards of the Kenai River or within one-quarter mile of the Sterling Highway would not</p>	<p>Implement a limited permit program to address non-guided public use. A public rulemaking process would provide stakeholders an opportunity to provide input on the program. Sportfishing guides would be required to have special use permits. Permits would be reduced to 15 through attrition and issued competitively. Each permit would allow 10 starts per week with no more than 4 starts per day. Additional restrictions may be imposed if demand for commercial recreational services increases. The Incidental Use Permit Program for State-licensed sportfishing guides not having Refuge special use permits would be eliminated. Dispersed camping within 100 yards of the Kenai River plus camping within one mile of the inlet or outlet of the Kenai River and Skilak Lake would be limited to 48 hours within any 14-day period. Camping would not be allowed within one-quarter</p>	<p>Same as Alternative C.</p>

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
			be allowed.	mile of the Sterling Highway.	
Middle Kenai River (Skilak Lake Downstream to the Refuge Boundary):					
	Non-guided public use would be allowed without restriction. Sportfishing guides would be required to have special use permits. Permits would be issued without limit.	Non-guided public use would be allowed without restriction. Following the conclusion of the Kenai River-wide guide limitation process, evaluate the need to implement a Refuge-specific permitting process for guided sportfishing.	Non-guided public use would be allowed without restriction on the number of users until a Limits-of-Acceptable-Change (LAC) planning process is completed with stakeholders (See 2.1.9.3 Issue 4). Sportfishing guides would be required to have special use permits. Permits would be limited to the number of existing permittees, current permittees would be “grandfathered” in for a limited time following regulatory changes.”	Non-guided public use would be managed by a limited permit program. A public rulemaking process would provide stakeholders an opportunity to provide input on the program. Sportfishing guides would be required to have special use permits. Permits would be limited to 20 through a competitive selection process, and management of the timing of boats and/or starts would be initiated.	Same as Alternative C.
Issue 5: How will the Refuge balance motorized use with resource and visitor experience protection?					
Airplane Access to Lakes Located in Designated Wilderness:					
	Airplane access would be allowed on 46 lakes in designated Wilderness. Airplane access would not be allowed from May 1 through September 30 on any lake where nesting trumpeter swans and/or their broods are present except on two lakes in designated Wilderness— Scenic Lake, located within the Dave Spencer unit of the Kenai Wilderness, and Windy Lake, located within the Andy Simons unit of the	Airplane access would be allowed on 45 lakes in designated Wilderness, plus an environmental assessment would be conducted to determine the amount of airplane use and any associated impacts on Refuge resources, recreation opportunities, and Wilderness values. Airplane access would not be allowed from May 1 through September 30 on any lake where nesting trumpeter	Airplane access would be allowed on 50 lakes in designated Wilderness. Airplane access would not be allowed from May 1 through September 30 on any lake where nesting trumpeter swans and/or their broods are present except on two lakes in designated Wilderness— Scenic Lake, located within the Dave Spencer unit of the Kenai Wilderness, and Windy Lake, located within the Andy Simons unit of the	Airplane access would be allowed on 59 lakes in designated Wilderness plus one additional lake. Airplane access would not be allowed from May 1 through September 30 on any lake where nesting trumpeter swans and/or their broods are present except on five lakes in designated Wilderness— Scenic, King, and Bird lakes, located within the Dave Spencer unit of the Kenai Wilderness; Windy and	Same as Alternative A. Except: The Refuge will propose a rule change that could allow the Refuge Manager to issue access permits to successful applicants in the State’s limited drawing hunt program. (See 2.1.9.3 Issue 5)

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
	Kenai Wilderness, where the closure would be May 1 through September 10.	swans and/or their broods are present except on two lakes in designated Wilderness—Scenic Lake, located within the Dave Spencer unit of the Kenai Wilderness, and Windy Lake, located within the Andy Simons unit of the Kenai Wilderness, where the closure would be May 1 through September 10.	Kenai Wilderness, where the closure would be May 1 through September 10.	Harvey Lake, located within the Andy Simons unit of the Kenai Wilderness; plus one lake outside of designated Wilderness—Beaver Lake—where the closure would be May 1 through September 10.	
Airplane Access to Chickaloon Flats:					
	Wheeled airplane access would be allowed year-round within designated areas, including three upland landing zones, a designated beach landing zone, and the unmaintained Big Indian Creek airstrip. Floatplane access would be allowed on 6.5 miles of the Chickaloon River.	Wheeled airplane access would be allowed on 21 square miles of the Chickaloon Flats area that are unvegetated and the Big Indian Creek airstrip (minimal periodic maintenance). Floatplane access would be allowed on 6.5 miles of the Chickaloon River.	Wheeled airplane access would be allowed on 21 square miles of the Chickaloon Flats area that are unvegetated and the maintained Big Indian Creek airstrip. Floatplane access would be allowed on 6.5 miles of the Chickaloon River.	Wheeled airplane access would be allowed on 21 square miles of the Chickaloon Flats area that are unvegetated and the maintained Big Indian Creek airstrip, an additional 6.8 square miles of the flats from September 1 to December 15 (or to coincide with future waterfowl hunting seasons). Floatplane access would be allowed on 6.5 miles of the Chickaloon River.	Same as Alternative B.
Snowmachine Access:					
	Snowmachines would be allowed in designated areas from December 1 through April 30 if the Refuge manager determines there is adequate snowcover.	Snowmachines would be allowed in designated areas from December 1 through April 30 if the Refuge manager determines there is adequate snowcover. Studies with stakeholders would evaluate the effects of use on Refuge resources	Snowmachines would be allowed in designated areas from December 1 through April 30 if the Refuge manager determines there is adequate snowcover except certain zones within designated areas may be opened earlier or later,	Snowmachines would be allowed in designated areas when the Refuge manager determines there is adequate snowcover; certain zones within designated areas would be opened earlier or later depending on local snow conditions. Studies	Same as Alternative B.

	Alternative A (Current Management)		Alternative B		Alternative C		Alternative D		Alternative E (Preferred Alternative)	
			and visitor experiences, the results of which would be used to support future management decisions.		depending on local snow conditions. Studies would be conducted with stakeholders to evaluate the effects of use on Refuge resources and visitor experiences, the results of which would be used to support future management decisions.		would be conducted to evaluate the effects of use on Refuge resources and visitor experiences, the results of which would be used to support future management decisions.			
Staffing and Budget Needs: (Beyond Current Levels)										
	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term
Permanent Full-Time Employees	5	20	1	16	5	16	5	16	1	26
Permanent Seasonal Employees	4	14	5	21	5	21	5	21	5	16
Temporary Seasonal Employees	25	45	10	50	10	50	10	50	5	30
Volunteers	20	60	20	60	20	60	20	60	20	60
Total Staff	54	139	36	147	40	147	40	147	31	132
Annual Budget Needs	\$5,115,000	\$21,489,410	\$5,515,000	\$21,864,410	\$7,800,000	\$21,864,410	\$8,050,000	\$21,864,410	\$5,115,000	\$22,414,410

5.3.2 **Management Categories**

Kenai Refuge would continue to be managed under five management categories (Figure 5). For information about management of these lands see Volume 1, Appendix C, Section 1.2 of the Plan.

Intensive Management – This least protective category encompasses areas of high public use and development. Natural processes are modified, and the influence of human activities is evident. Public facilities, administrative sites, industrial development, and transportation systems are allowed in this category. Approximately 54,500 acres (2.7 percent) of land will be managed under the Intensive management category.

Moderate Management – This category manages areas easily accessible to the public and manipulates a significant amount of habitat to benefit populations of selected species (principally moose). Although some natural processes are altered, habitat management is designed to maintain natural landscapes. Permanent facilities may be provided for public recreation or public safety. Approximately 179,000 acres (9.1 percent) of land will be managed under the Moderate management category.

Traditional Management – This category encompasses undeveloped areas where habitat and public use are managed to provide a mixture of benefits in a natural setting. No roads occur within this category. Management of forest habitats relies on natural tools such as prescribed burning with no mechanical manipulation of commercial timber harvest. Approximately 189,000 acres (9.6 percent) of land will be managed under the Traditional management category. Table 2 depicts the differences between the Traditional and Minimal management categories.

Minimal Management – Management under this category would be directed at maintaining the pristine conditions of areas that have important fish and wildlife and wilderness values. These areas generally would not be subject to planned habitat manipulation. Restrictions are placed on motorized access, recreation, and economic uses. Lands in this category represent the Service's recommendations for future Wilderness designation. Approximately 196,000 acres (9.7 percent) of land will be managed under the Minimal management category.

Wilderness Management – This category includes those areas of the Refuge currently designated as Wilderness. It preserves the pristine and unmodified character of these areas. Natural fish and wildlife population dynamics and habitats are emphasized, although regulated hunting, fishing, and trapping is allowed. Motorized access is permitted for traditional activities subject to reasonable regulations to protect natural resources, including wilderness values. Regulations limiting motorized access on Kenai Refuge, including Congressionally-designated Wilderness, can be found at 50 CFR 36.39(i). This management category is the most protective. Approximately 1,320,500 acres (66.4 percent) of land will be managed under the Wilderness management category.

Table 2. Differences Between Traditional and Minimal Management Under Alternative A.

Land Management Activity	Traditional Management Category	Minimal Management Category
Prescribed Fire	Permitted	Restricted to the protection of life or property or significant resource value
Sand and Gravel Removal	Permitted on a site-specific basis for use on Refuge subject to reasonable regulation	Not Permitted
Oil and Gas Exploration	Permitted on a site-specific basis subject to reasonable regulation	Not Permitted
Oil and Gas Leasing	Permitted on a site-specific basis subject to reasonable regulation	Not Permitted

5.3.3

Management Direction Identified By Issue

The following discussion describes how Alternative A would address the issues identified during the scoping process. It provides management direction for major Refuge programs as they would be implemented under the alternative.

Issue 1: How will the Refuge address large-scale habitat changes and the use of fire?

Fire Management Program

Use of Fire as a Management Tool

Management direction would allow prescribed fire, use of wildland fire, and mechanical treatments to improve habitats for select wildlife species (Figure 6).

Prescribed fire would be allowed in the Intensive, Moderate, Traditional, and Minimal management categories (approximately 618,500 acres or 31 percent of the Refuge), though its use would be limited in the Minimal management category (approximately 196,000 acres or 9.7 percent of the Refuge).

Use of wildland fire would be allowed in the Moderate, Traditional, Minimal, and Wilderness management categories (approximately 1,883,500 acres or 95 percent of the Refuge). Undesirable wildfires (i.e., those not contributing to Refuge management goals) would be suppressed through the use of an “appropriate management response.”

Issue 2: How will the Refuge manage facilities for public use while ensuring natural resources protection?***Facilities Program******Swanson River Oil and Gas Unit***

Industrial roads, pipelines, and facilities may be authorized in support of exploration, discovery, development, and production of oil and gas found within the unit by the current unit operator. Such operations would be subject to prior approval of the Service. An annual Plan of Development and Operations would be required from each unit operator. The Plan would be reviewed by the Service for comment, and approved by the BLM AO. The AO's approval, with the Service's concurrence, of specific operations must be obtained prior to commencement of such operations. During the life of the project, the Refuge would request, on a case-by-case basis, that industrial roads, pipelines and associated fixtures, and facilities not needed to support ongoing operations be removed and the sites restored.

After the life of the project, most industrial roads and facilities may be removed and the sites restored, though some industrial roads and facilities may be retained for possible public and administrative uses at the Refuge manager's discretion. If roads are retained and vehicles are allowed on those roads, bicycles would be allowed. Bicycles would not be allowed otherwise, and camping facilities would not be provided.

Beaver Creek Oil and Gas Unit

Same as *Swanson River Oil and Gas Unit* (see previous text).

Contaminated Sites

Industrial facilities would be required to operate in compliance with applicable Federal and State environmental statutes and regulations, known contaminant releases will be cleaned up in a timely manner, and areas no longer in use will be restored to predevelopment conditions.

Mystery Creek Road and Pipeline Corridor

Maintenance of the unimproved access road from the Sterling Highway to the Alaska Pipeline corridor would be conducted by ENSTAR during the life of the project. Public use of the area would not require registration, and vehicle use of the unimproved access road and Alaska Pipeline corridor north to Chickaloon Bay would be allowed from the start of moose hunting season (approximately August 9) until snow cover. Pedestrian and horse use would be allowed year-round with no seasonal restrictions. Snowmachine use would be allowed when the Refuge manager determines there is adequate snow cover and when adjacent areas are open. Bicycle use would be allowed when the access road and Alaska Pipeline corridor are open to public vehicle use (approximately August 9 until snow cover). After the life of the pipeline project, the unimproved access road and Alaska Pipeline corridor would be restored at the discretion of the Refuge manager.

Ski Hill Road

If the State of Alaska Department of Transportation and Public Facilities (ADOT&PF) continues to maintain the graveled road on an irregular basis, the Refuge would continue to conduct grading and plowing on an “as needed” basis. The northern and southern routes would remain open to pedestrian, bicycle, and public vehicle use.

Sterling Highway Pullout

Maintenance of the undeveloped pullout at milepost 62 would not be conducted, and public use facilities would not be provided.

Trail Maintenance and Planning

The development of new trails would be allowed in all management categories except Wilderness. New trails would be only developed in response to a documented need and when compatible with Refuge purposes. Maintenance decisions would be driven by availability of funding.

Issue 3: How will the Refuge enhance wildlife-oriented recreation opportunities?

Visitor Services Program

Personal Collection of Natural Resources

Personal collection of berries, mushrooms, other edible plants, and/or shed antlers would not be allowed by regulation 50 CFR 27.51 and 27.61, which generally prohibits such activities.

Christmas Tree Harvesting

Harvesting one black or white spruce tree no larger than 20 feet in height at least 150 feet from roads, trailheads, campgrounds, picnic areas, and waterways per family per year between Thanksgiving and Christmas Day for personal use would be allowed upon general announcement.

Issue 4: How will the Refuge manage increasing public use to ensure resource and visitor experience protection?

Visitor Services Program

Swanson River/Swan Lake Canoe Systems

All canoeists would be required to register at entrance points. Maximum group size would be limited to 15 individuals without a special use permit. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period.

Upper Kenai River (Russian River to Skilak Lake)

Non-Guided Public Use — Non-guided public use would be allowed without restriction.

Guided Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits issued would be limited to 20. Each permit would allow 10 starts per week with no more than 4 starts per day. Additional restrictions may be imposed if demand for commercial recreational services increases.

Guided Use: Sportfishing Incidental Use Program — State-licensed sportfishing guides not having Refuge special use permits may be issued incidental use permits for as many as three trips per year, subject to quotas and blackout dates.

Camping — Dispersed camping would be allowed but may not exceed 14 days in any 30-day period. Camping would not be allowed within one-quarter mile of the Sterling Highway.

Middle Kenai River (Skilak Lake Downstream to Refuge Boundary)

Non-Guided Public Use — Non-guided public use would be allowed without restriction on the number of users.

Guided Public Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits would be issued without limit.

Issue 5: How will the Refuge balance motorized access with protection of resources and visitor experiences?*Airplane Access to Lakes in Designated Wilderness*

Airplane access would be allowed on 46 lakes in designated Wilderness (Figure 7 and Figure 8).

- Dave Spencer Unit: Scenic, Nekutak, Shoepac, Norak, Grouse, King, Bedlam, Taiga, Snowshoe, Wilderness, Mull, Tangerra, Bird, Cook, Sandpiper, and Vogel lakes, plus Pepper, Gene, and Swanson lakes would be open for ice fishing only.
- Andy Simons Unit: Upper Russian, East Twin, West Twin, Emerald, High, Dinglestadt Glacier terminus, Lower Russian, Iceberg, Green, North Kolomin, South Kolomin, Wosnesenski Glacier terminus, Pothole, Harvey, Martin, Windy, Tustumena and all wilderness lakes within one mile of the shoreline of Tustumena Lake (Fox, Nikolai, and Point lakes), and all unnamed lakes in sections 1 and 2, T. 1 S., R. 10 W., and sections 4, 5, 8, and 9, T. 1 S., R 9 W., Seward Meridian, AK (six lakes).
- Mystery Creek Unit: An unnamed lake in section 11, T. 6 N., R. 5 W., Seward Meridian, AK.

Airplane access would not be allowed from May 1 through September 30 on any lake where nesting trumpeter swans and/or their broods are present except on two lakes in designated Wilderness—Scenic Lake, located within the Dave Spencer unit of the Kenai Wilderness, and Windy Lake, located within the Andy Simons unit of the Kenai Wilderness, where the closure would be May 1 through September 10.

Airplane Access to the Chickaloon Flats Area

Wheeled airplane access would be allowed year-round within designated areas including three upland landing zones, a designated beach landing zone, and the unmaintained Big Indian Creek airstrip; and floatplane access would be allowed on 6.5 miles of the Chickaloon River (Figure 9).

Snowmachine Access

Snowmachines less than 46 inches in width and less than 1,000 pounds in weight would be allowed in designated areas from December 1 through April 30 if the Refuge manager determines that there is adequate snowcover to protect underlying vegetation and soils.

5.3.4 Funding and Personnel Requirements

Base Funding

The base Refuge operational budget in fiscal year (FY) 2007 was \$3,245,000. Additional funds necessary to operate Refuge programs were received for annual maintenance (\$312,000), one-time operations (\$390,000), and fire operations (\$528,000). To maintain the current level of services, adjustments will be necessary to balance the offsets of fixed costs and inflation. Current funding levels are inadequate to fully implement existing biological and visitor services programs, and the one-time operations addition was necessary to operate at FY 2005 levels.

Table 1 shows the funds necessary to implement Alternative A. The figures demonstrate the level of funding needed to maintain programs plus inflation adjustments for the short term. Long-term adjustments to the base budget reflect not only short-term adjustments, but also implementation of projects currently identified in the Refuge Operations Needs System (RONS) database. These figures represent the funding and accomplishment of established goals and objectives previously identified.

RONS/SAMMS Projects

RONS is the mechanism that the Refuge uses to justify needed funds and personnel for new programs and for projects necessary to meet legal mandates, Refuge plans, and U.S. Department of the Interior and Service directives. This Internet accessible database is used by all refuges to compete for dollars to adequately fund programs. The identified projects are needed to:

1. Continue implementation of projects initially identified in the Refuge's 1985 Comprehensive Conservation Plan,
2. Continue implementation of projects identified in approved Refuge step-down management plans,
3. Meet approved Refuge goals and objectives necessary for the Refuge to achieve establishment purposes,
4. Meet legal mandates,
5. Implement approved ecosystem goals,
6. Implement approved partnership programs necessary to benefit Refuge resources.

The needs currently listed in Kenai's RONS database date back to 1985; there are 50 projects totaling \$10,747,000 and 25 new staff positions.

The Service Asset Maintenance Management System (SAMMS) is a database the Refuge uses to document and justify significant maintenance projects and equipment replacement. Kenai's SAMMS project list currently has 253 projects identified for a total of \$50,142,000.

Other

Management of oil and gas related activities on the Refuge is a time consuming and difficult process necessary to meet the Service's legal obligations for Federal leases. In FY 2007, it is estimated that oil and gas management costs amounted to approximately \$300,000. This includes costs associated with aircraft and vehicle utilization, personnel, and travel for meetings and site inspections. This program has never been fully funded at the current level of management.

Current and Additional Staffing Needs

In FY 2007, Kenai Refuge had a staff size of 118 employees and volunteers: 35 permanent full-time employees, 8 permanent seasonal employees, 12 temporary seasonal employees, and 63 volunteers. Table 1 identifies the number of staff needed beyond current levels to fully implement Alternative A.

5.4. Alternative B

5.4.1 **General Management Direction**

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered under Alternative B. The following discussion identifies management direction proposed under Alternative B. Additionally, the Refuge Goals and Objectives presented in Volume 1, Section 2.2 in the Plan and the Management Direction, Policies, and Guidelines presented in Volume 2, Appendix C in the Plan apply to this alternative.

5.4.2 **Management Categories**

Four management categories would be applied to Kenai Refuge under Alternative B (Figure 10).

Intensive Management – As described in Alternative A.

Moderate Management – Approximately 204,000 acres (10.3 percent) of land would be managed under the Moderate management category.

Traditional Management – This category would be eliminated. Of the 189,000 acres of land currently identified as Traditional management, approximately 25,000 acres would convert to the Moderate management category, and 164,000 acres would convert to the Minimal management category.

Minimal Management – Approximately 360,000 acres (18.1 percent) of land would be managed under the Minimal management category.

Wilderness Management – As described in Alternative A.

5.4.3 **Management Direction Identified By Issue**

The following discussion describes how Alternative B would address the issues identified during the scoping process. It provides management direction for major Refuge programs as they would be implemented under the alternative.

Issue 1: How will the Refuge address large-scale habitat changes and the use of fire?

Fire Management Program

Use of Fire as a Management Tool

Management direction would allow prescribed fire, use of wildland fire, and mechanical treatments as the principle management tools to improve wildlife habitats, reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 11).

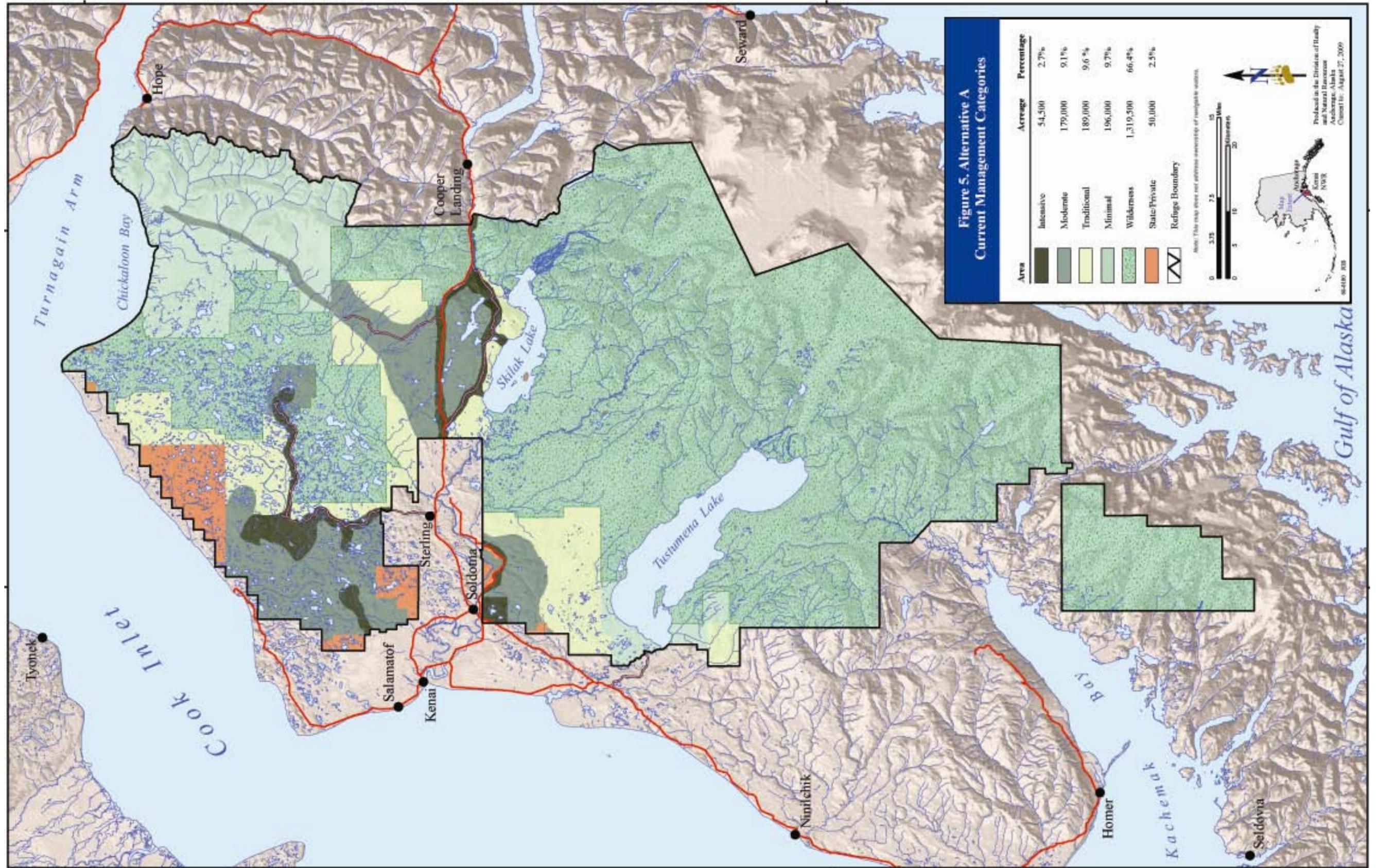


Figure 5: Alternative A Current Management Categories

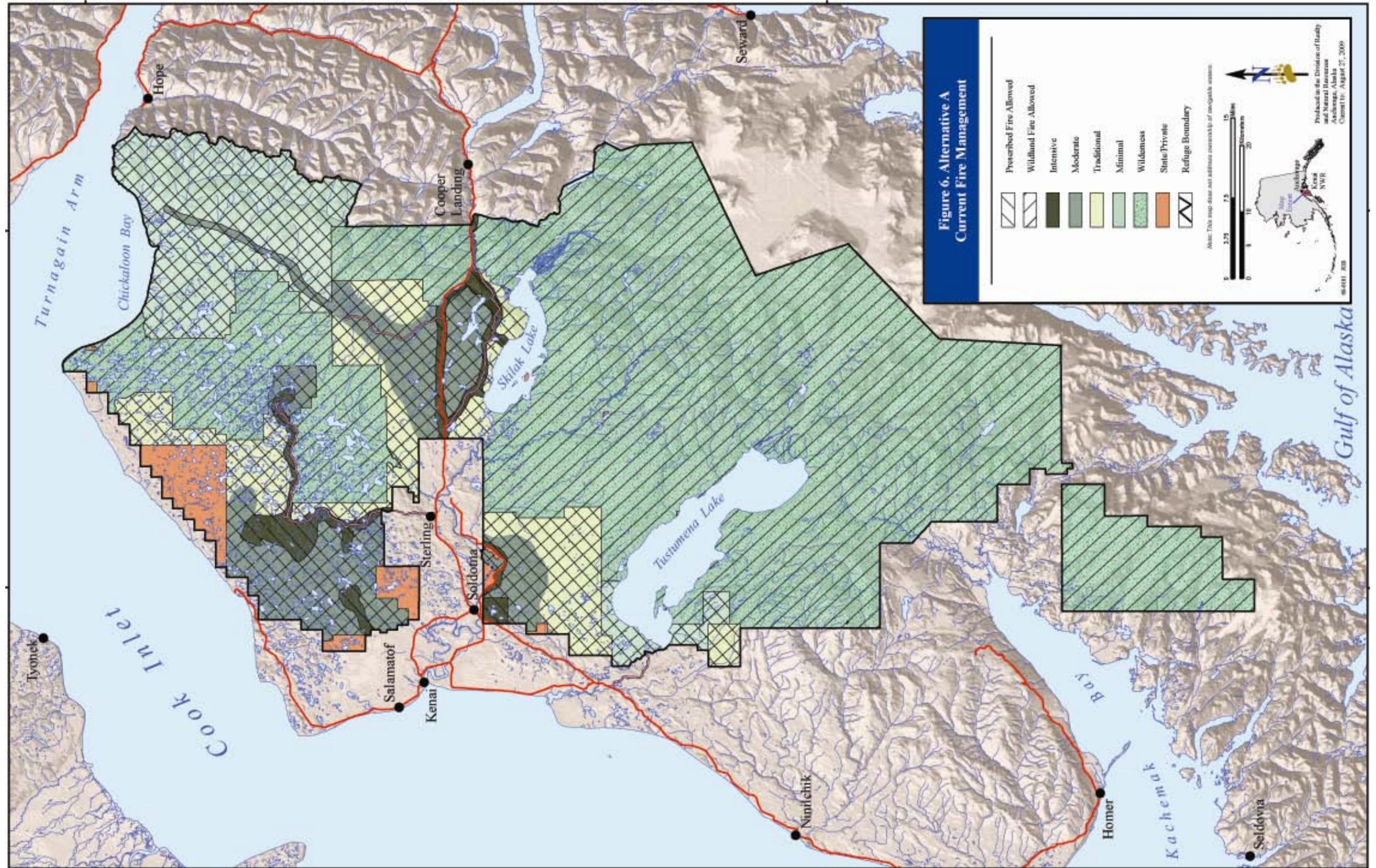


Figure 6: Alternative A Current Fire Management

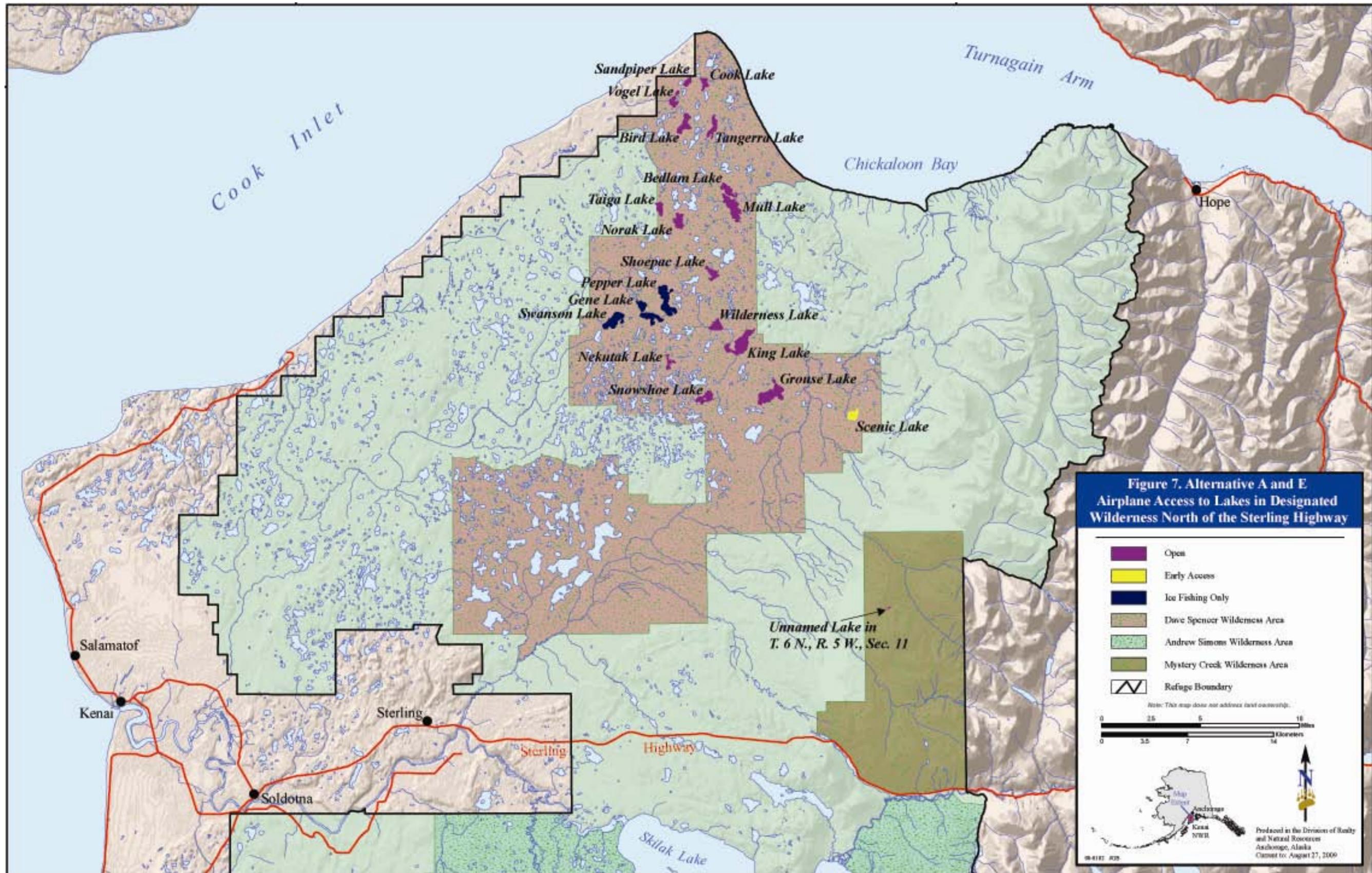


Figure 7: Alternatives A and E: Airplane Access - North

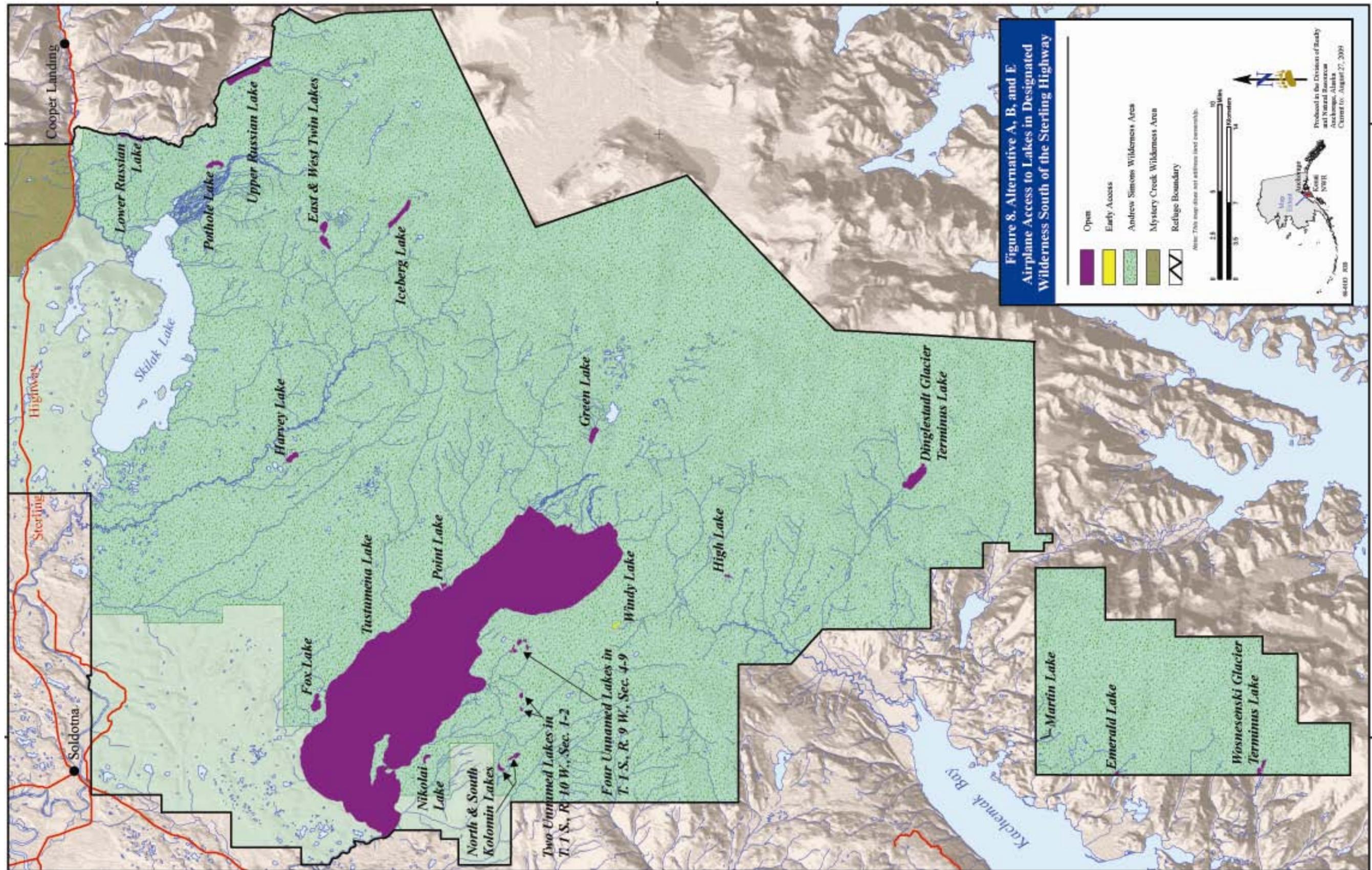


Figure 8: Alternatives A and E - Airplane access - South

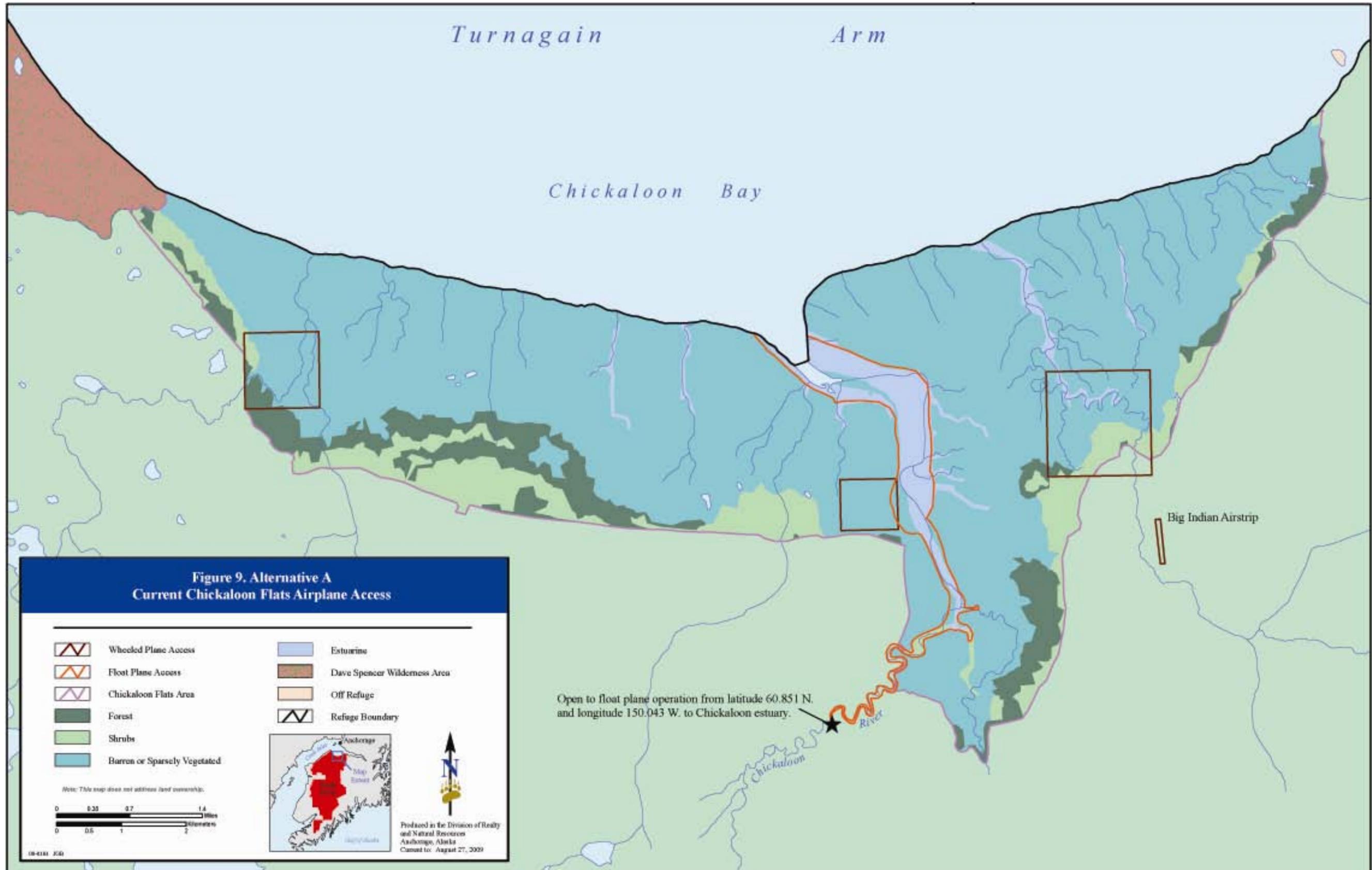


Figure 9: Alternative A - Current Chickaloon Flats Airplane Access

Back of Figure 9

Prescribed fire would be allowed in the Intensive and Moderate management categories (approximately 258,500 acres or 13 percent of the Refuge), and in the Minimal management category (approximately 360,000 acres or 18 percent of the Refuge) but only on lands not adjoining designated Wilderness.

Use of wildland fire would be allowed in the Minimal and Wilderness management categories (approximately 1,679,500 acres or 84.5 percent of the Refuge). Undesirable wildfires (i.e., those not contributing to Refuge management goals) would be suppressed through the use of an “appropriate management response.”

Issue 2: How will the Refuge manage facilities for public use while ensuring natural resources protection?

Facilities Program

Swanson River Oil and Gas Unit

After the life of the project, all industrial roads (except the Swanson River Road); pipelines and associated fixtures, regardless of whether they are located along industrial roads, on gravel well pads, or traverse the landscape; and all facilities built to support oil and gas operations would be removed and the sites restored to match the surrounding landscape. No industrial roads or facilities built to support oil and gas operations would be retained for public and/or administrative uses. Camping facilities would not be provided, and bicycles would not be allowed.

Beaver Creek Oil and Gas Unit

Same as *Swanson River Oil and Gas Unit*.

Contaminated Sites

Industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to remediate and restore the sites as necessary to acceptable standards agreed upon by ADEC, BLM, the Service, and the site owner or operator.

Mystery Creek Road and Pipeline Corridor

Maintenance of the improved access road from the Sterling Highway to the Alaska Pipeline corridor would be increased and conducted by ENSTAR during the life of the project. Road improvements would facilitate public access, enhance public safety, and ensure environmental protection. Public use of the area would require registration at points of entry. Public vehicle use of the improved access road and Alaska Pipeline corridor north to Chickaloon Bay and southwest to the East Fork of the Moose River would be allowed from July 1 through November 30. Pedestrian and horse use would be allowed year-round with no seasonal restrictions. Snowmachine use would be allowed when the Refuge manager determines there is adequate snow cover and when adjacent areas are open. Bicycle use would be allowed

generally from May 1 through November 30. After the life of the pipeline project, public use and/or restoration opportunities would be re-evaluated. If the improved access road is retained, maintenance would revert to the Refuge.

Ski Hill Road

The Refuge will assume management and maintenance responsibilities for the Ski Hill Road upon its transfer from the State to the Service. Maintenance of the graveled road would be conducted on a regular basis by the Refuge; and the northern and southern routes would remain open to pedestrian, bicycle, and public vehicle use.

Sterling Highway Pullout

Develop a formal rest stop at milepost 62 through a cooperative effort with ADOT&PF.

Trail Maintenance and Planning

Develop a trail needs assessment that identifies and prioritizes construction and/or maintenance needs and construction standards for a variety of trails.

Issue 3: How will the Refuge enhance wildlife-oriented recreation opportunities?

Visitor Services Program

Personal Collection of Natural Resources

Refuge-specific regulations would be amended to allow the personal collection and use of unlimited quantities of berries, mushrooms, and other edible plants. Such collection would be for non-commercial use only and could only be undertaken in a manner that does not unduly damage other resources (e.g., an individual could not cut down live trees to harvest the seeds and/or cones). Additionally, the collection of up to eight naturally shed moose or caribou antlers per person per year for non-commercial purposes would be allowed.

Christmas Tree Harvesting

Refuge-specific regulations would be amended to allow for harvesting one black or white spruce tree no larger than 20 feet in height per family per year between Thanksgiving and Christmas Day. Trees could not be taken within the two-square-mile Refuge Visitor Center area on Ski Hill Road or closer than 150 feet from roads, trails, campgrounds, picnic areas, and waterways (lakes, rivers, streams, or ponds). Additionally, for safety reasons, stumps from harvested trees must be trimmed less than six inches from the ground.

Issue 4: How will the Refuge manage increasing public use to ensure resource and visitor experience protection?

Visitor Services Program

Swanson River/Swan Lake Canoe Systems

All canoeists would be required to register at entrance points, and Refuge officers would spot-check and enforce the registration requirement. Maximum group size would be limited to 15 individuals without a special use permit. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period. A Limits-of-Acceptable-Change framework would be implemented to guide future management of the canoe systems.

Upper Kenai River (Russian River to Skilak Lake)

Non-Guided Public Use — Work cooperatively with stakeholders to modify, as needed, existing management agreements or plans (or develop new ones) to address Upper Kenai River crowding issues for non-guided public use.

Guided Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits would be limited to 20 issued. The timing of boats and starts for each permit would be managed beyond current conditions.

Guided Use: Sportfishing Incidental Use Program — State-licensed sportfishing guides not having Refuge special use permits may be issued an incidental use permit limited to one trip per year subject to quotas and blackout dates.

Camping — Dispersed camping within 100 yards of the Kenai River would be limited to 24 hours within any 14-day period. Camping would not be allowed within one-quarter mile of the Sterling Highway.

Middle Kenai River (Skilak Lake Downstream to Refuge Boundary)

Non-Guided Public Use — Non-guided public use would be allowed without restriction on the number of users.

Guided Use: Sportfishing — Following the conclusion of the Kenai River-wide guide limitation process conducted by the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, the Refuge would evaluate the need to implement a Refuge-specific permitting process similar to the system used on the Upper Kenai River.

Issue 5 — How will the Refuge balance motorized access with protection of resources and visitor experiences?

Airplane Access to Lakes in Designated Wilderness

As described in Alternative A, airplane access would be allowed on 45 lakes in designated Wilderness (Figure 8 and Figure 12) except on Bird Lake (Dave Spencer Unit).

An environmental assessment would be conducted to determine the amount of airplane use and any associated impacts on Refuge resources, recreation opportunities, and Wilderness values.

Airplane Access to Chickaloon Flats

Wheeled airplane access would be allowed year-round on 21 square miles of the Chickaloon Flats area that are unvegetated and the unmaintained Big Indian Creek airstrip; floatplane access would be allowed on 6.5 miles of the Chickaloon River (Figure 13)

Snowmachine Access

Studies with the State of Alaska and other stakeholders would evaluate the effects of use on Refuge resources and visitor experiences, the results of which would be used to support future management decisions.

5.4.4 Funding and Personnel Requirements

Base Funding

The funds necessary to implement Alternative B in addition to those base funds already received are shown in Table 1. The figures demonstrate the level of funding needed to maintain programs plus inflation adjustments for the short term. Long-term adjustments to the base budget reflect not only short-term adjustments, but also implementation of projects currently identified in the RONS database plus those needed to implement this alternative.

RONS/SAMMS Projects

A number of RONS and SAMMS projects would need to be funded to achieve the requirements of this alternative.

Other

Management of oil and gas related activities on the Refuge would continue to be manpower intensive and costly under this alternative.

Additional Staffing Needs

Selection of this alternative would require additional staff. One additional law enforcement officer, in addition to those positions currently identified in the RONS package, would be required. Costs for this position would be approximately \$150,000 in year one and \$80,000 in subsequent years. Year one costs would include a move, vehicle, salary, and necessary equipment. A seasonal trail crew, consisting of five permanent seasonal employees would also be added at a cost of approximately \$250,000. Table 1 identifies the number of staff needed beyond current levels to fully implement Alternative B.

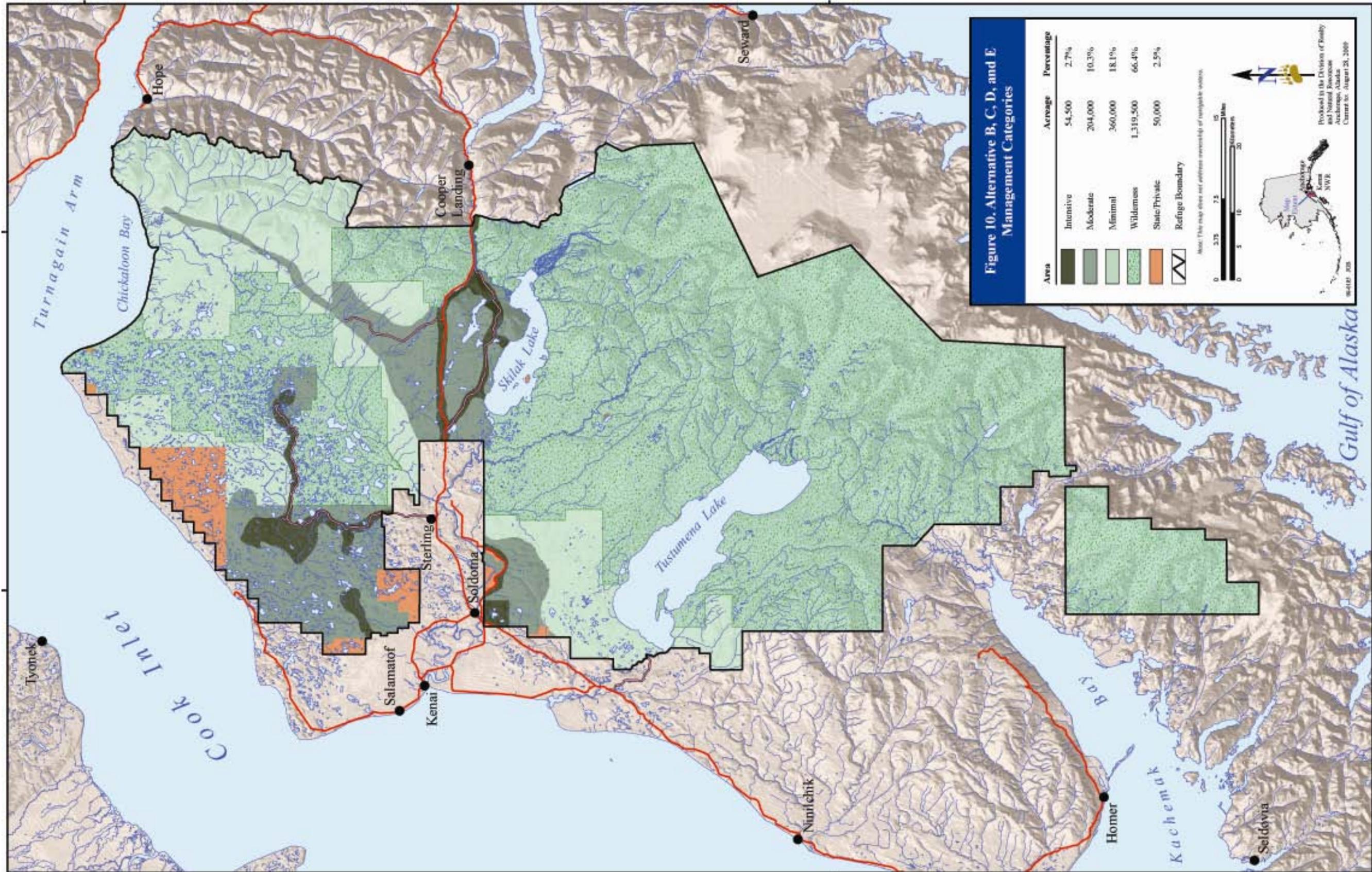


Figure 10: Alternatives B, C, D, and E - Management Categories

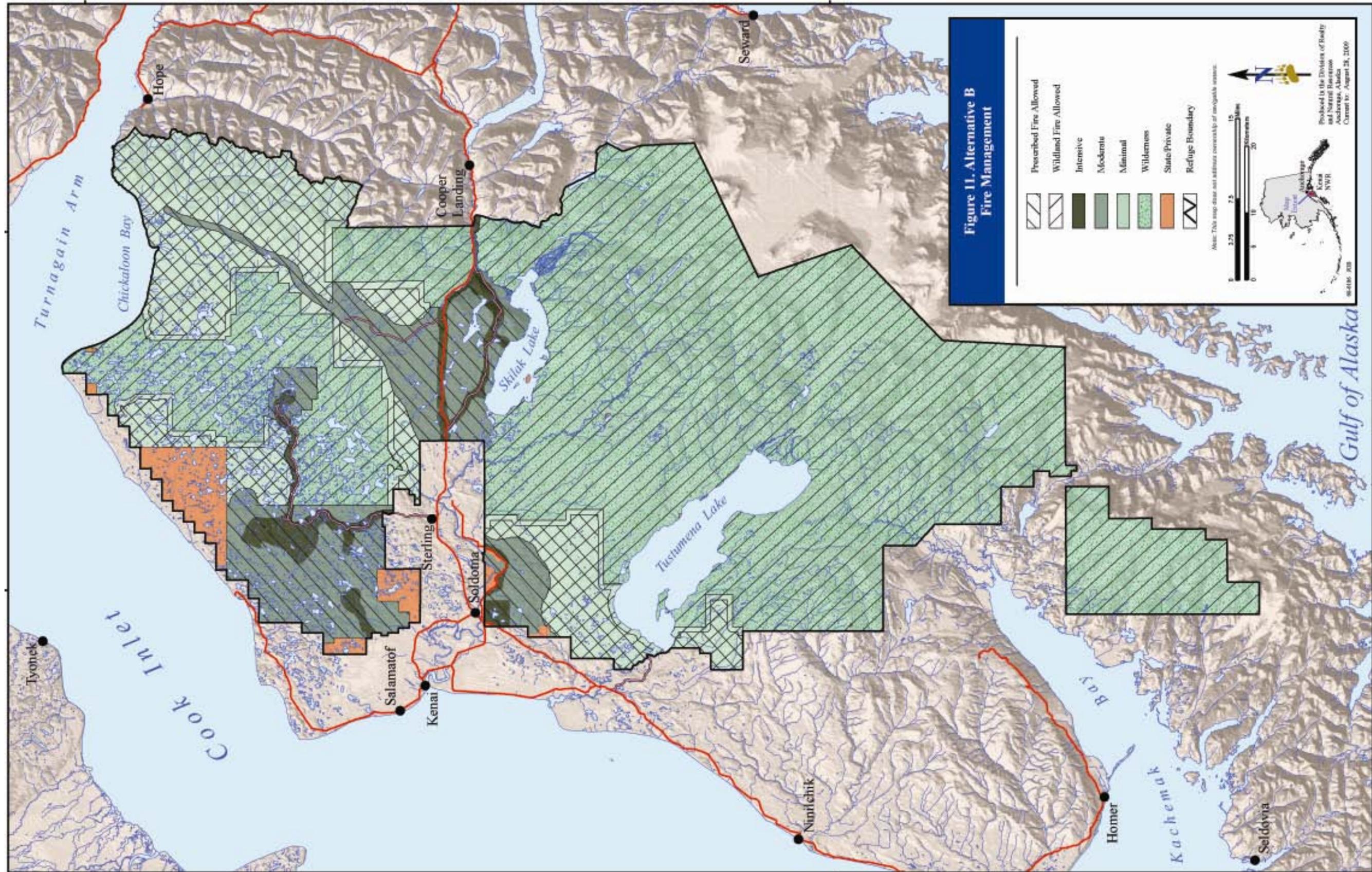


Figure 11: Alternative B - Fire Management

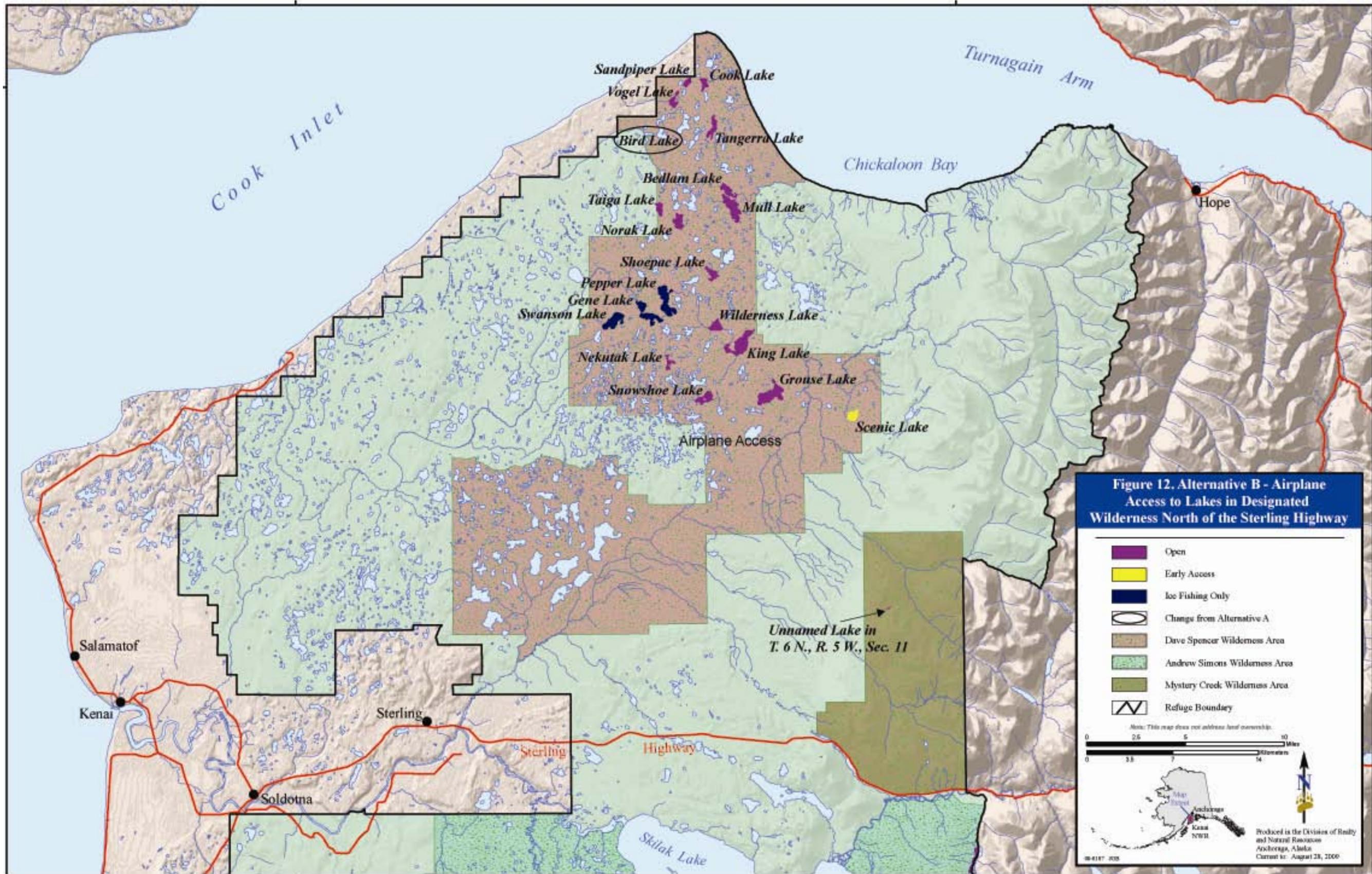


Figure 12: Alternative B - Airplane Access to Lakes in Designated Wilderness, North of the Sterling Highway

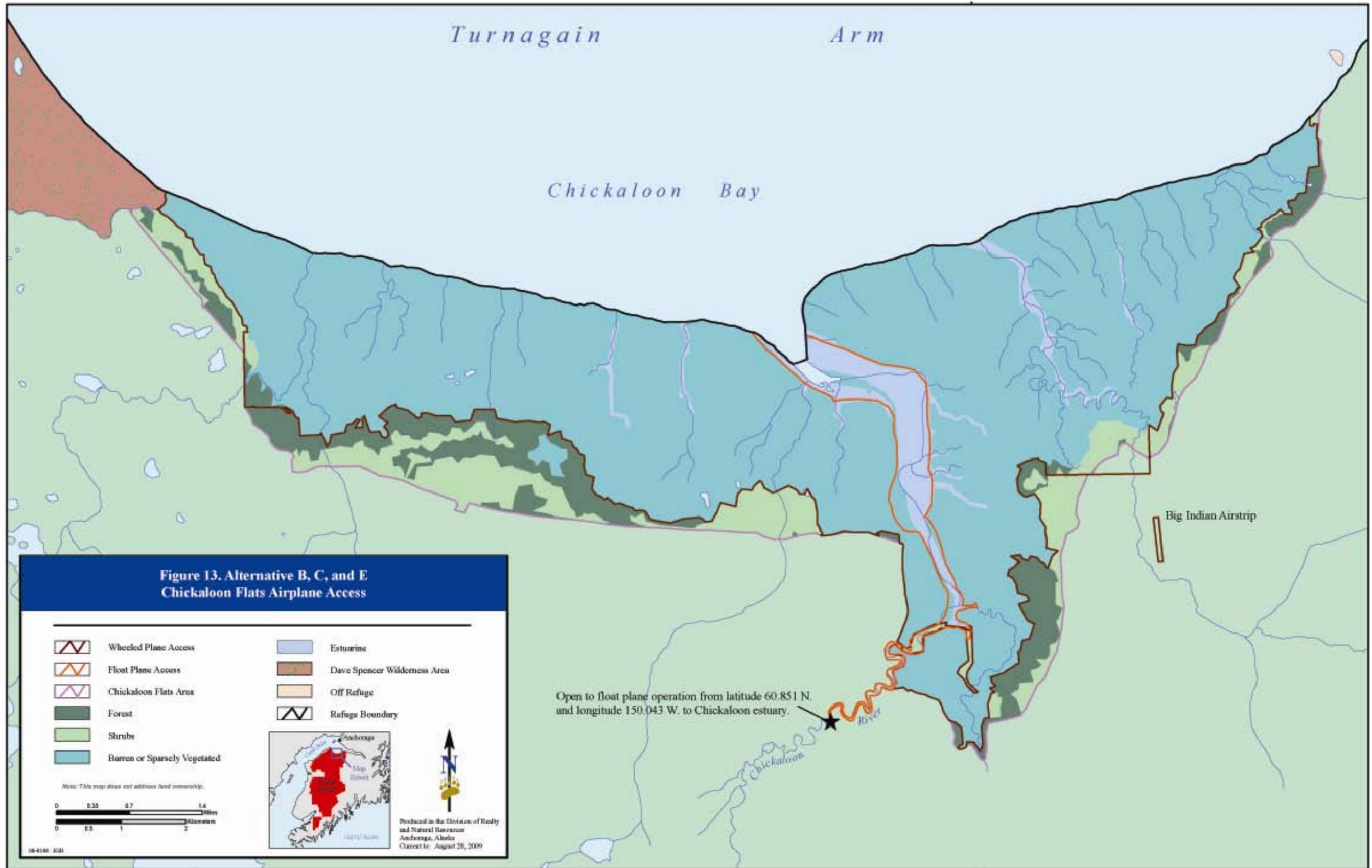


Figure 13: Alternatives B, C, and E - Chickaloon Flats Airplane Access

5.5. Alternative C

5.5.1 **General Management Direction**

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered under Alternative C. The following discussion identifies management direction proposed under Alternative C. Additionally, the Refuge Goals and Objectives presented in Volume 1, Section 2.2 in the Plan and the Management Direction, Policies, and Guidelines presented in Volume 2, Appendix C in the Plan apply to this alternative.

5.5.2 **Management Categories**

Four management categories would be applied to Kenai Refuge under Alternative C (Figure 10).

Intensive Management – As described in Alternative A.

Moderate Management – As described in Alternative A.

Traditional Management – As described in Alternative B.

Minimal Management – Approximately 385,000 acres (19.4 percent) of the land would be managed under the Minimal management category.

Wilderness Management – As described in Alternative A.

5.5.3 **Management Direction Identified By Issue**

The following discussion describes how Alternative C would address the issues identified during the scoping process. It provides management direction for major Refuge programs as they would be implemented under the alternative.

Issue 1: How will the Refuge address large-scale habitat changes and the use of fire?

Fire Management Program

Use of Fire as a Management Tool

Management direction would allow prescribed fire, use of wildland fire, and mechanical treatment as the principle management tools to improve wildlife habitats, reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 14).

Prescribed fire would be allowed in the Intensive, Moderate, and Minimal management categories (approximately 618,500 acres or 31 percent of the Refuge).

Use of wildland fire would be allowed in the Intensive, Moderate, Minimal, and Wilderness management categories (approximately 1,938,000 acres or 97.5 percent of the Refuge), but use would be emphasized in the Minimal

management category (approximately 385,000 acres or 19.5 percent of the Refuge) and the default management action in the Wilderness management category (approximately 1,319,500 acres or 66.4 percent of the Refuge) unless safety, resource availability, or other planning objectives dictate a different response is warranted. Undesirable wildfires (i.e., those not contributing to Refuge management goals) would be suppressed through the use of a pre-identified management response.

Issue 2: How will the Refuge manage facilities for public use while ensuring natural resources protection?

Facilities Management Program

Swanson River Oil and Gas Unit

After the life of the project, some industrial roads; all pipelines and associated fixtures, regardless of whether they are located along industrial roads, on gravel well pads, or traverse the landscape; and all facilities built to support oil and gas operations would be removed and the sites restored to match the surrounding landscape. Most industrial roads would be converted to trails for pedestrian and horse use at the Refuge manager's discretion. Although no facilities built to support oil and gas operations would be retained for public and/or administrative uses, up to five primitive camping facilities would be provided for walk-in use only. Bicycles would not be allowed.

Beaver Creek Oil and Gas Unit

Same as *Swanson River Oil and Gas Unit* except up to two primitive camping facilities would be provided for walk-in use only.

Contaminated Sites

Same as described in Alternative B.

Mystery Creek Road and Pipeline Corridor

Maintenance of the improved access road from the Sterling Highway to the Alaska Pipeline corridor would be conducted by ENSTAR to continue to provide for a backcountry experience. Road improvements would be limited to those necessary for public safety and environmental protection. Public use of the area would require registration at points of entry. Public vehicle use of the improved access road and Alaska Pipeline corridor north to Chickaloon Bay and southwest to the East Fork of the Moose River would be allowed from August 9 through November 30. Pedestrian and horse use would be allowed year-round with no seasonal restrictions. After the life of the pipeline project, public use and/or restoration opportunities would be re-evaluated. If the improved access road is retained, maintenance would revert to the Refuge.

Ski Hill Road

The Refuge will assume management and maintenance responsibilities for the Ski Hill Road upon its transfer from the State to the Service. Maintenance and road improvements would be conducted by the Refuge upon transfer of the road from the State to the Service. The northern route would remain graveled and open to pedestrian, bicycle, and emergency vehicle use only. The southern route would be improved and hard-surfaced, and open to pedestrian, bicycle, and public vehicle use.

Sterling Highway Pullout

As described in Alternative B.

Trail Maintenance and Planning

As described in Alternative B.

Issue 3: How will the Refuge enhance wildlife-oriented recreation opportunities?*Personal Collection of Natural Resources*

As described in Alternative B.

Christmas Tree Harvesting

As described in Alternative B.

Issue 4: How will the Refuge manage increasing public use to ensure resource and visitor experience protection?*Visitor Services Program**Swan Lake and Swanson River Canoe Systems*

All canoeists would be required to register at entrance points. Maximum group size would be limited to 15 individuals without a special use permit. Dispersed camping would be allowed but may not exceed 14 days in any 30-day period. Campsites would be monitored and evaluated regularly using standard protocols. Management actions taken to address resource concerns, including temporary closures of selected campsites to encourage natural rehabilitation, may be implemented as needed. Regulations requiring appropriate disposal of human waste would be adopted.

Upper Kenai River (Russian River to Skilak Lake)

Non-Guided Public Use — Implement a public process to restrict or redirect non-guided public use for the Upper Kenai River if more than 25 percent of anglers surveyed (outside of the confluence area) report difficulty in finding an uncrowded fishing spot.

Guided Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits would be limited to 18 issued through attrition. Each permit would allow ten 10 starts per week with no more than 4 starts per day. Additional restrictions may be imposed if demand for commercial recreational services increases.

Guided Use: Sportfishing Incidental Use Program — State-licensed sportfishing guides not having Refuge special use permits may be issued incidental use permits for as many as three trips per year subject to additional quotas and blackout dates.

Camping — Dispersed camping within 100 yards of the Kenai River or within one-quarter mile of the Sterling Highway would not be allowed.

Middle Kenai River (Skilak Lake Downstream to Refuge Boundary)

Non-Guided Public Use — Non-guided public use would be allowed without restriction on the number of users until a Limits-of-Acceptable-Change planning process is completed with stakeholders, including the State of Alaska, which would lead to the development of a step-down management plan.

Guided Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits would be limited to the number of permittees existing upon completion of this comprehensive conservation planning process, and existing permittees would be “grandfathered” in.

Issue 5: How will the Refuge balance motorized access with protection of resources and visitor experiences?

Airplane Access to Lakes in Designated Wilderness

Airplane access would be allowed on 50 lakes in designated Wilderness (Figure 15 and 16). Same as alternative A with the addition of the following 4 lakes

- Dave Spencer Unit: Falcon, Wren, and Neckshorta lakes,
- Andy Simons Unit: An unnamed lake southwest of Goat Lake in section 28 .

Airplane Access to Chickaloon Flats

Wheeled airplane access would be allowed year-round on 21 square miles of the Chickaloon Flats area that are unvegetated, regular maintenance would be conducted on the Big Indian Creek airstrip, and floatplane access would be allowed on 6.5 miles of the Chickaloon River (Figure 13).

Snowmachine Access

Snowmachines less than 46 inches wide and less than 1,000 pounds in weight would be allowed in certain zones within designated areas from December 1 through April 30, if adequate snow cover is present. The Refuge Manager determines if adequate snow cover is present. Snow cover is necessary to

protect vegetation and soils from damage. Studies would be conducted with the State of Alaska and other stakeholders to evaluate the effects of snowmachine use on Refuge resources and visitor experiences, the results of which would be used to support future management decisions.

5.5.4 Funding and Personnel Requirements

Base Funding

Table 1 shows the funds necessary to implement Alternative C in addition to those base funds already received. The figures demonstrate the level of funding needed to maintain programs plus inflation adjustments for the short term. Long-term adjustments to the base budget reflect not only short-term adjustments, but also implementation of projects currently identified in the RONS database plus those needed to implement this alternative. Significant new funding would be required to implement this alternative to harden roadways (\$2,500,000), develop new visitor facilities for wildlife observation (\$1,500,000), and pay salaries for six additional personnel needed to accomplish these new programs (\$750,000).

RONS / SAMMS Projects

A number of RONS and SAMMS projects would need to be funded to achieve the requirements of this alternative.

Other

Management of oil and gas related activities on the Refuge would continue to be manpower intensive and costly under this alternative.

Additional Staffing Needs

Selection of this alternative would require additional staff. Two additional law enforcement officers, in addition to those positions currently identified in the RONS package, would be required. Costs for these positions would be approximately \$300,000 in year one, and \$160,000 in subsequent years. Year one costs would include moves, vehicle, salary, and necessary equipment. Other required personnel would include two maintenance professionals (year one costs approximately \$250,000; subsequent years approximately \$160,000), and two park rangers (Visitor Services) to provide services at new facilities (year one costs approximately \$250,000; subsequent years approximately \$160,000). A seasonal trail crew consisting of five permanent seasonal employees would also be added at a cost of approximately \$250,000. Table 1 identifies the number of staff needed beyond current levels to fully implement Alternative C.

5.6. Alternative D

5.6.1 **General Management Direction**

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered under Alternative D. The following discussion identifies management direction proposed under Alternative D. Additionally, the Refuge Goals and Objectives presented in Volume 1, Section 2.2 in the Plan and the Management Direction, Policies, and Guidelines presented in Volume 2, Appendix C in the Plan apply to this alternative.

5.6.2 **Management Categories**

Four management categories would be applied to Kenai Refuge under Alternative D (Figure 10).

Intensive Management – As described in Alternative A.

Moderate Management – This category would be reduced and eventually eliminated after the life of the Alaska Pipeline project. Approximately 129,550 acres (6.5 percent) of the land would convert to the Minimal management category immediately. The remaining 49,450 acres (2.5 percent) of land would be retained as Moderate management during the life of the Alaska Pipeline project. These lands would convert to the Minimal management category after the life of that project.

Traditional Management – As described in Alternative B.

Minimal Management – Approximately 514,550 acres (25.9 percent) of the land would be managed under the Minimal management category during the life of the Alaska Pipeline project. After the life of the project, 564,000 acres (28.4 percent) would be managed under the Minimal management category.

Wilderness Management – As described in Alternative A.

5.6.3 **Management Direction Identified By Issue**

The following discussion describes how Alternative D would address the issues identified during the scoping process. It provides management direction for major Refuge programs as they would be implemented under the alternative.

Issue 1: How will the Refuge address large-scale habitat changes and the use of fire?

Fire Management Program

Use of Fire as a Management Tool

Management direction would allow prescribed fire, wildfire, and mechanical treatments as the principle management tools to improve wildlife habitats,

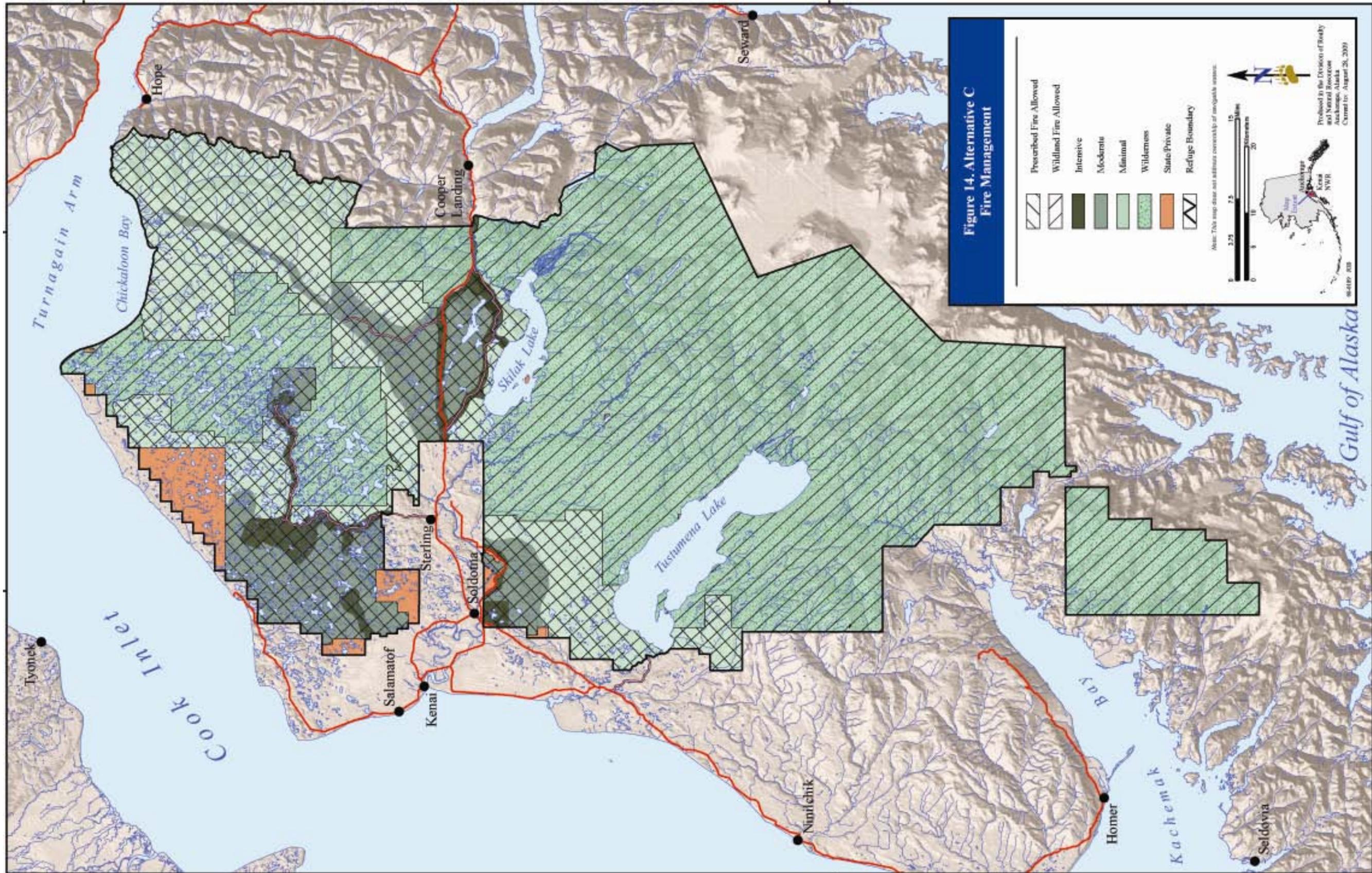


Figure 14: Alternative C - Fire Management

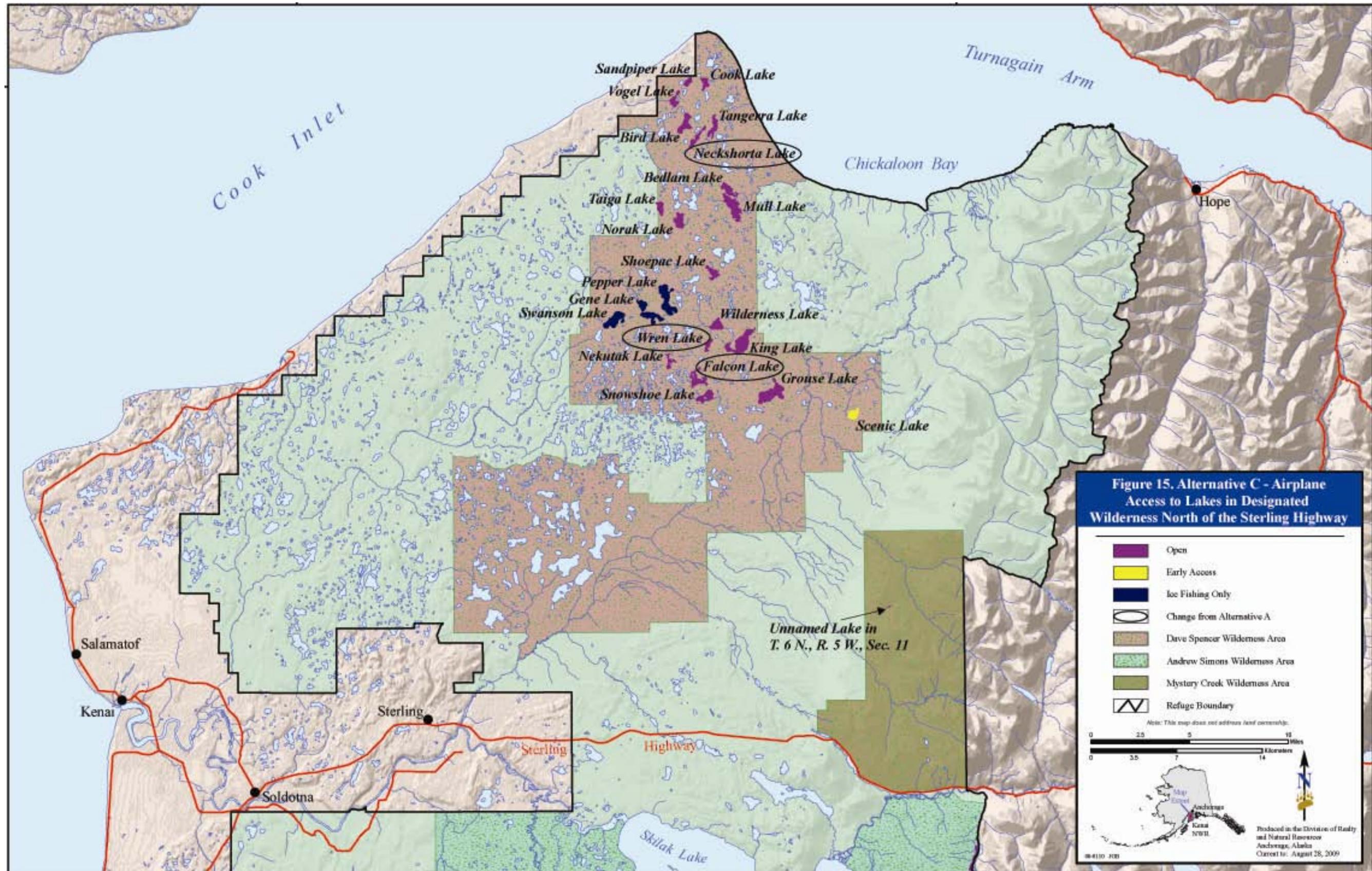


Figure 15: Alternative C - Airplane Access to Lakes in Designated Wilderness, North of the Sterling Highway

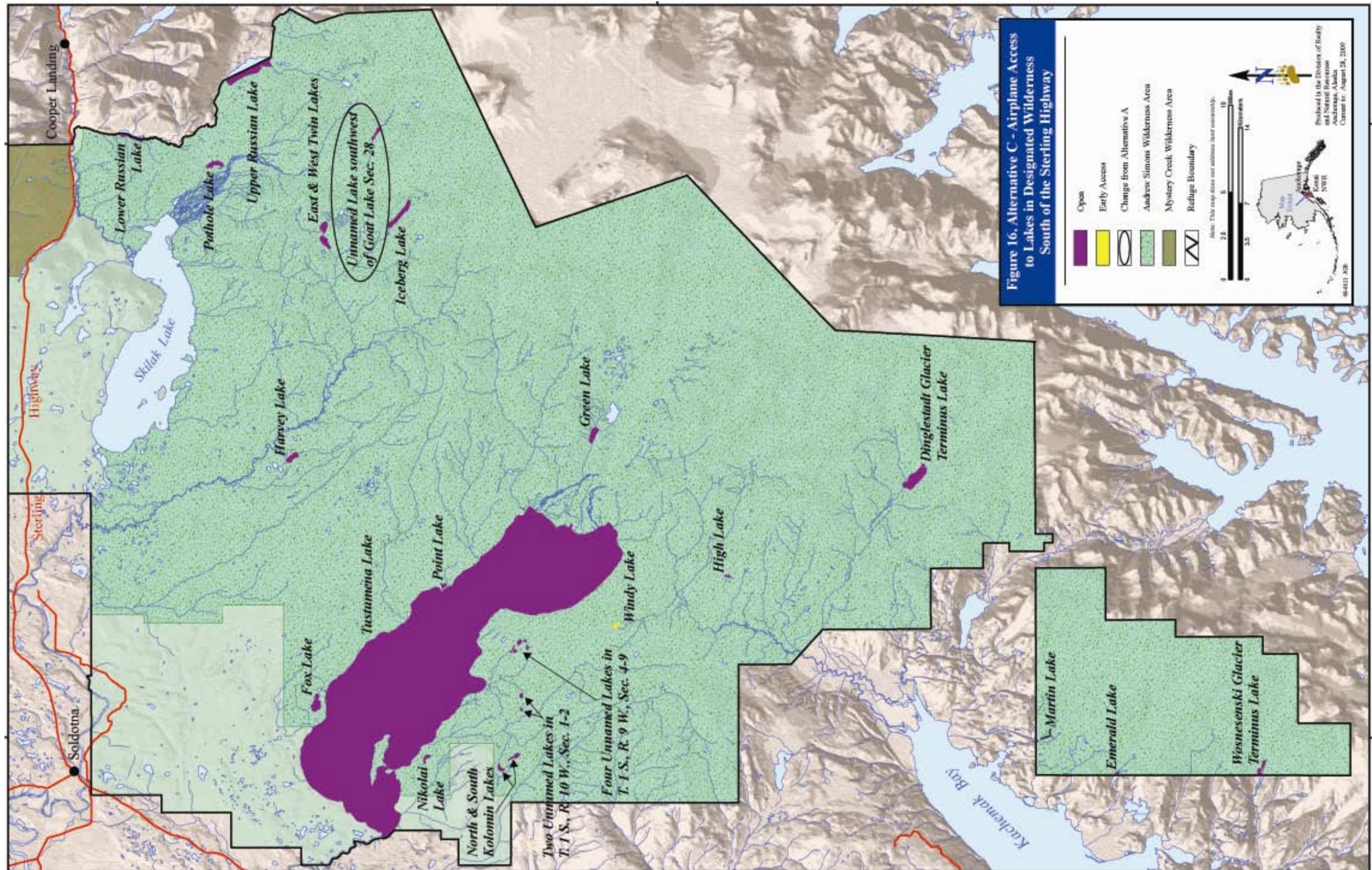


Figure 16. Alternative C - Airplane Access to Lakes in Designated Wilderness South of the Sterling Highway

Open
 Early Access
 Change from Alternative A
 Andrew Simons Wilderness Area
 Mystery Creek Wilderness Area
 Refuge Boundary

0 2.5 5 7.5 10 Miles
 0 2.5 5 7.5 10 Kilometers
 Note: This map does not address land ownership.

Produced by the Division of Realty and Natural Resources, Anchorage, Alaska
 Current to: August 28, 2009
 88-0111-328

Figure 16: Alternative C - Airplane Access to Lakes in Designated Wilderness , South of the Sterling Highway

Back of Figure

reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 17).

Prescribed fire would be allowed in the Intensive, Moderate, Minimal, and Wilderness management categories (approximately 1,938,000 acres or 97.5 percent of the Refuge), though its use in the Wilderness management category would only occur under specific conditions defined in national Wilderness and fire management policies.

Use of wildland fire would be allowed in the Intensive, Moderate, Minimal, and Wilderness management categories (approximately 1,938,000 acres or 97.5 percent of the Refuge), but use would be the default management action in the Minimal and Wilderness management categories (approximately 1,883,500 acres or 95 percent of the Refuge). Undesirable wildfires (i.e., those not contributing to Refuge management goals) would be suppressed through the use of an “appropriate management response.”

Issue 2: How will the Refuge manage facilities for public use while ensuring natural resources protection?

Facilities Management Program

Swanson River Oil and Gas Unit

After the life of the project, some industrial roads; most pipelines, sections of pipelines, and associated fixtures, regardless of whether they are located along industrial roads, on gravel well pads, or along utility corridors that have not adequately revegetated; and most facilities built to support oil and gas operations would be removed and the sites restored to match the surrounding landscape. In cases where more environmental damage would occur by removing pipelines (or sections of pipelines) than by leaving them in place, the pipeline (or sections of pipeline) would be cleaned, capped, and left in place. Most industrial roads would be retained and maintained for public and administrative uses at the Refuge manager’s discretion. Some facilities built to support oil and gas operations may be retained for administrative uses (e.g., research, law enforcement, or seasonal programs) at the Refuge manager’s discretion; and up to two developed campgrounds, consisting of “hardened” campsites, vault toilets, tables, and fire rings, would be provided. Bicycles would be allowed on roads and trails.

Beaver Creek Oil and Gas Unit

Same as *Swanson River Oil and Gas Unit* except up to one developed campground would be provided.

Contaminated Sites

As described in Alternative B.

Mystery Creek Road and Pipeline Corridor

Maintenance of the unimproved access road from the Sterling Highway to the Alaska Pipeline corridor would be conducted by ENSTAR during the life of the project. Public use of the area would not require registration. Public vehicle use and bicycles would not be allowed; pedestrian and horse use would be allowed year-round with no seasonal restrictions. Snowmachine use would be allowed when the Refuge manager determines there is adequate snow cover and when adjacent areas are open. After the life of the pipeline project, the unimproved access road and Alaska Pipeline corridor would be restored, and a trail would be constructed for pedestrian and horse use only.

Ski Hill Road

The Refuge will assume management and maintenance responsibilities for the Ski Hill Road upon its transfer from the State to the Service. Maintenance and road improvements would be conducted by the Refuge. The northern route would remain graveled and open to pedestrian, bicycle, and emergency vehicle use only. The southern route would be improved, hard-surfaced and open to public vehicle use, and a trail would be provided within the road right-of-way for pedestrian and bicycle use.

Sterling Highway Pullout

As described in Alternative B.

Trail Maintenance and Planning

As described in Alternative B.

Issue 3: How will the Refuge enhance wildlife-oriented recreation opportunities?*Visitor Services Program**Personal Collection of Natural Resources*

As described in Alternative B.

Christmas Tree Harvesting

As described in Alternative B.

Issue 4: How will the Refuge manage increasing public use to ensure resource and visitor experience protection?*Swan Lake and Swanson River Canoe Systems*

All canoeists would be required to register via a reservation system. Maximum group size would be limited to 15 individuals without a special use permit. Camping would be allowed in designated sites only. Regulations

requiring the use of outhouses provided at designated campsites would be adopted.

Upper Kenai River (Russian River to Skilak Lake)

Non-Guided Public Use — Implement a limited permit program for the Upper Kenai River to address non-guided sportfishing and scenic float trips between Sportsman’s Lodge and Jim’s Landing. A public rulemaking process would provide stakeholders an opportunity to make suggestions on how best to implement the system.

Guided Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits would be limited to 15 issued through attrition. Each permit would allow 10 starts per week with no more than 4 starts per day. Additional restrictions may be imposed if demand for commercial recreational services increases.

Guided Use: Sportfishing Incidental Use Program — The Incidental Use Program would be eliminated.

Camping — Dispersed camping within 100 yards of the Kenai River and camping within one mile of the inlet or outlet of the Kenai River and Skilak Lake would be limited to 48 hours within any 14-day period. Camping would not be allowed within one-quarter mile of the Sterling Highway.

Middle Kenai River (Skilak Lake Downstream to Refuge Boundary)

Non-Guided Public Use — A limited permit program for all non-guided public use would be developed. A public rulemaking process would provide stakeholders an opportunity to make suggestions on how best to implement the program.

Guided Use: Sportfishing — Special use permits would be required for sportfishing guides. Permits would be limited to 20 issued through a competitive selection process, and management of the timing of boats and/or starts would be initiated.

Issue 5: How will the Refuge balance motorized access with protection of resources and visitor experiences?

Airplane Access to Lakes in Designated Wilderness

Airplane access would be allowed on 59 lakes in designated Wilderness and 1 additional lake outside of designated Wilderness (Figure 18 and 19). Includes the lakes listed in Alternative A plus the following 13 lakes.

- Dave Spencer Unit: Falcon, Wren, Neckshorta, Rabbit Foot, and Muskrat lakes plus Angler lake would be open for ice fishing only.
- Andy Simons Unit: An unnamed lake southwest of Goat Lake in section 28, an unnamed lake west of Kolomin lake in section 31, four lakes north of Harvey lake (Round Lake in section 29, an unnamed lake northwest of Round Lake in section 30, an unnamed lake southwest of Round Lake in

section 30, and an unnamed lake southwest of Round Lake in section 31), and Kaknu Lake

Airplane access would not be allowed from May 1 through September 30 on any lake where nesting trumpeter swans and/or their broods are present except on five lakes in designated Wilderness—Scenic, King, and Bird lakes located within the Dave Spencer unit of the Kenai Wilderness, and Windy and Harvey lakes located within the Andy Simons unit of the Kenai Wilderness—and one lake outside of designated Wilderness (Beaver Lake), where the closure would be May 1 through September 10.

Airplane Access to Chickaloon Flats

Wheeled airplane access would be allowed year-round on 21 square miles of the Chickaloon Flats area that are unvegetated; an additional 6.8 square miles would be open from September 1 to December 15 (or to coincide with future waterfowl hunting seasons). Regular maintenance of the Big Indian Creek airstrip would be conducted, and floatplane access would be allowed on 6.5 miles of the Chickaloon River (Figure 20).

Snowmachine Access

Snowmachines less than 46 inches wide and less than 1,000 pounds in weight would be allowed in certain zones within designated areas, if adequate snow cover is present. The Refuge Manager determines if adequate snow cover is present. Snow cover is necessary to protect vegetation and soils from damage. Studies would be conducted with the State of Alaska and other stakeholders to evaluate the effects of snowmachine use on Refuge resources and visitor experiences, the results of which would be used to support future management decisions.

5.6.4 Funding and Personnel Requirements

Base Funding

Table 1 shows the funds necessary to implement Alternative D in addition to base funds already received. The figures demonstrate the level of funding needed to maintain programs plus inflation adjustments for the short term. Long-term adjustments to the base budget reflect not only short-term adjustments, but also implementation of projects currently identified in the RONS database plus those needed to implement this alternative. Significant new funding will be required to implement this alternative to pave some roadways (\$26,000,000), harden surfaces of other roadways (\$2,500,000), develop new visitor facilities for wildlife observation (\$1,500,000), develop new trails (\$1,500,000), and pay salaries for six full time personnel (\$750,000) and a seasonal trail crew (\$250,000) needed to accomplish these new programs.

RONS / SAMMS Projects

A number of RONS and SAMMS projects would need to be funded to achieve the requirements of this alternative.

Other

Management of oil and gas related activities on the Refuge would continue to be manpower intensive and costly under this alternative.

Additional Staffing Needs

Selection of this alternative would require additional staff: Two additional law enforcement officers, in addition to those positions currently identified in the RONS package, would be required. Costs for these positions would be approximately \$300,000 in year one and \$160,000 in subsequent years. Year one costs would include moves, vehicle, salary, and necessary equipment. Other required personnel would include two maintenance professionals (year one costs approximately \$250,000; subsequent years approximately \$160,000), and two park rangers (Visitor Services) to provide services at new facilities (year one costs approximately \$250,000; subsequent years approximately \$160,000). A seasonal trail crew consisting of five permanent seasonal employees would also be added at a cost of approximately \$250,000. Table 1 identifies the number of staff needed beyond current levels to fully implement Alternative D.

5.7. Alternative E — The Preferred Alternative

5.7.1 General Management Direction

Although most of the general management direction described in Alternative A would continue, some specific direction and actions occurring under current management would be altered or not pursued under Alternative E. The following discussion identifies management direction proposed under Alternative E. Additionally, the Refuge Goals and Objectives presented in Volume 1, Section 2.2 in the Plan and the Management Direction, Policies, and Guidelines presented in Volume 2, Appendix C in the Plan apply to this alternative.

5.7.2 Management Categories

Four management categories would be applied to Kenai Refuge under Alternative E (Figure 10).

Intensive Management – As described in Alternative A.

Moderate Management – As described in Alternative D.

Traditional Management – As described in Alternative B.

Minimal Management – As described in Alternative D.

Wilderness Management – As described in Alternative A.

5.7.3 Management Direction Identified By Issue

The following discussion describes how Alternative E would address the issues identified during the scoping process. It provides management direction for major Refuge programs as they would be implemented under the alternative.

Issue 1: How will the Refuge address large-scale habitat changes and the use of fire?

Fire Management Program

Use of Fire as a Management Tool

As described in Alternative D (Figure 17).

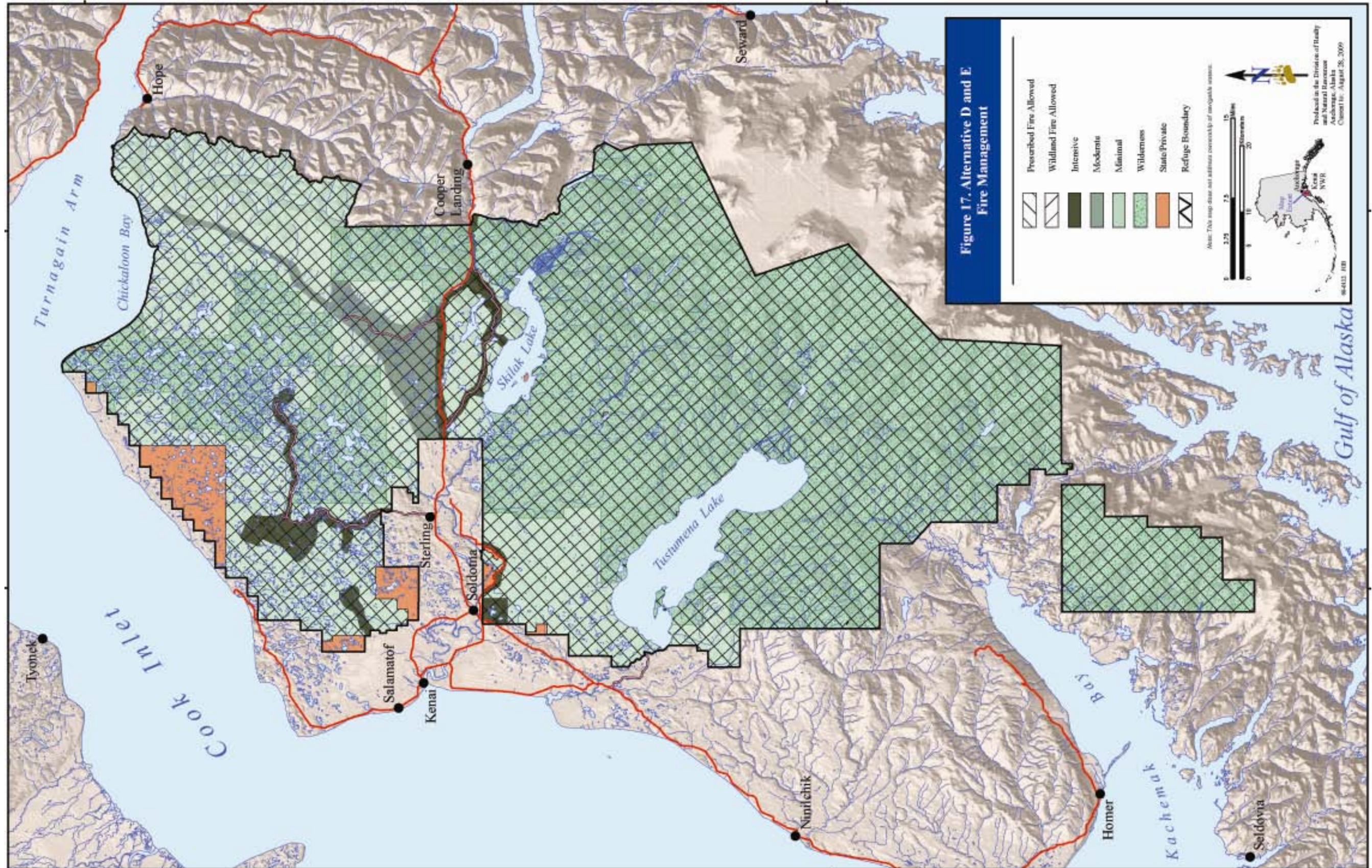


Figure 17: Alternatives D and E - Fire Management

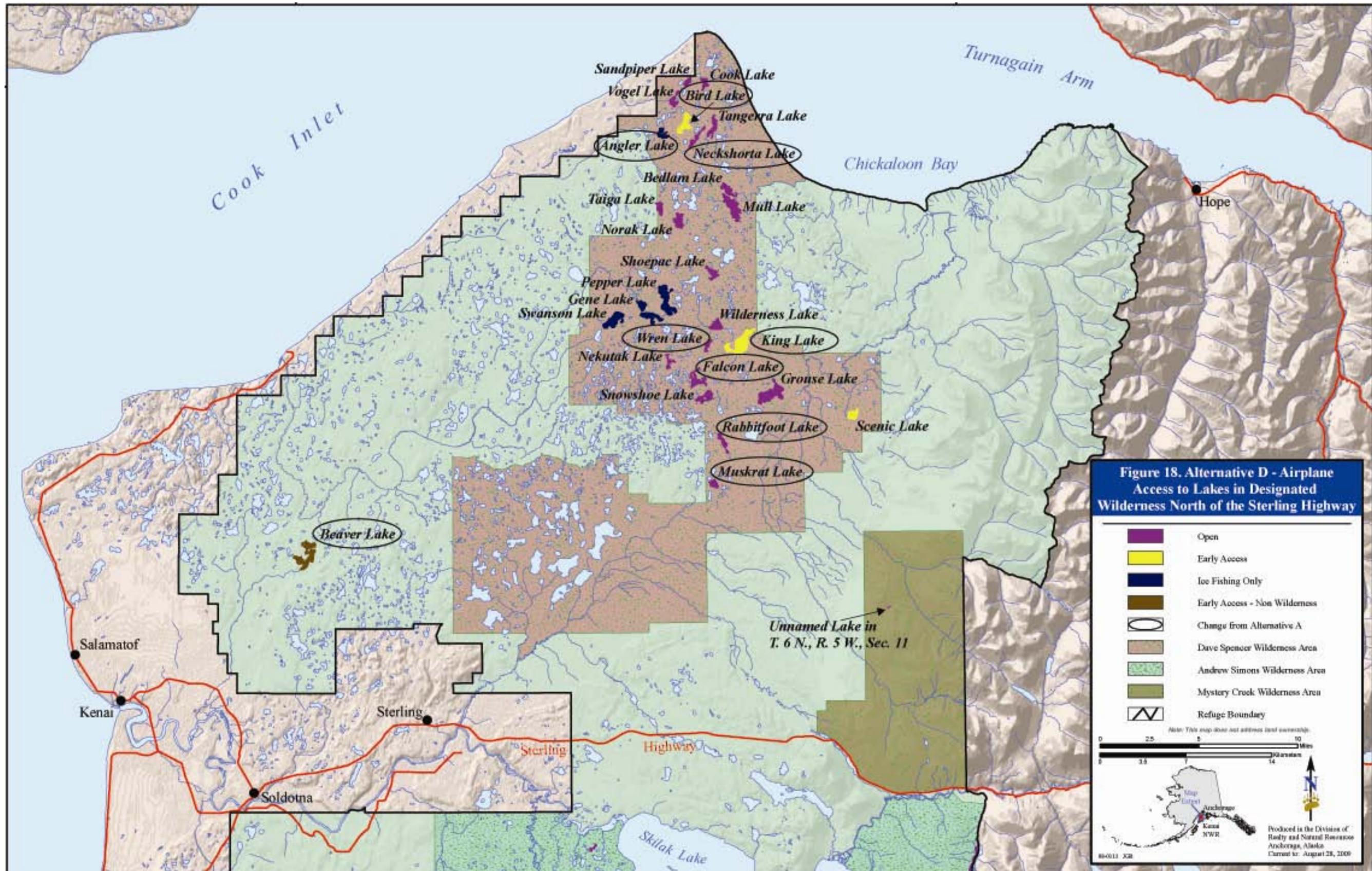


Figure 18: Alternative D - Airplane Access to Lakes in Designated Wilderness, North of the Sterling Highway

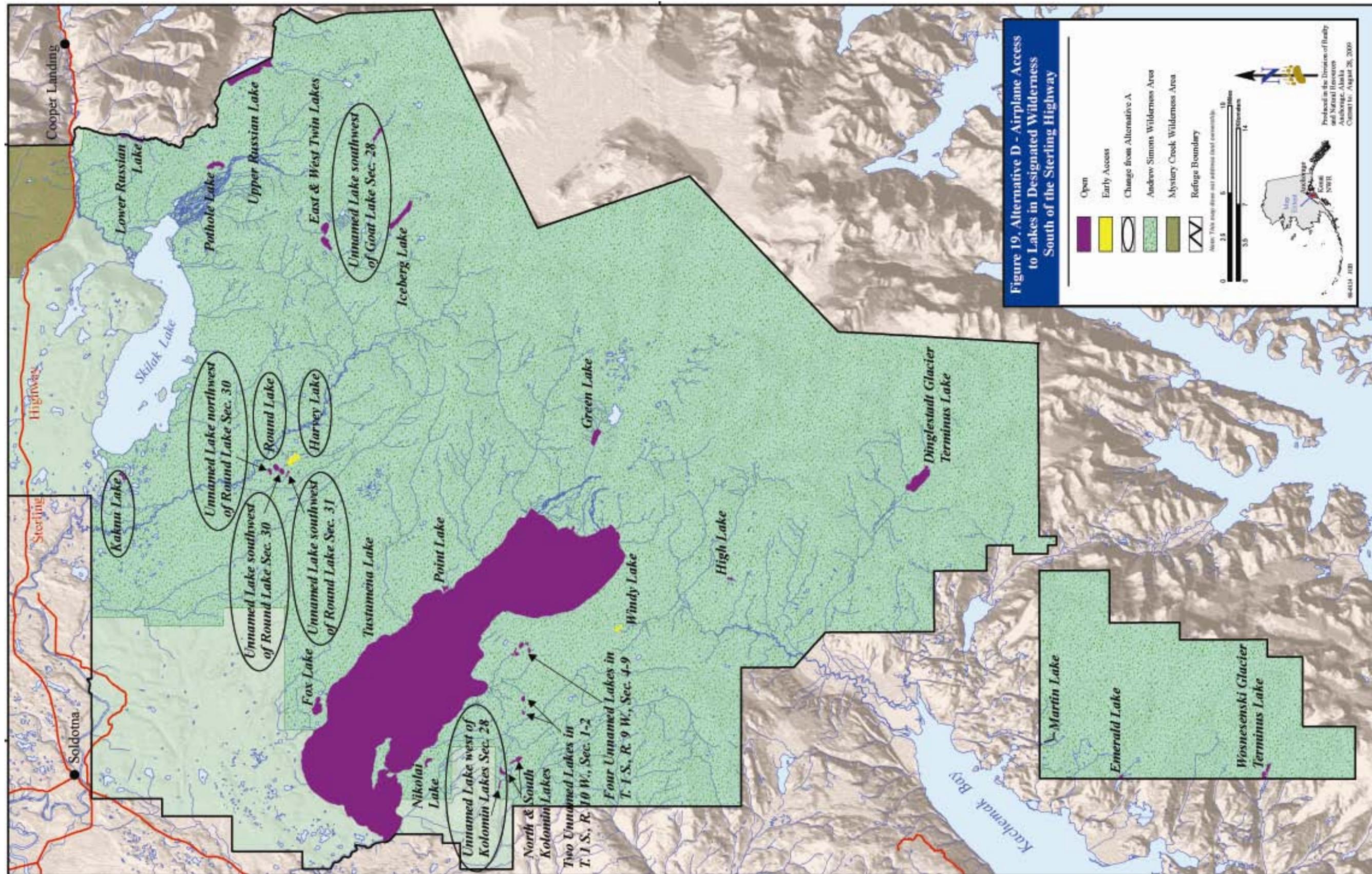


Figure 19: Alternative D - Airplane Access to Lakes in Designated Wilderness, South of the Sterling Highway

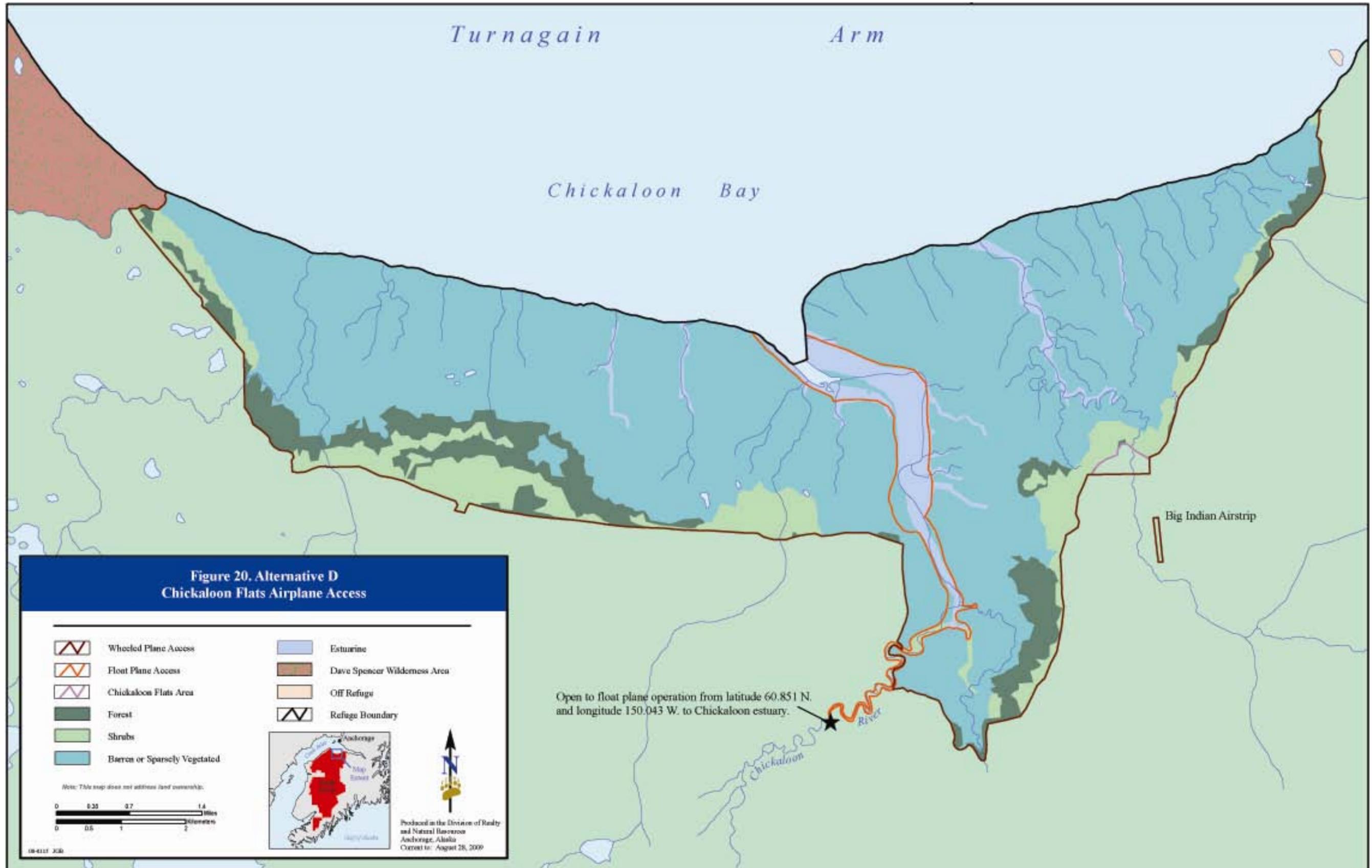


Figure 20: Alternative D - Chickaloon Flats Airplane Access

Issue 2: How will the Refuge manage facilities for public use while ensuring natural resources protection?

Facilities Management Program

Swanson River Oil and Gas Unit

As described in Alternative D.

Beaver Creek Oil and Gas Unit

As described in Alternative B.

Contaminated Sites

As described in Alternative B.

Mystery Creek Access Road and Pipeline Corridor

Same as Alternative C except after the life of the pipeline project, the unimproved access road and Alaska Pipeline corridor would be restored, and a trail would be constructed for pedestrian and horse use only.

Ski Hill Road

As described in Alternative D.

Sterling Highway Pullout

As described in Alternative B.

Trail Maintenance and Planning

As described in Alternative B.

Issue 3: How will the Refuge enhance wildlife-oriented recreation opportunities?

Visitor Services Program

Personal Collection of Natural Resources

As described in Alternative B.

Christmas Tree Harvesting

As described in Alternative B.

Issue 4: How will the Refuge manage increasing public use to ensure resource and visitor experience protection?

Visitor Services Program

Swan Lake and Swanson River Canoe Systems

As described in Alternative C.

Upper Kenai River (Russian River to Skilak Lake)

As described in Alternative C.

Middle Kenai River (Skilak Lake Downstream to Refuge Boundary)

As described in Alternative C.

Issue 5: How will the Refuge balance motorized access with protection of resources and visitor experiences?

Airplane Access to Lakes in Designated Wilderness

As described in Alternative A, airplane access would be allowed on 46 lakes in designated Wilderness (Figure 7 and Figure 8).

The Refuge will propose a rule change that would allow, but not require, the Refuge Manager to issue special use permits to successful applicants in the State's limited drawing hunt program. This opportunity would allow the Refuge Manager to provide increased access to otherwise closed lakes for hunters who have drawn special permits. Such access would be limited enough in scope that no significant impacts would be anticipated, and no additional environmental analysis would generally be necessary. The specifics of this proposed access opportunity will be addressed in the proposed rulemaking to follow approval of this Plan.

Airplane Access to Chickaloon Flats

As described in Alternative B (Figure 13).

Snowmachine Access

As described in Alternative B.

5.7.4 Funding and Personnel Requirements

Base Funding

Table 1 shows the funds necessary to implement Alternative E in addition to base funds already received. The figures demonstrate the level of funding needed to maintain programs plus inflation adjustments for the short term. Long-term adjustments to the base budget reflect not only short-term adjustments, but also implementation of projects currently identified in the RONS database plus those needed to implement this alternative.

RONS / SAMMS Projects

A number of RONS and SAMMS projects would need to be funded to achieve the requirements of this alternative.

Other

Management of oil and gas related activities on the Refuge would continue to be manpower intensive and costly under this alternative.

Additional Staffing Needs

Selection of this alternative would require new staff. One additional law enforcement officer, in addition to those positions currently identified in the RONS package, would be required. Costs for this position would be approximately \$150,000 in year one, and \$80,000 in subsequent years. Year one costs will include a move, vehicle, salary, and necessary equipment. A seasonal trail crew consisting of five permanent seasonal employees would also be added at a cost of approximately \$250,000. Table 1 identifies the number of staff needed beyond current levels to fully implement Alternative E.

6. Environmental Consequences

6.1. Introduction

This chapter identifies, describes, and compares the consequences (or impacts) of implementing five management alternatives (including current management) proposed in Volume 1, Chapter 2 on the physical, biological, and socioeconomic environments identified in Volume 1, Chapter 3 of the Comprehensive Conservation Plan (Plan). Alternative A: Current Management provides the basis for comparing the effects of the action alternatives (Alternatives B–E). The effects of each alternative on Refuge resources and recreation opportunities were assessed. To facilitate development of the analysis, the physical, biological, and socioeconomic environments were subdivided into 11 resource areas, grouped into three categories:

- Physical Environment—air quality, soil resources, water quality
- Biological Environment—vegetation/habitat, wildlife
- Socioeconomic Environment—cultural resources, local economy, recreation, river values, subsistence, and wilderness values

Any proposal for future development or a new use on the Kenai National Wildlife Refuge (Refuge, Kenai Refuge) would trigger the need for additional analysis and possibly an amendment to this Plan. First, an analysis of whether or not the proposed development was appropriate for the Refuge would be conducted. If it was determined to be appropriate, an evaluation of compatibility with Refuge purposes would be required. If it received a favorable compatibility determination, the project might be able to proceed or—if potential effects warranted—a site-specific analysis of the environmental effects would require following National Environmental Policy Act (NEPA) procedures with a Plan amendment.

6.2. Definition of Terms

Various terms were identified and used to provide a framework for conducting the environmental consequences analysis. These terms were used to describe the impacts on identified Refuge resources and recreation opportunities:

6.2.1 *Impact Type*

Beneficial Impacts

Impacts resulting from management actions that maintain or enhance the quality and/or quantity of identified Refuge resources or recreation opportunities

Adverse Impacts

Impacts resulting from management actions that degrade the quality and/or quantity of identified Refuge resources or recreation opportunities

6.2.2 Duration of Impact

Short-Term

Impacts on identified Refuge resources or recreation opportunities that occur during implementation of the management action but no longer

Medium-Term

Impacts on identified Refuge resources or recreation opportunities that occur during implementation of the management action that are expected to persist for some time into the future though not throughout the life of the Plan

Long-Term

Impacts on identified Refuge resources or recreation opportunities that occur during implementation of the management action that are expected to persist throughout the life of the Plan and possibly longer

6.2.3 Intensity of Impact

Negligible Impacts

Impacts resulting from management actions that cannot be reasonably expected to affect identified Refuge resources or recreation opportunities at the identified scale

Minor Impacts

Impacts resulting from the specified management action that can be reasonably expected to have detectable though limited affect on identified Refuge resources or recreation opportunities at the identified scale

Moderate Impacts

Impacts resulting from the specified management action that can be reasonably expected to have apparent and detectable affect on identified Refuge resources or recreation opportunities at the identified scale

Major Impacts

Impacts resulting from the specified management action that can be reasonably expected to have readily apparent and substantial affect on identified Refuge resources or recreation opportunities at the identified scale

6.2.4 Context or Scale of Impact

Site-Specific Scale

Beneficial or adverse impacts occurring at a specific site that is relatively small in size (e.g., a well pad located within the Swanson River Oil and Gas Unit, etc.)

Local Scale

Beneficial or adverse impacts occurring throughout a locally defined area (e.g., Ski Hill Road, Chickaloon Flats, Caribou Hills, etc.)

Refuge-Wide Scale

Beneficial or adverse impacts occurring throughout the Kenai National Wildlife Refuge.

6.3. Key Indicators and Assumptions

Key indicators and various assumptions were identified and used to assist with development of the environmental consequences analysis. Key indicators (e.g., air pollution emissions, physical soil characteristics, etc.) were established for each resource (e.g., air quality, soils, etc.). These indicators were used to measure the type, duration, intensity, and scale of impact anticipated on Refuge resources and/or recreation opportunities.

In most cases, a set of assumptions were made to facilitate development of the impact analysis. Assumptions are often used to clarify the intent of the management direction; in some cases, they are used to fill in gaps where specific information is not available. General assumptions are listed under each management action (e.g., Fire Management), and specific assumptions are listed under the heading of each impact analysis (e.g., Consequences of Using Fire as a Management Tool on Air Quality).

Table 3. Summary Comparison of the Effects of Implementing the Alternatives

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Air Quality					
Adverse Impacts	Some temporary declines	Similar to Alternative A	Similar to Alternative A; notable differences depend on fire events	Similar to Alternative A; notable differences depend on fire events	Similar to Alternative A; notable differences depend on fire events
Soil Resources					
Adverse Impacts	Some site-specific impacts observed	More impacts observed than Alternative A	More impacts observed than Alternative A	More impacts observed than Alternative A	More impacts observed than Alternative A
Beneficial Impacts	Most benefits obtained after life of energy projects	More benefits obtained than Alternative A after life of energy projects	Benefits obtained after life of energy projects but slightly less than Alternative A	Benefits obtained after life of energy projects but slightly less than Alternative A	More benefits obtained than Alternative A after life of energy projects
Water Quality					
Adverse Impacts	Some short-term impacts observed	Similar to Alternative A; notable differences due to fire events	Similar to Alternative A; notable differences due to fire events	Similar to Alternative A; notable differences due to fire events	Similar to Alternative A; notable differences due to fire events
Beneficial Impacts	Few benefits obtained during life of pipeline project	More benefits obtained during life of pipeline project	More benefits obtained during life of pipeline project	More benefits obtained during and after life of pipeline project	More benefits obtained during and after life of pipeline project
Vegetation / Wildlife Habitat					
Adverse Impacts	Site-specific impacts observed	Similar to Alternative A	More site-specific impacts than Alternative A	More site-specific impacts than Alternative A	More site-specific impacts than Alternative A
Beneficial Impacts	Benefits obtained from fire events and restoration projects	Less benefits from fire events; more from restoration projects	More benefits from fire events; slightly less from restoration projects	More benefits from fire events; slightly less from restoration projects	More benefits obtained from fire events and restoration projects
Wildlife					
Adverse Impacts	Some short-term disturbance at site-specific locations	More short-term disturbance at site-specific locations	More short-term disturbance at site-specific locations	More short-term disturbance at site-specific locations	More short-term disturbance at site-specific locations
Beneficial Impacts	Benefits obtained from public use management and restoration projects	Additional benefits obtained from restoration projects	Similar to Alternative A	Less benefits obtained from public use management and restoration projects	Additional benefits obtained from restoration projects
Cultural Resources					

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
Adverse Impacts	Some site-specific impacts observed	Potentially more site-specific impacts than Alternative A			
Local Economy					
Beneficial Impacts	Benefits obtained from public use management prescriptions	Less benefits obtained due to guided use restrictions	Less benefits obtained due to guided use restrictions	Less benefits obtained due to non-guided and guided use restrictions	Less benefits obtained due to guided use restrictions
Recreation					
Adverse Impacts	Some long-term, local scale impacts observed	Similar to Alternative A	Slightly more long-term, local impacts than Alternative A	More long-term, local scale impacts than Alternative A	Slightly more long-term, local impacts than Alternative A
Beneficial Impacts	Benefits obtained from public use management prescriptions	More benefits obtained, largely from additional access prescriptions	More benefits obtained, largely from additional access prescriptions	More benefits obtained, largely from additional access prescriptions	More benefits obtained, largely from additional access prescriptions
Wilderness Values					
Adverse Impacts	Some long-term, local scale impacts observed	More impacts than Alternative A			
Beneficial Impacts	Some long-term, local scale benefits observed	More benefits than Alternative A			

7. Evaluation of the Alternatives

7.1. Evaluation Criteria

The alternatives described in chapter 2 of the Plan were evaluated against six criteria based on existing law and policy. These criteria were selected as being the most important factors for selecting the preferred alternative. Following are the criteria in order of importance.

1. How well does the alternative satisfy the purposes of the Refuge and provisions of ANILCA?
2. How well does the alternative satisfy the mission of the Refuge System?
3. How well does the alternative contribute to meeting the goals of the Refuge?
4. How well does the alternative address the issues and concerns identified during scoping?
5. How well does the alternative maintain biological integrity and diversity, and environmental health at Refuge and ecosystem scales and contribute to managing the Refuge as part of an ecosystem?
6. How well does the alternative agree with ADF&G management plans for the area?

Table 4. Evaluation of the Alternatives Based on Significant Planning Issues

Issue / Concern	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
How will the Refuge Address Large-Scale Habitat Changes and the Use of Fire?					
	Habitats managed with prescribed fire use on 618,500 acres and wildland fire use on 1,883,500 acres.	Less management flexibility to address habitat changes.	Slightly more management flexibility to address habitat changes.	Much more management flexibility to address habitat changes.	Much more management flexibility to address habitat changes.
How will the Refuge Manage Existing Facilities for Public Use While Ensuring Resource Protection?					
	Facilities managed for public use include oil and gas units (after the life of the projects), Mystery Creek area, trails, Ski Hill Road, and Sterling Highway pullout.	Slightly more management of facilities for public use; more resource protection.	More management of facilities for public use; slightly less resource protection.	More management of facilities for public use; more resource protection.	Much more management of facilities for public use; slightly less resource protection.
How will the Refuge Enhance Wildlife-Dependent Recreation Opportunities?					
	Opportunities to collect natural resources and harvest Christmas trees for personal use limited.	More opportunities for wildlife-dependent opportunities.	More opportunities for wildlife-dependent opportunities.	More opportunities for wildlife-dependent opportunities.	More opportunities for wildlife-dependent opportunities.
How will the Refuge Manage Increasing Public Use to Ensure Resource and Visitor-Experience Protection?					
	Public use managed at Swanson River and Swan Lake canoe systems and Kenai River.	Slight increases in management of public use to ensure protection of visitor experiences.	Increases in management of public use to ensure protection of visitor experiences.	Additional increases in public use to ensure protection of visitor experiences.	Increases in management of public use to ensure protection of visitor experiences.
How will the Refuge Balance Motorized Access with Resource and Visitor-Experience Protection?					
	Airplane and snowmachine access managed refuge-wide.	Motorized access slightly increased to enhance visitor experience; slightly less resource protection.	Motorized access increased to enhance visitor experience; less resource protection.	Motorized access increased more to enhance visitor experience; less resource protection.	Motorized access slightly increased to enhance visitor experience; slightly less resource protection.

8. Summary of Public Comment

The following is a summary of the public comments received by the Service in response to the Draft Revised Plan and EIS. The notice of availability for the Draft EIS was published May 8, 2008 and the public comment period ended September 1, 2008.

The Service received 53 responses—including letters and e-mails—of which 47 contained original language. The remaining 6 responses were organized response campaign (form) letters. This Summary of Public Comment is based on the 47 original responses and the text of the form letter's master copy (see Appendix D in the Final Plan). All responses have been analyzed using a process called content analysis (described below). Respondents are self-selected (they voluntarily provided comments); therefore their comments do not necessarily represent the sentiments of the public as a whole.

8.1. Summary of Issues

A number of issues were identified in the public comments received for the project. Comments were organized and “coded” to reflect different resource issues about which commenters expressed concern. This summary is organized according the same coding categories. The public responses received in relation to the Draft Plan/EIS were diverse.

8.1.1 *Climate*

Several comments were received in relation to climate conditions; all of these came from two specific respondents. Several of these comments focused on the value and importance of climate science, research, and monitoring.

One respondent believed the Plan should identify and describe the “significant problems that may adversely affect the populations and habitats of fish, wildlife, and plants” within the Refuge and identify “the actions necessary to correct or mitigate such problems.” This group requested that impacts of climate change be a central consideration in the development of the Plan. Furthermore, this group requested that the Service incorporate adaptive management strategies based on research and monitoring into the Plan that would help alleviate the effects of climate change.

8.1.2 *Cultural Resources*

A single response with cultural resource implications was received. This respondent recommended implementing Tribal consultation from Indian Tribal Governments to include “traditional ecological knowledge about local subsistence use and harvest, cultural resources, and migration patterns of subsistence resources in the planning area.” This group further recommended developing a Tribal Government-to-Government Consultation Plan that would include input from Tribal Governments regarding management practices and for the Refuge.

8.1.3 *General Ecological*

Two respondents also expressed concerns or provided information of a “general ecological” nature. In essence, these comments stated that the Service

should take specific actions to protect the general ecosystems of the Refuge. One respondent recommends incorporating an ecological network or flow diagram to aid in clarifying the cause-and-effect relationship within the Refuge's ecosystems to help insure prioritization of objectives. Another respondent encourages the Service to include analyses in the Final Plan that demonstrate how chosen actions will preserve the connectivity of the Refuge in the face of certain factors, i.e., recreation, industrial, and administrative demands, etc., which threaten the integrity of wildland habitat.

8.1.4 Fisheries/Aquatics

Two respondents provided comments that focused on conditions related to fisheries and aquatics. Several comments from these respondents were technical/editorial in nature, but some addressed objectives dealing with fisheries management. Some comments requested various objectives to be revised while other comments request clarification or further discussion and analysis of expected impacts. In addition, several respondents provided data and recommended that it be used during fisheries/aquatics analysis.

8.1.5 General (No Natural Resource)

Many respondents made comments that were not specific to a resource. Many of these simply expressed support for the current and proposed management direction of the Refuge, or stated a preference among alternatives. Many individuals believed the range of alternatives, as they related to the issues, are acceptable. Several respondents supported the Service's Preferred Alternative and felt that it represents the better choice over other alternatives and provides sound planning to safeguard the Refuge's mission. Other respondents supported a modified version of the Service's Preferred Alternative with specific recommended changes.

8.1.6 Geology and Minerals

Two comments were received in relation to this resource. One was a detailed discussion of oil and gas management that focused on the history of and potential for spills and contamination. This same commenter also indicated support for pursuing testing and remediation of contamination associated with past and present industrial uses on the Refuge to ensure the safety of users. The second comment was from an organization that recommended clarifying Objective 1.21, regarding the anticipated soil survey. This organization further recommended that various geologic surveys be included in the final survey.

8.1.7 Infrastructure

Three different respondents commented on infrastructure. Each provided a single, specific comment. One respondent recommended amending Alternative E to include Alternative A's provision which calls for removing "most" industrial roads and facilities, and restoring the sites. Another respondent suggested the Plan include expected allocation of costs over the next 30 years for infrastructure, i.e., roads, electricity, emergency services. The third respondent expressed a concern with the maintenance of Mystery Creek Road, and the need to conduct improvements to assure public safety.

8.1.8 Legal and Regulatory (Incl. Process)

Several respondents provided comments relating to legal and regulatory issues. Many of these comments focused on Wilderness Reviews. One conservation group requested that “the Service sufficiently review wilderness lands and make a range of wilderness recommendations within the Alternatives to be analyzed in the Plan revision process.” This group believed that by not doing so, the Service is “out of compliance with ANILCA, NEPA, and the agency’s own policies and guidelines.”

Several groups commented on the Wild and Scenic Rivers Act. These groups pointed out that the Plan identifies and describes seven Refuge rivers with “outstandingly remarkable values,” but fails to determine the eligibility and suitability of these rivers. These groups requested that the Service consider potential national wild, scenic, and recreation river areas for addition to the Wild and Scenic River System.

One organization urged the Service to more rigorously adhere to regional guidelines. This organization stated that the Refuge has a number of unique circumstances that warrant certain deviations from Management Policies and Guidelines, but feels that many of these deviations “lack the required justification, trigger state jurisdictional concern, and/or are misleading or inaccurate.” Furthermore, this organization requested that the Service modify several Objectives by “using more recent information, providing more meaningful targets for long term guidance, and inviting interested parties to participate in future planning processes.”

One group encouraged the Service to continue providing the public the opportunity to participate in the development or revision of these plans. One individual requested an extended comment period. Another group believed the cooperative planning process between the Service, State, and the public should be outlined in the Plan.

8.1.9 Land Designation and Management

The majority of comments concerning land designation and management focused on the analysis of oil and gas-related activities. Some organizations felt that oil and gas activities were not adequately addressed in the document. While some comments suggested a lack of analysis throughout the entire document, many identified specific areas where additional information is needed to clarify, correct, or add to the oil and gas activity discussion. Some specific areas include: the discussion of Oil and Gas Occurrences and Potential in Chapter 4 of the Final Plan; impacts from ongoing oil and gas activities in Chapter 4; cumulative impacts section in Chapter 4 of the Final Plan; and irreversible and irretrievable impacts section in Chapter 4 of the Final Plan. One organization believed “. . .portrayal of opportunities for oil and gas leasing in misleading and incomplete.” Other organizations stated that the Plan does not provide adequate scientific data or documentation to support statements about impacts from oil and gas activities. One organization suggested that future assumptions related to oil and gas development be addressed through a “Reasonable Foreseeable Development” scenario. Another group was concerned about the insufficient acknowledgement of the existence of oil and gas exploration and production rights and interests within the Refuge.

Some respondents supported testing and remediation for contamination associated with past and present industrial uses. These respondents believed that this action will improve the environmental quality of the Refuge and clean-up costs in the future. Conversely, other industry groups believed that restoration of any site to “predevelopment conditions” is not practical and may conflict with the rights and obligations the oil and gas industry has pursuant to common law, oil and gas leases, unit agreements, etc. In addition, one organization recommended developing an Oil and Gas Infrastructure Decommissioning Plan for the Refuge to ensure that proper steps will be taken to decommission the facilities and restore the area for future public uses and expansion of wildlife habitat.

Some respondents supported restrictions of helicopter and airplane access to lakes located in designated wilderness. Other groups believed the Service’s decision not to review or recommend lands for wilderness recommendations is lacking and out of compliance with Federal laws and agency regulations. These groups urged the Service to complete wilderness reviews and recommendations in this Planning process and request that this issue be rectified in the Final EIS and Revised Plan. Several respondents believed the Service should give consideration to potential national wild, scenic, and recreational river areas.

8.1.10 Recreation

Respondents requested that a wide range of recreation-related items be either included or clarified in the Plan. The majority of these comments were from governmental organizations and recreation groups. Some of these requests included: conducting “a more balanced” analysis of openings and closures on all user groups; using more recent user information showing the actual long-term trend of use on both the Kenai River and the Kenai Peninsula; clarifying the term “recreation opportunity settings”; and conducting additional assessments to identify other potential impacts.

Some respondents suggested that certain assumptions in the Plan are unconfirmed and lack substantial evidence. Some respondents did not support a registration system for canoeing and believes the Plan does not show adequate justification for implementing such a system.

Several respondents were concerned with overcrowding and protecting visitor experience. One organization was concerned that any effort to reduce perceived crowding in certain areas would create additional impacts in areas inside and perhaps outside the Refuge.

8.1.11 Socioeconomics

Several comments addressed socioeconomic issues. Many of these cited specific sections and language from the Plan/EIS, and provided additional information or critique of analysis. A few comments requested a more detailed environmental justice analysis in the Plan, including impacts on low-income and minority communities, cumulative and indirect impacts, and impacts to subsistence, cultural, and historic resources. One organization believed that the analysis of conservation concerns related to subsistence harvest regulations is inadequate. Another group believed that certain sections regarding the economy used dated information. In addition, some respondents requested that

we include the value the oil and gas industry derived from the Refuge when calculating the economic significance of the Refuge.

8.1.12 Soil Resources

One organization recommended clarifying Objective 1.21, regarding the anticipated soil survey. This organization further recommended that various soil surveys be included in the final survey.

8.1.13 Transportation

Transportation was clearly one of the key issues, with most respondents providing at least some specific comment on transportation and general access to the Kenai Refuge. These comments generally included issues dealing with aircraft, snow machines, and general access to pipeline roads.

Aircraft access and landing were primary concerns for many respondents. As one respondent stated, "Aircraft access is a way of life in Alaska." Some respondents recommend certain areas be off-limits to aircraft while other respondents requested opening more landing sites for small planes. Many comments dealt with aircraft studies, expanding lakes open to landing, and the Chickaloon flats/Indian Creek airstrip.

Some groups believed that including adequate studies regarding aircraft and wildlife relationships within the Plan would clarify "assumptive comments" found in the Plan. Many respondents and groups would like a better explanation on the continued closure of lakes within the Refuge, claiming that many lakes were originally closed to aircraft users for the purpose of increasing trumpeter swan populations. Respondents feel the general public was assured that these lakes would be re-opened once swan populations were restored. Many respondents requested a justification of the continued closure now that swan populations have increased. A number of respondents requested that studies be performed to assess impacts of float planes on swan populations and aquatic areas. Many respondents believed the analysis was arbitrary due to the lack of studies relating to all user groups. Many respondents disagreed with comments that assume ideas such as "an increased number of open lakes will attract more aviation users." They felt that there is no supporting evidence. Many respondents requested accurate studies or better information to support these statements.

Increasing aircraft landing on lakes within the Kenai Refuge was strongly suggested by several respondents. One group strongly opposed the closure on all but 45 lakes within a 1.3 million acre Refuge and stated that the closure is not adequately justified in the draft. In addition, this group suggested other alternatives that included additional airplane access be considered, such as Alternative D (which includes 14 additional lakes). Another group supported opening additional lakes as stated in Alternative D but had concerns about determining restrictions such as the swan nesting season. One group suggested amending Alternative E by adopting Alternative B's provision to develop an Environmental Assessment to determine the effects of small aircraft float planes on Refuge resources, recreational opportunities, and wilderness values. One respondent explained that allowing aircraft landings on more lakes would reduce the ecological footprint because minimal impacts would be made on wildlife and vegetation. One group strongly opposed increased aircraft access

to the Chickaloon area or opening access to other lakes within the Refuge to help protect swan habitat.

Opening the Chickaloon area to expand small aircraft landing was supported by many respondents. In regard to enforcement, some respondents recommended defining a clear boundary for aircraft landing in the Chickaloon area, as opposed to allowing landing in any “un-vegetated areas”. Some respondents are confused with the term “un-vegetated” and request a clarification be provided. One group was opposed to expansion of aircraft access in the Chickaloon area and requested that access levels stay where they currently are because of impacts to waterfowl. Some respondents supported re-establishing the Indian Creek air strip. Brush that makes that strip currently unusable.

Managing snow machines was another common response received regarding the transportation section. Many respondents urged management direction to incorporate a zoning policy for snow machine use, as stated in Alternative D. This zoning policy would allow more flexibility to snow machine users and would be based on snow levels rather than a concrete time period.

Some groups were concerned about the interaction of wildlife and snow machines within the Caribou Hills, and recommend conducting specific studies of snow machine impacts in the area. Some respondents believed that snow machine access is vital because it allows unique opportunities to access parts of the Refuge that would otherwise be off-limits to many visitors. One respondent emphasized the importance of snow machine use on the Refuge for conducting inspections and maintenance on oil and gas pipelines. Some respondents felt that assumptions are made, without valid evidence, within the DEIS about snow machines and their impacts.

The use of pipeline roads was another common issue. One group did not support the continued use and maintenance of these roads after the pipeline project has finished, because the roads would allow more access to wilderness areas and lead to resource damage. One respondent insisted that these roads be left in place for non-motorized recreational purposes and that the natural environment be allowed to restore these roads naturally. Some respondents were in favor of Alternative B to open the road system. They also stated that long-term impacts would be made to recreation if these roads were closed and there isn't new trail development.

8.1.14 Vegetation and Fire

Diverse comments were received in relation to vegetation and fire. Several comments identified specific technical/editorial items to be addressed and included citations. One organization supported the proposed fire management direction because “it provides sufficient discretion to use both prescribed and wildland fire to achieve land and resource management objectives.” One comment requested public participation in the development of comprehensive step-down management plans for the Refuge, including for exotic, injurious, and invasive species. One group believed that the Plan contains misleading information in relationship to oil and gas activities and the spread of exotic flora.

8.1.15 Wildlife and Wildlife Habitat

Wildlife was another key issue for public commenters. Many respondents commented on wildlife corridors, climate change impacts, aircraft access, and wildlife protection through management practices.

Including the Skilak Wildlife Travel Corridor in the final DEIS was a common suggestion. Respondents believed that the Corridor provides significant conservation measures to ensure connectivity for wildlife. Many respondents suggested that future developments and natural barriers will make it difficult for wildlife to migrate between the northern and southern sections of the Refuge. These respondents strongly suggested that this corridor be included in the Preferred Alternative. One group stressed the importance of restricting any type of recreational activities or public facilities in this corridor. They suggest that this corridor be for the sole purpose of wildlife connectivity.

One group suggested conserving corridors such as the Skilak Corridor because they would allow wildlife to shift habitats during climate changes. This group recommended using proactive management techniques such as prioritizing the development of landscape and statistical models relating to climate change. This group also expressed the need to identify and measure the impacts of non-climatic stressors and to reduce and/or eliminate them.

Most respondents agreed that wildlife protection through management practices is necessary and if accomplished properly will also support recreational opportunities. One respondent explained that, “the fish and the wilderness are valuable resources and all user groups should share equally in their protection.” Another respondent felt that having a multiple-use balance within the Refuge is important. One organization suggested including game habitats, populations, and hunting opportunities within the wildlife-oriented recreation goals. One group suggested including hunting as part of Refuge’s priority objectives. This group explained that hunting and hiking are popular activities in the Refuge and therefore should be addressed more in the Plan. This organization also suggested that wildlife management activities will be reduced in the Plan and requested an assessment of how these changes will affect game populations and hunting opportunities. They were concerned that this will lead to a reduction of wildlife habitats and corresponding effects on hunting on the Refuge.

One group suggested that current wildlife management proposals are inconsistent with State objectives, and State and Federal protocols. This group further explained that unilateral intents exist within the DEIS and are inconsistent with the Master Memorandum of Understanding (MMOU). This group also identified specific assumptions made in the DEIS that it felt were unsupported and/or artificial. In addition, this group provided a list of items that it felt need to be clarified, and indicated that it believes some analysis used outdated science that is inconsistent with recent information. This group requested that additional wildlife and habitat studies be performed, and emphasized the importance of working with cooperating agencies in species management and monitoring programs. Another group was concerned about assumptions that related to the impacts of oil and gas activities on wildlife. This group explained that while wildlife habitat damage can be measured in

terms of road and pad sites, these impacts (when considered in proper context), are negligible.

8.1.16 Water Resources

A single comment was received in reference to water resources. The respondent believed that, coupled with climate monitoring, an understanding of hydrologic conditions on the Refuge is critical and should be a funding priority.

8.2. Geographic Representation

Geographic representation was tracked for each respondent (Table 15). Letters and emails were received from 8 of the United States. Only one multiple respondent response received (letter number 1). States of residence for each individual signature were tracked for the multiple respondent response.

Table 5. Geographic Representation of Response by State

State	Number of Respondents	Number of Signatures
Alaska	48	50
District of Columbia	1	1
Delaware	1	1
Minnesota	1	1
New Jersey	1	1
New York	1	1
Washington	2	2
Wisconsin	1	1
Anonymous/Unknown	2	2
Total	58	60

8.3. Organizational Affiliation

Responses were received from various organizations and unaffiliated individuals. Organization types were tracked for each letter and email received. There was 1 multiple respondent response with a total of 7 signatures received. That letter is number 1. Organization Types and signatures are broken out in Table 16.

Table 6. Number of Responses/Signatures by Organizational Affiliation

Organization Type	Number of Respondents	Number of Signatures
Business	1	1
Federal Agency/Elected Official	5	6
Individual	28	28
Oil, Natural Gas, Coal, or Pipeline Industry	3	3
Preservation/Conservation	10	11
Recreational (non-specific)	1	1
Recreation/Conservation Organization	2	2
Non-Motorized/Non-Mechanized Recreation	2	2
State Government Agency/Elected Official/Association	4	4
Other or unidentified organization	2	2
Total	58	60

8.4. Response Type

Response types were tracked for each response received on the project (Table 17). Responses were received in the form of Letters, Forms, Forms with extra comments (Form Plus), and Public Meeting Comment Forms.

Table 7. Number of Responses/Signatures by Response Type

Response Type	Number of Responses	Number of Signatures
Letter	40	47
Form	6	6
Form Plus	1	1
Public Meeting Comment Form	6	6
Total	53	60

8.5. Response to Comments

The Service's Response to Comments can be found in Volume 2, Appendix D of the Plan (Comments and Response to Comments).

9. References

- USFWS. 1985. Kenai National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement and Wilderness Review. Anchorage, Alaska: U.S. Fish and Wildlife Service. 193 pp.
- USFWS. 1985. "Record of Decision: Kenai National Wildlife Refuge Final Comprehensive Conservation Plan, Environmental Impact Statement and Wilderness Review." June 27, 1985. Anchorage, Alaska: U.S. Fish and Wildlife Service.
- USFWS. 1988. "Final Supplemental Environmental Impact Statement for the Wilderness Proposal of the Kenai Refuge Comprehensive Conservation Plan." Anchorage, Alaska: U.S. Fish and Wildlife Service.

Kenai National Wildlife Refuge
2139 Ski Hill Road
P.O. Box 2139
Soldotna, Alaska 99669-2139
Telephone: (907) 262-7021
Fax: (907) 262-3599

U.S. Fish and Wildlife Service
Alaska Regional Office
1011 East Tudor Rd., MS-231
Anchorage, AK 99503
Telephone: 786-3357
Fax: 907/786-3965
<http://www.r7.fws.gov>

August 2009

