

Summary

Draft Revised

Comprehensive Conservation Plan

and

Environmental Impact Statement

Kenai National Wildlife Refuge

May 2008

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 Planning & Policy
1011 East Tudor Rd., MS-231
Anchorage, AK 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:

Enclosed is a summary of the Draft Revised Comprehensive Conservation Plan and Environmental Impact Statement for the Kenai National Wildlife Refuge. The final version of the Comprehensive Conservation Plan will guide management of the Refuge for the next 15 years. This Plan outlines five management alternatives, including the preferred alternative, for addressing management issues raised during public scoping, and it describes the environmental impacts associated with implementing each alternative.

This Summary document has been sent to you because public involvement in the planning process is essential for development of an effective plan. Please review and provide comment on the contents of this Summary by **September 1, 2008**. Comments should be specific, addressing merits of the alternatives and adequacy of the environmental analysis. We will consider your comments as we prepare the Final Plan. Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the Final Plan.

All public comments received, including respondent names and addresses will be included in the planning record which will be available for public review. If you, as an individual, wish us to withhold your name or address, state this prominently at the beginning of your comments. We will honor your request to the extent allowed by law. All comments from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection. Anonymous comments will not be considered.

Public meetings will be held in communities near Kenai Refuge and in the city of Anchorage during the public review period. Meeting dates, times, and locations will be announced once they are confirmed.

You may view the Draft Plan online at: <http://www.r7.fws.gov/nwr/planning/plans.htm>, or obtain a paper copy or a compact disk of the full document by request at the address below.

Comments should be mailed, e-mailed, or provided orally by **September 1, 2008** to:

Rob Campellone, Planning Team Leader
U.S. Fish & Wildlife Service
1011 E. Tudor Road, MS-231
Anchorage, AK 99503
Phone: (907) 786-3982
Email: fw7_kenai_planning@fws.gov

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

Robin West, 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.....	S-1
1.1 PLANNING FOR THE FUTURE.....	S-1
1.2 WHAT IS A COMPREHENSIVE CONSERVATION PLAN?.....	S-1
1.3 PLAN CONTENTS.....	S-1
1.4 PLANNING CONTEXT	S-2
2. KENAI NATIONAL WILDLIFE REFUGE	S-3
2.1 ROOTS IN HISTORY	S-3
2.2 “ALASKA IN MINIATURE”.....	S-3
2.3 REFUGE VISION, PURPOSES, GOALS, AND OBJECTIVES.....	S-8
3. THE PLANNING PROCESS.....	S-24
3.1 PREPLANNING	S-24
3.2 INITIATE PUBLIC INVOLVEMENT AND SCOPING	S-24
3.3 DETERMINE SIGNIFICANT ISSUES	S-24
3.4 DEVELOP AND ANALYZE ALTERNATIVES	S-24
3.5 PREPARE DRAFT PLAN AND ENVIRONMENTAL IMPACT STATEMENT	S-25
3.6 PREPARE AND ADOPT A FINAL PLAN AND ENVIRONMENTAL IMPACT STATEMENT	S-25
3.7 IMPLEMENT PLAN, MONITOR, AND EVALUATE	S-25
3.8 REVIEW AND REVISE PLAN.....	S-25
4. SIGNIFICANT PLANNING ISSUES	S-26
4.1 ISSUE 1– HABITAT CHANGE AND USE OF FIRE	S-26
4.2 ISSUE 2– FACILITIES MANAGEMENT	S-26
4.3 ISSUE 3 – ENHANCING WILDLIFE-DEPENDENT RECREATION OPPORTUNITIES	S-27
4.4 ISSUE 4 – MANAGING INCREASING PUBLIC USE	S-27
4.5 ISSUE 5 – MANAGING MOTORIZED ACCESS.....	S-27
5. ALTERNATIVES	S-28
5.1 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY	S-28
5.2 ELEMENTS COMMON TO ALL ALTERNATIVES.....	S-30
5.3 MANAGEMENT DIRECTION COMMON TO ALL ALTERNATIVES.....	S-31
5.4 COMPARISON OF THE ALTERNATIVES	S-34
5.5 ALTERNATIVE A—CURRENT MANAGEMENT	S-45
5.6 ALTERNATIVE B	S-62
5.7 ALTERNATIVE C	S-78
5.8 ALTERNATIVE D	S-94
5.9 ALTERNATIVE E — THE PREFERRED ALTERNATIVE.....	S-110
6. ENVIRONMENTAL CONSEQUENCES	S-127
7. EVALUATION OF THE ALTERNATIVES	S-129
8. REFERENCES.....	S-131

List of Figures

FIGURE 1. NATIONAL WILDLIFE REFUGES IN ALASKA.	S-2
FIGURE 2. LOCATION OF KENAI NATIONAL WILDLIFE REFUGE.	S-5
FIGURE 3. SPECIAL RESOURCE VALUES	S-9
FIGURE 4. ALTERNATIVE A (CURRENT MANAGEMENT) – MANAGEMENT CATEGORIES.....	S-47
FIGURE 5. ALTERNATIVE A (CURRENT MANAGEMENT) – FIRE MANAGEMENT.....	S-51
FIGURE 6 & 7. ALTERNATIVE A (CURRENT MANAGEMENT) – AIRPLANE ACCESS TO LAKES IN DESIGNATED WILDERNESS.....	S-55, S-57
FIGURE 8. ALTERNATIVE A (CURRENT MANAGEMENT) – AIRPLANE ACCESS TO CHICKALOON Flats.....	S-59
FIGURE 9. ALTERNATIVE B – MANAGEMENT CATEGORIES.....	S-63
FIGURE 10. ALTERNATIVE B – FIRE MANAGEMENT.....	S-65
FIGURE 11 & 12. ALTERNATIVE B – AIRPLANE ACCESS TO LAKES IN DESIGNATED WILDERNESS	S-71, S-73
FIGURE 13. ALTERNATIVE B – AIRPLANE ACCESS TO CHICKALOON FLATS	S-75
FIGURE 14. ALTERNATIVE C – MANAGEMENT CATEGORIES.....	S-79
FIGURE 15. ALTERNATIVE C – FIRE MANAGEMENT.....	S-81
FIGURE 16 & 17. ALTERNATIVE C – AIRPLANE ACCESS TO LAKES IN DESIGNATED WILDERNESS	S-87, S-89
FIGURE 18. ALTERNATIVE C – AIRPLANE ACCESS TO CHICKALOON FLATS	S-91
FIGURE 19. ALTERNATIVE D – MANAGEMENT CATEGORIES.....	S-95
FIGURE 20. ALTERNATIVE D – FIRE MANAGEMENT.....	S-99
FIGURE 21 & 22. ALTERNATIVE D – AIRPLANE ACCESS TO LAKES IN DESIGNATED WILDERNESS.....	S-103, S-105
FIGURE 23. ALTERNATIVE D – AIRPLANE ACCESS TO CHICKALOON FLATS	S-107
FIGURE 24. ALTERNATIVE E (PREFERRED ALTERNATIVE) – MANAGEMENT CATEGORIES	S-111
FIGURE 25. ALTERNATIVE E (PREFERRED ALTERNATIVE) – FIRE MANAGEMENT	S-115
FIGURE 26 & 27. ALTERNATIVE E (PREFERRED ALTERNATIVE) – AIRPLANE ACCESS TO LAKES IN DESIGNATED WILDERNESS.....	S-121, S-123
FIGURE 28. ALTERNATIVE E (PREFERRED ALTERNATIVE) – AIRPLANE ACCESS TO CHICKALOON FLATS.....	S-125

List of Tables

TABLE 1. COMPARISON OF THE ALTERNATIVES IDENTIFIED BY ISSUE AND MANAGEMENT ACTION ...	S-34
TABLE 2. DIFFERENCES BETWEEN TRADITIONAL AND MINIMAL MANAGEMENT UNDER ALTERNATIVE A.....	S-46
TABLE 3. ALTERNATIVE A BUDGET NEEDS.....	S-54
TABLE 4. ALTERNATIVE A STAFFING NEEDS BEYOND CURRENT LEVELS.....	S-61
TABLE 5. ALTERNATIVE B BUDGET NEEDS BEYOND CURRENT LEVELS.....	S-77
TABLE 6. ALTERNATIVE B STAFFING NEEDS BEYOND CURRENT LEVELS.....	S-77
TABLE 7. ALTERNATIVE C BUDGET NEEDS BEYOND CURRENT LEVELS.....	S-93
TABLE 8. ALTERNATIVE C STAFFING NEEDS BEYOND CURRENT LEVELS.....	S-94
TABLE 9. ALTERNATIVE D BUDGET NEEDS BEYOND CURRENT LEVELS.....	S-109
TABLE 10. ALTERNATIVE D STAFFING NEEDS BEYOND CURRENT LEVELS.....	S-110
TABLE 11. ALTERNATIVE E BUDGET NEEDS BEYOND CURRENT LEVELS.....	S-120
TABLE 12. ALTERNATIVE E STAFFING NEEDS BEYOND CURRENT LEVELS.....	S-120
TABLE 13. SUMMARY COMPARISON OF THE EFFECTS OF IMPLEMENTING THE ALTERNATIVES.....	S-127
TABLE 14. EVALUATION OF THE ALTERNATIVES BASED ON SIGNIFICANT PLANNING ISSUES	S-129

1. Introduction

1.1 Planning for the Future

This is a summary of the Draft Revised Comprehensive Conservation Plan for the Kenai National Wildlife Refuge. The Refuge's original plan, which was approved in 1985, provided broad policy guidance and established long-term goals for U.S. Fish and Wildlife Service management. 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 Comprehensive Conservation Plan is being revised to guide management of the Refuge for the next 15 years. Revising the Comprehensive Conservation 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 National Wildlife Refuge (Kenai Refuge, the Refuge) Draft Revised Comprehensive Conservation Plan (Draft Plan) describes current management (Alternative A) plus four additional alternatives including the U.S. Fish and Wildlife Service's (the Service) Preferred Alternative (Alternative E) for managing the Refuge. Each alternative describes how it would address management concerns and public issues. The Draft 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 refuges contain a wide range of habitats with varied terrain that includes mountains, glaciers, tundra, grasslands, wetlands, lakes, woodlands, and rivers. Together, the 16 refuges in Alaska 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.



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...*”.

The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 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 (Kenai Refuge, the Refuge) (Figure 2), added nearly a quarter of a million acres of land, and established the 1.32 million-acres Kenai Wilderness.

2.2 “Alaska in Miniature”

2.2.1 *Physical Environment*

The Kenai Refuge is considered by many to be “Alaska in Miniature.” The Kenai Mountains – within the eastern third of the Refuge – vary in elevation from 3,000 to 6,600 feet 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 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.

The Kenai Lowlands make up approximately two-thirds of the Refuge and contains thousands of lakes and boreal forest covering low hills, ridges, and muskeg. The largest two lakes on the Kenai Peninsula are the 73,000 acre Tustumena and 25,000 acre Skilak Lakes.

The Kenai River is the dominant river system on the Refuge. Approximately 54 percent of the watershed is on the Refuge. 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, 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, recreation, 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 fungi, 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 forests, black spruce forest, and white spruce forests. Wildfire is an important natural 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 landscape of the Refuge.

2.2.3 Human Uses

Approximately 1.2 million people travel through 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 from 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 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.

Placeholder:

Figure 2

Refuge Location

Page 5

Placeholder:

Figure 2

Refuge Location

(backside)

Page 6

2.2.4 Special Resource Values

Comments received from the public 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 on the Refuge that they valued (Figure 3), including:

Chickaloon River Watershed and Estuary

The Chickaloon River watershed and associated estuary 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 itself 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. 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 area north of Skilak Lake 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 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 environmental education, interpretation, photography, wildlife viewing, 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, 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.

2.3 Refuge Vision, Purposes, Goals, and Objectives

2.3.1 Vision Statement

Refuge staff identified their vision of the Refuge considering the Refuge System mission, the Refuge's ANILCA purposes, the 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."

Placeholder:

Figure 3

Special Values

Page 9

Placeholder:

Figure 3

Special Values

(backside)

Page 10

2.3.2 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 services 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 Fire 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 Comprehensive Conservation Plan's (Plan) 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 program that incorporates the five designated Research Natural Areas (RNAs) 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 1.8: 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 to assess populations of early-run Chinook salmon in the Kenai River.

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 over the next 50 to 200 years.

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 unilateral efforts to protect and restore riparian habitats along the Kenai River.

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 populations (subadults and adults) within one standard error of the 20-year average for three count areas (Twin Lakes 355, Indian Creek 356, and Tustumena Glacier 357) within Refuge boundaries, and the percentage of young-of-year in

the counts will not drop below 20 percent for three consecutive years. 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 Wildland Fire Monitoring Plan that will include monitoring purposes, goals, objectives, and proposed activities for wildland fire, prescribed fire, wildland fire use, 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, complete 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 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 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.

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 wood frogs until the cause of their abnormalities is identified.

Objective 3.2: Resource Assessment—Continue and expand research on local bird populations until the cause of bill abnormalities is identified.

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.

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 PM₁₀ 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—Over the 15-year interval, post Plan’s 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 ground water 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, wildland fire use, 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 habitat, 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 Alaska Department of Fish and Game (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 the Canoe Trails Systems and maintain it weekly during the intensive visitor use periods 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 wilderness 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 ten 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 7.13: Wildlife-Oriented Recreation—Within ten years of Plan’s approval, implement the Refuge’s approved law enforcement deployment model. Enforcement officers will patrol front country 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, Alaska Department of Environmental Conservation (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 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 8.5: Facilities—Within two years of Plan’s approval, implement the programmatic agreement for managing historic cabins.

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 we are using to revise Kenai Refuge's Comprehensive Conservation 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 Draft 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 Draft Plan. Formal scoping began with publication of a notice of intent to prepare an Environmental Impact Statement (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 update contained information about the Refuge, the planning process, and some preliminary issues identified by Refuge staff. The update included an optional issues workbook to make it easier for people to identify their issues and concerns.

Public open house meetings were held in the towns of Cooper Landing, Homer, Soldotna, and Seward on the Kenai Peninsula, and in the city of Anchorage. A total of one hundred people attended the meetings, and 313 written or telephone responses were received during the scoping period (December 2003–May 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, the Service, other Federal agencies, and the State of Alaska. 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 address 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 responded to the significant planning issues.

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 public. The environmental effects of the alternatives were analyzed, and the results are presented in chapter 4 of the Draft Plan and summarized in chapter 6 of this document.

3.5 Prepare Draft Plan and Environmental Impact Statement

The purpose of the fifth step is to produce a Draft Plan/EIS. The Draft Plan/EIS contains five management alternatives, including one that describes continuation of current management (the 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/EIS will be reviewed and analyzed. The Draft Plan/EIS will be modified as needed, including refining the Preferred Alternative, after which the Final Revised Comprehensive Conservation Plan (Final Revised Plan) will be published. Following a 30-day comment period, the Service's regional director will issue a decision that describes the alternative that will be implemented.

3.7 Implement Plan, Monitor, and Evaluate

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

3.8 Review and Revise Plan

Agency policy directs that the Conservation Plan be reviewed annually to assess the need for changes. The Conservation 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

The Draft Revised Comprehensive Conservation Plan (Draft Plan) and Environmental Impact Statement (EIS) addresses five issues that were identified from public comments and from within the U.S. Fish and Wildlife Service:

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. Examples of comments include:

“The lack of letting the forest burn naturally, the habitat for many Refuge species is deteriorating quickly. [Need to] burn or log—clear.”

“I understand and accept the value of Wilderness fires and the desire to provide healthy regrowth and habitat for wildlife. I oppose road-building for this purpose. Aerial management [is] ok if feasible and enough equipment and management available to protect nearby communities.”

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 sportfishing. 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. Examples of comments include:

“[I’m concerned about . . .] maintaining the quality of the visitor experience, maintaining facilities (trails, campgrounds, roads, etc.) and wildlife habitat in an era of increased visitor use and shrinking budgets.”

“I don’t like to see pristine areas become developed on the Refuge. Every year more and more man-made infrastructure (roads, oil pads, pipelines, campgrounds, highways, utility ROW) impacts pristine natural areas.”

“The oil fields should be returned to wildlife habitat. The main road in the Swanson River area should be left for nonmotorized access for public recreation (including the use of mountain bikes for wildlife related recreation). Otherwise, rehabilitate all roads, bridges, pads.”

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. An example of comments include the following:

“Non-commercial, personal use collecting should be permitted as an encouragement of enjoying nature’s bounty and healthy wildlands. Commercial quantity and collecting for resale should continue to be prohibited.”

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. Examples of comments include:

“The proliferation of guides has put so many boats on the river that it’s hard for me and my family to find a place to fish. They bring so many people and drop-offs just line the banks. It’s just terrible. For peace and serenity fishing before 6:00 a.m. and after 9:00 p.m. is necessary. I’m ready to sell my boat! I’m disgusted!”

“People [are] loving it to death. The canoe trails are seeing a lot more traffic than in the past. Not everyone is good about cleaning up after themselves or as courteous as in the past.”

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. Examples of comments include:

“Too much area in the Refuge is closed to motorized access.”

“There is increasing mechanized recreation and an inadequate effort to protect opportunities for ‘quiet’ users.”

5. Alternatives

This section of the Summary presents five alternatives for managing Kenai Refuge, including continuation of current management (Alternative A) and the U.S. Fish and Wildlife Service's Preferred Alternative (Alternative E).

5.1 Alternatives Considered But Eliminated from Detailed Study

Many potential actions were eliminated from further consideration because they were impractical, unfeasible, or too expensive to implement. Actions considered in preliminary alternatives but subsequently eliminated from detailed consideration include the following:

5.1.1 Issue: Crowding on the Upper Kenai River

Action Considered: Reducing the Number of Float Starts by Commercial Guides

The Refuge and the Kenai Fish and Wildlife Field Office conducted public use studies on the Upper Kenai River in 1994, 1999, and 2004 to determine the types and levels of use on the river. The results of these studies indicate that the principal and increasing use is by private, non-commercial watercraft consisting of either inflatable rafts or drift boats. As such, limiting commercial use alone would not address the crowding issue. Although reducing the number of commercial starts would reduce the number of guided boats on the river at any given time, this alternative was eliminated from further consideration because it was not the most effective management action the Refuge could take to address crowding.

5.1.2 Issue: Airplane Access to Lakes in Designated Wilderness

Action Considered: Developing Management Objectives for Trumpeter Swans

An alternative to identify specific management objectives for trumpeter swan populations was eliminated from further consideration because the primary purpose of the Refuge is to conserve fish and wildlife populations and their habitats in their natural diversity. Natural diversity implies allowing wildlife populations to vary naturally over time (i.e., not sustaining them at artificially high levels through management activities or allowing population declines due to management activities). Consequently, development of specific population objectives for trumpeter swans would be inconsistent with Refuge mandates.

Action Considered: Providing Airplane Access Later in the Season

An alternative to allow airplane access to lakes on September 11 was eliminated from further consideration because trumpeter swan broods are still flightless 13–15 weeks after hatching, resulting in many broods not fledging until well into September. Allowing airplane access during the suggested time period would lead to premature brood breakup and poor survivorship because brood success is poor prior to fledging.

Action Considered: Phasing the Opening of Lakes and Studying the Impacts to Trumpeter Swan Broods

An alternative to allow a phased opening of lakes to airplane access in conjunction with research studies designed to assess the impacts of such access on trumpeter swan brood success was eliminated from further consideration because additional research was not deemed justifiable. A preponderance of studies already exists which identify the negative impacts of airplane disturbance on broods. Furthermore, current management strategies demonstrate the positive effects on swan populations (i.e., the number of breeding swan pairs has increased from less than 40 pairs to more than 60 pairs since 1985).

5.1.3 Issue: Airplane Access to Uplands

Action Considered: Providing Access to the Funny River Airstrip, and North and South Alaska Pipeline airstrips

An alternative to consider opening the Funny River Airstrip, and North and South Alaska Pipeline airstrips to facilitate airplane access to upland areas was eliminated from further consideration because the Funny River airstrip was not a constructed strip, but rather an upland landing area that was closed to use over 40 years ago due to resource concerns. The area has naturally revegetated and is largely not discernable to the casual observer as an airstrip. The North and South Alaska Pipeline airstrips were constructed airstrips along the Mystery Creek pipeline corridor to help facilitate pipeline construction. They have become part of the largely unmaintained route with highway vehicles driving on them in summer and fall and snowmachines and dog teams using them in winter. These old airstrips were designed for industrial purpose access and not with public use in mind. They would have inherent safety concerns associated with airplane use and do not provide critical access to inaccessible areas. Additionally, the pipeline operator has expressed concerns about vandalism to their industrial infrastructure and has requested restricted access on their right-of-way.

5.1.4 Issue: Snowmachine Access

Action Considered: Providing Snowmachine Access to Canoe Systems

An alternative to consider opening the Swanson River and Swan Lake Canoe Systems to snowmachine access was eliminated from further consideration because: snowmachine use has been and is currently permitted on 1.25 million acres (64 percent) of the Refuge. Such use has been managed for decades to balance visitor interests and resource protection needs. The canoe systems have been closed to snowmachine use since the 1970s, pre-dating ANILCA and Wilderness designation. Public sentiments range from providing more liberal snowmachine use to reducing it, largely dependent upon individual personal values. No information currently available suggests the Refuge should look at opening or closing specific additional areas to snowmachine use beyond what has been historically allowed. The range of alternatives accepted for this planning process, however, does include an alternative that would examine this issue—evaluate use patterns, intensity, and impacts of snowmachine use—the results of which could conceivably propose additional open areas, such as part or all of the canoe systems, or perhaps additional closures, such as restrictions in the Caribou Hills.

5.1.5 Issue: Use of Canoe Carriers

Action Considered: Allowing Canoe Carriers in the Canoe System

An alternative to consider allowing wheeled canoe carriers throughout the canoe systems was eliminated because wheeled carts are currently prohibited on the Refuge except on roads designated and open for public vehicular access (50 CFR 36.39 [i] [7] [v]). While wheeled carts might be useful on some trails, variable trail standards, soil types, and other factors likely make them inappropriate or impractical in many areas. Any consideration of wheeled carts would require a detailed inventory and analysis of current trail conditions and uses to ensure the continued protection of resources and visitor experiences. That level of detail is best provided in a specific, step-down management plan rather than in a Revised Comprehensive Conservation Plan. For these reasons, this alternative was eliminated from further consideration. However, the Refuge-wide trails assessment proposed as part of this plan will provide the needed foundation for making informed decisions about if and where to allow wheeled carts in the future.

5.1.6 Issue: Wild and Scenic River Recommendations

As a result of concerns expressed by the State of Alaska and subsequent analysis of those concerns by the Service, alternatives that would have recommended that Congress consider rivers for inclusion in the National Wild and Scenic Rivers System were considered but eliminated from detailed study. In compliance with section 304 (g) of ANILCA, special values of the Refuge, including river-related values, are discussed in chapter 3; however, recommendations for designations are not included in the range of alternatives. Current and proposed management direction provides adequate protection for all river-related values.

5.1.7 Issue: Wilderness Recommendations

As a result of concerns expressed by the State of Alaska and subsequent analysis of those concerns by the Service, alternatives that would have recommended that Congress consider lands for inclusion in the National Wilderness Preservation System were considered but eliminated from detailed study. The Service has a recommendation for Wilderness designation (approximately 195,500 acres) from the Supplemental Environmental Impact Statement for the Wilderness Proposal of the Final Kenai Comprehensive Conservation Plan/Environmental Impact Statement/Wilderness Review (USFWS 1988). This recommendation will remain in effect unless withdrawn or until submitted to Congress. Wilderness values are discussed in chapter 3 of the Draft Plan, but recommendations for additional designations are not included in the range of alternatives. Current and proposed management direction provides adequate protection for all wilderness values.

5.2 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

5.3 Management Direction Common To All Alternatives

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

5.3.1 Beetle Kill Trees/Fire Safety

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

5.3.2 Cultural Resources Management

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

5.3.3 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 the Alaska Department of Environmental Conservation. 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 visitors are not exposed to contaminants if re-use is planned.

5.3.4 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 *Land Management Training Facility* in section 5.3.6 below).

5.3.5 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 sport fishing incidental use permits would be continued to be issued (to include blackout dates and quotas to avoid crowding during high use periods).

5.3.6 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.

5.3.7 Law Enforcement

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

5.3.8 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.

5.3.9 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.

5.3.10 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. Sampling for contaminants,

remediation, and restoration of the site to predevelopment conditions will be required.

5.3.11 Visitor Center

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

5.3.12 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.

5.4 Comparison of the Alternatives

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%)	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 (19.4%)	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:					
	Fire use allowed to improve habitats for select wildlife species. Prescribed fire allowed in the Intensive, Moderate,	Fire use allowed as the principle management tool to improve wildlife habitats, reduce hazardous accumulations of wildland	Fire use allowed as the principle management tool to improve wildlife habitats, reduce hazardous accumulations of wildland	Fire use allowed as the principle management tool to improve wildlife habitats, reduce hazardous accumulations of wildland	Same as Alternative D

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
	Traditional, and Minimal management categories, though its use would be limited in the Minimal management category. Wildland fire use allowed in the Moderate, Traditional, Minimal, and Wilderness management categories.	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. Wildland fire use allowed in the Minimal and Wilderness management categories.	fuels, and maintain or restore natural fire regimes. Prescribed fire allowed in the Intensive, Moderate, and Minimal management categories. Wildland fire use 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.	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. Wildland fire use 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.	
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	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	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	Same as Alternative D

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
	allowed.		only, and bicycles would not be allowed.	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.	
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 public and administrative uses. Camping facilities would not be provided, and bicycles would not be allowed.	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 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 two primitive camping areas 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	Same as Alternative B

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
				for administrative uses. Up to one developed campground would be provided, and bicycles would be allowed on roads and trails.	
Contaminated Sites:					
	Industrial facilities would be required to operate in a clean manner (e.g., contaminant releases are cleaned up, areas no longer in use are restored).	Same as Alternative A, plus industry would be required to test suspected contaminated sites and clean them if contamination is present.	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	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.	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	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)
	the life of the project, the access road and pipeline corridor would be restored.	Pedestrian, horse, and snowmachine use would be allowed. Bicycle use would be allowed generally from May 1 through November 30. Public use and/or restoration opportunities would be re-evaluated after the life of the project.	August 9 through November 30. Pedestrian, horse, and snowmachine use would be allowed. Bicycle use would 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.	A trail needs assessment would be developed 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 the State of Alaska Department of Transportation and Public Facilities. 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	Same as Alternative D.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
				the road right-of-way for pedestrian and bicycle use.	
Sterling Highway Pullout (mile post 62.5):					
	Maintenance not conducted, and public use facilities not provided.	A formal rest stop at MP 62 would be developed through a cooperative effort with the State of Alaska Department of Transportation and Public Facilities.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
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.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
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 requiring appropriate disposal of human waste would be adopted.	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.
Upper Kenai River (Russian River to Skilak Lake):					
	Non-guided public use would be allowed without restriction. Sport fishing 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	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. Sport fishing guides would be required to have special use permits. Permits	Implement a program 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. Sport fishing guides would be required to have special use permits.	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. Sport fishing guides would be required to have special use permits. Permits would be reduced	Same as Alternative C.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
	demand for commercial recreational services increases. State-licensed sport fishing 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.	would be limited to 20 issued. The timing of boats and starts for each permit would be managed beyond current levels. State-licensed sport fishing 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.	Permits would be reduced to 18 thru 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 sport fishing 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 be allowed.	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 sport fishing 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 mile of the Sterling Highway.	
Middle Kenai River (Skilak Lake Downstream to the Refuge Boundary):					
	Non-guided public use would be allowed without restriction. Sport fishing 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-	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. Sport	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.	Same as Alternative C.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
		specific permitting process for guided sport fishing.	fishing guides would be required to have special use permits. Permits would be limited to the number of existing permittees, and existing permittees would be “grandfathered” in.	Sport fishing 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.	
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 Kenai Wilderness, where the closure would be May 1 through September 10.	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 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	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 Kenai Wilderness, where the closure would be May 1 through September 10.	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 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	Same as Alternative A.

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
		Lake, located within the Andy Simons unit of the Kenai Wilderness, where the closure would be May 1 through September 10.		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 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 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 and visitor experiences, the results of which would be used to	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, depending on local snow conditions. Studies would be conducted with	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 would be conducted to evaluate the effects of use on Refuge resources and	Same as Alternative B.

	Alternative A (Current Management)		Alternative B		Alternative C		Alternative D		Alternative E (Preferred Alternative)	
			support future management decisions.		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.		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	104	179	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

5.5 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).

5.5.1 General Management Direction

Management of the Refuge would continue to follow the 1985 Kenai National Wildlife Refuge Comprehensive Conservation Plan (USFWS 1985) and Record of Decision (USFWS 1985) as amended by subsequent step-down management plans. Seventy-six percent of the Refuge would continue to be managed to protect existing wilderness values (66.4 percent as designated Wilderness and 9.7 percent in the Minimal management category, areas which are 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.

5.5.2 Management Categories

Kenai Refuge would continue to be managed under five management categories (Figure 4).

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.

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

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.

5.5.3 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.

Placeholder:
Figure 4
Alternative A
Management Categories
Page 47

Placeholder:
Figure 4
Alternative A
Management Categories
(backside)
Page 48

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 and wildland fire use to improve habitats for select wildlife species (Figure 5).

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).

Wildland fire use would be allowed in the Moderate, Traditional, Minimal, and Wilderness management categories (approximately 1,883,500 acres or 95 percent of the Refuge). Undesirable wildland fires (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 U.S. Fish and Wildlife Service. An annual *Development and Operations Plan* for each Unit Operator would be required for comment and approval by the Refuge Manager. 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 a clean manner (e.g., , known contaminant releases are cleaned up in a timely manner, areas no longer in use are 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 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 mile post 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 regulations 50 CFR 27.51 and 27.61, which generally prohibit 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.

Placeholder:

Figure 5

Alternative A

Fire Management

Page 51

Placeholder:

Figure 5

Alternative A

Fire Management

(backside)

Page 52

Upper Kenai River (Russian River to Skilak Lake)

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

Guided Use: Sport Fishing — Special use permits would be required for sport fishing 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: Sport Fishing Incidental Use Program — State-licensed sport fishing 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: Sport Fishing — Special use permits would be required for sport fishing 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 6 and Figure 7).

- 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 8).

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.

5.5.4 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 3 reflects 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.

Table 3. Alternative A Budget Needs.

Item	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Refuge Operations	\$3,635,000	\$14,216,410
Annual Maintenance	\$360,000	\$1,620,000
Fire Funding	\$1,120,000	\$5,653,000
Total Annual Budget Needs	\$5,115,000	\$21,489,410

Placeholder:

Figure 6

Alternative A

Aircraft Access to Lakes

North

Page 55

Placeholder:

Figure 6

Alternative A

Aircraft Access to Lake

Nouth

(backside)

Page 56

Placeholder:

Figure 7

Alternative A

Aircraft Access to Lakes

South

Page 57

Placeholder:

Figure 7

Alternative A

Aircraft Access to Lakes

South

(backside)

Page 58

Placeholder:

Figure 8

Alternative A

Aircraft Access to Chickaloon

Page 59

Placeholder:

Figure 8

Alternative A

Aircraft Access to Chickaloon

(backside)

Page 60

RONS/SAMMS Projects

RONS is the mechanism that the Refuge uses to justify needed funds and personnel for new programs and 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 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 4 identifies the number of staff needed beyond current levels to fully implement Alternative A.

Table 4. Alternative A Staffing Needs Beyond Current Levels.

Action Type	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Permanent Full-Time Employees	5	20
Permanent Seasonal Employees	4	14
Temporary Seasonal Employees	25	45
Volunteers	20	60

5.6 Alternative B

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 B.

5.6.2 Management Categories

Four management categories would be applied to Kenai Refuge under Alternative B (Figure 9).

Intensive Management – Approximately 54,500 acres (2.7 percent) of land would be managed under the Intensive management category.

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 – Approximately 1,320,500 acres (66.4 percent) of land would be managed under the Wilderness management category.

5.6.3 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 and wildland fire use as the principle management tools to improve wildlife habitats, reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 10).

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

Wildland fire use would be allowed in the Minimal and Wilderness management categories (approximately 1,679,500 acres or 84.5 percent of

Placeholder:
Figure 9
Alternative B
Management Categories
Page 63

Placeholder:
Figure 9
Alternative B
Management Categories
(backside)
Page 64

Placeholder:
Figure 10
Alternative B
Fire Management
Page 65

Placeholder:
Figure 10
Alternative B
Fire Management
(backside)
Page 66

the Refuge). Undesirable wildland fires (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 U.S. Fish and Wildlife Service. An annual *Development and Operations Plan* for each unit operator would be required for comment and approval by the Refuge Manager. 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, 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

Industrial facilities would be required to operate in a clean manner (e.g., known contaminant releases are cleaned up in a timely manner, and that areas no longer in use are restored to predevelopment conditions). Industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to clean sites if contamination is present.

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

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

A formal rest stop at mile post 62 would be developed through a cooperative effort with the State of Alaska Department of Transportation and Public Facilities.

Trail Maintenance & Planning

A trail needs assessment would be developed 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: Sport Fishing — Special use permits would be required for sport fishing 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: Sport Fishing Incidental Use Program — State-licensed sport fishing 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: Sport Fishing — 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

Airplane access would be allowed on 45 lakes in designated Wilderness (Figure 11 and Figure 12).

- Dave Spencer Unit: Scenic, Nekutak, Shoepac, Norak, Grouse, King, Bedlam, Taiga, Snowshoe, Wilderness, Mull, Tangerra, 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.

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

Snowmachines less than 46 inches wide 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 there is adequate snow cover to protect underlying vegetation and soils. 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.

5.6.4 Funding and Personnel Requirements

Base Funding

All current management programs would continue under Alternative B, and some new programs would begin. The base Refuge operational budget (\$3,245,000) would continue with additions to cover the new programs. Additional funds necessary to operate Refuge programs received for annual maintenance (\$312,000) and fire operations (\$528,000) would continue to be needed. To maintain the current level of services and adequately fund new programs, the one-time operations addition in fiscal year (FY) 2007 (\$390,000) would continue to be required to operate at FY 2005 levels, and adjustments would 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, so new funds will be necessary.

Table 5 reflects the funds necessary to implement Alternative B 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.

Placeholder:
Figure 11
Alternative B
Aircraft Access to Lakes
North
Page 71

Placeholder:
Figure 11
Alternative B
Aircraft Access to Lakes
North
(backside)
Page 72

Placeholder:
Figure 12
Alternative B
Aircraft Access to Lakes
South
Page 73

Placeholder:
Figure 12
Alternative B
Aircraft Access to Lakes
South
(backside)
Page 74

Placeholder:

Figure 13

Alternative B

Aircraft Access to Chickaloon

Page 75

Placeholder:

Figure 13

Alternative B

Aircraft Access to Chickaloon

(backside)

Page 76

Table 5. Alternative B Budget Needs Beyond Current Levels.

Item	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Total Annual Budget Needs	\$5,515,000	\$21,864,410

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 6 identifies the number of staff needed beyond current levels to fully implement Alternative B.

Table 6. Alternative B Staffing Needs Beyond Current Levels

Action Type	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Permanent Full-Time Employees	1	16
Permanent Seasonal Employees	5	21
Temporary Seasonal Employees	10	50
Volunteers	20	60

5.7 Alternative C

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 under Alternative C.

5.7.2 Management Categories

Four management categories would be applied to Kenai Refuge under Alternative C (Figure 14).

Intensive Management – Approximately 54,500 acres (2.7 percent) of the land would be managed under the Intensive management category.

Moderate Management – Approximately 179,000 acres (9.0 percent) of the land would be managed under the Moderate management category.

Traditional Management – This category would be eliminated. All of the 189,000 acres (9.6 percent) of land currently identified as Traditional Management would convert to the Minimal management category.

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

Wilderness Management – Approximately 1,320,500 acres (66.4 percent) of land would be managed under the Wilderness management category.

5.7.3 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 and wildland fire use as the principle management tools to improve wildlife habitats, reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 15).

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

Wildland fire use 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)

Placeholder:
Figure 14
Alternative C
Management Categories
Page 79

Placeholder:
Figure 14
Alternative C
Management Categories
(backside)
Page 80

Placeholder:
Figure 14
Alternative C
Fire Management
Page 81

Placeholder:
Figure 14
Alternative C
Fire Management
(backside)
Page 82

unless safety, resource availability, or other planning objectives dictate a different response is warranted. Undesirable wildland fires (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

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 U.S. Fish and Wildlife Service. An annual *Development and Operations Plan* for each unit operator would be required for comment and approval by the Refuge Manager. 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, 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

Industrial facilities would be required to operate in a clean manner (e.g., known contaminant releases are cleaned up in a timely manner, areas no longer in use are restored to predevelopment conditions). Industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to clean sites if contamination is present.

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. 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 opened to public vehicle use (approximately August 9) until snow cover. 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

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

A formal rest stop at mile post 62 would be developed through a cooperative effort with the State of Alaska Department of Transportation and Public Facilities.

Trail Maintenance & Planning

A trail needs assessment would be developed 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 authorized.

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*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 program 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: Sport Fishing — Special use permits would be required for sport fishing guides. Permits would be limited to 18 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: Sport Fishing Incidental Use Program — State-licensed sport fishing 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: Sport Fishing — Special use permits would be required for sport fishing 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 16 and Figure 17).

- Dave Spencer Unit: Falcon, Wren, Neckshorta, 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: An unnamed lake southwest of Goat Lake in section 28; 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, AKs.

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 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 18).

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 depending on local snow conditions when the Refuge Manager determines there is adequate snow cover to protect underlying vegetation and soils. 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.

5.7.4 Funding and Personnel Requirements

Base Funding

All current management programs would continue under Alternative C, and some new programs would begin. The base Refuge operational budget

Placeholder:
Figure 16
Alternative C
Aircraft Access to Lakes
North
Page 87

Placeholder:
Figure 16
Alternative C
Aircraft Access to Lakes
North
(backside)
Page 88

Placeholder:
Figure 17
Alternative C
Aircraft Access to Lakes
South
Page 89

Placeholder:
Figure 17
Alternative C
Aircraft Access to Lakes
South
(backside)
Page 90

Placeholder:

Figure 18

Alternative C

Aircraft Access to Chickaloon

Page 91

Placeholder:

Figure 18

Alternative C

Aircraft Access to Chickaloon

(backside)

Page 92

(\$3,245,000) would continue with additions to cover the new programs. Additional funds necessary to operate Refuge programs received for annual maintenance (\$312,000) and fire operations (\$528,000) would continue to be needed. To maintain the current level of services and adequately fund new programs, the one-time operations addition in fiscal year (FY) 2007 (\$390,000) would continue to be required to operate at FY 2005 levels, and adjustments would 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, so new funds would be necessary.

Table 7 reflects 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).

Table 7. Alternative C Budget Needs Beyond Current Levels.

Item	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Total Annual Budget Needs	\$7,800,000	\$21,864,410

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 8 identifies the number of staff needed beyond current levels to fully implement Alternative C.

Table 8. Alternative C Staffing Needs Beyond Current Levels.

Action Type	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Permanent Full-Time Employees	5	16
Permanent Seasonal Employees	5	21
Seasonal Employees	10	50
Volunteers	20	60

5.8 Alternative D

5.8.1 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.

5.8.2 Management Categories

Four management categories would be applied to Kenai Refuge under Alternative D (Figure 19).

Intensive Management – Approximately 54,500 acres (2.7 percent) of the land would be managed under the Intensive management category.

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 – This category would be eliminated. All of the 189,000 acres (9.6 percent) of land currently identified under this category would convert to the Minimal management category.

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 – Approximately 1,320,500 acres (66.4 percent) of the land would be managed under the Wilderness management category.

5.8.3 Management Direction Identified By Issue

The following discussion describes how Alternative D would address the issues identified during the scoping process. It provides management

Placeholder:
Figure 19
Alternative D
Management Categories
Page 95

Placeholder:
Figure 19
Alternative D
Management Categories
(backside)
Page 96

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 and wildland fire use as the principle management tools to improve wildlife habitats, reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 20).

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.

Wildland fire use would be allowed in the Intensive, Moderate, Minimal, and Wilderness land 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 wildland fires (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

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 U.S. Fish and Wildlife Service. An annual *Development and Operations Plan* for each unit operator would be required for comment and approval by the Refuge Manager. 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, 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

Industrial facilities would be required to operate in a clean manner (e.g., known contaminant releases are cleaned up in a timely manner, areas no longer in use are restored to predevelopment conditions). Industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to clean sites if contamination is present.

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

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

Develop a formal rest stop at milepost 62 through a cooperative effort with the State of Alaska Department of Transportation and Public Facilities.

Trail Maintenance & Planning

Develop a trail needs assessment that identifies and prioritizes construction and/or maintenance needs and construction standards for a wide 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

Placeholder:
Figure 20
Alterantive D
Fire Management
Page 99

Placeholder:
Figure 20
Alternative D
Fire Management
(backside)
Page 100

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 authorized.

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

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 sport fishing 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: Sport Fishing — Special use permits would be required for sport fishing 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: Sport Fishing 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: Sport Fishing — Special use permits would be required for sport fishing 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 21 and Figure 22).

- Dave Spencer Unit: Falcon, Wren, Neckshorta, Rabbit Foot, Muskrat, Scenic, Nekutak, Shoepac, Norak, Grouse, King, Bedlam, Taiga, Snowshoe, Wilderness, Mull, Tangerra, Bird, Cook, Sandpiper, and Vogel, plus Angler, Pepper, Gene, and Swanson lakes 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 Koloman 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), Kaknu, 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 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 23).

Placeholder:
Figure 21
Alternative D
Aircraft Access to Lakes
North
Page 103

Placeholder:
Figure 21
Alternative D
Aircraft Access to Lakes
North
(backside)
Page 104

Placeholder:
Figure 22
Alternative D
Aircraft Access to Lakes
South
Page 105

Placeholder:

Figure 22

Alternative D

Aircraft Access to Lakes

South

(backside)

Page 106

Placeholder:

Figure 23

Alternative D

Aircraft Access to Chickaloon

Page 107

Placeholder:

Figure 23

Alternative D

Aircraft Access to Chickaloon

(backside)

Page 108

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 depending on local snow conditions when the Refuge Manager determines there is adequate snow cover to protect underlying vegetation and soils. 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.

5.8.4 Funding and Personnel Requirements

Base Funding

All current management programs would continue under Alternative D, and some new programs would begin. The base Refuge operational budget (\$3,245,000) would continue with additions to cover the new programs. Additional funds necessary to operate Refuge programs received for annual maintenance (\$312,000) and fire operations (\$528,000) would continue to be needed. To maintain the current level of services and adequately fund new programs, the one-time operations addition in fiscal year (FY) 2007 (\$390,000) would continue to be required to operate at FY 2005 levels, and adjustments would 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, so new funds would be necessary.

Table 9 reflects 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.

Table 9. Alternative D Budget Needs Beyond Current Levels.

Item	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Total Annual Budget Needs	\$8,050,000	\$21,864,410

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 10 identifies the number of staff needed beyond current levels to fully implement Alternative D.

Table 10. Alternative D Staffing Needs Beyond Current Levels.

Action Type	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Permanent Full-Time Employees	5	16
Permanent Seasonal Employees	5	21
Seasonal Employees	10	50
Volunteers	20	60

5.9 Alternative E — The Preferred Alternative

5.9.1 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.

5.9.2 Management Categories

Four management categories would be applied to Kenai Refuge under Alternative E (Figure 24).

Intensive Management – Approximately 54,500 acres (2.7 percent) of the land would be managed under the Intensive management category.

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)

Placeholder:
Figure 24
Alternative E
Management Categories
Page 111

Placeholder:
Figure 24
Alternative E
Management Categories
(backside)
Page 112

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 – This category would be eliminated. All of the 189,000 acres (9.6 percent) of land currently identified under this category would convert to the Minimal management category.

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 – Approximately 1,320,500 acres (66.4 percent) of the land would be managed under the Wilderness management category.

5.9.3 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

Management direction would allow prescribed fire and wildland fire use as the principle management tools to improve wildlife habitats, reduce hazardous accumulations of wildland fuels, and maintain or restore natural fire regimes (Figure 25).

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 occur under specific conditions defined in national Wilderness and Fire Management policies.

Wildland fire use would be allowed in the Intensive, Moderate, Minimal, and Wilderness land 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 wildland fires (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

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 U.S. Fish and Wildlife Service (Service). An annual *Development and Operations Plan* for each unit operator would be required for comment and approval by the Refuge Manager. 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, 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

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 U.S. Fish & Wildlife Service. An annual *Development and Operations Plan* for each unit operator would be required for comment and approval by the Refuge Manager. 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, all industrial roads (except Marathon 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.

Contaminated Sites

Industrial facilities would be required to operate in a clean manner (e.g., known contaminant releases are cleaned up on a timely manner, areas no longer in use are restored to predevelopment conditions). Industry would be required to investigate, and if necessary, test suspected contaminated sites to confirm the existence and identity of contaminants and to clean sites if contamination is present.

Placeholder:
Figure 25
Alternative E
Fire Management
Page 115

**Placeholder:
Figure 25
Alternative E
Fire Management
(backside)
Page 116**

Mystery Creek Access 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. 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 November 30. 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

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

A formal rest stop at milepost 62 would be developed through a cooperative effort with the State of Alaska Department of Transportation and Public Facilities.

Trail Maintenance and Planning

A trail needs assessment would be developed 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/cones). Additionally, the collection of up to eight naturally shed moose or caribou antlers per person per year for non-commercial purposes would be authorized.

Christmas Tree Harvesting

Refuge-specific regulations would be amended to allowed 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

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

Guided Use: Sport Fishing — Special use permits would be required for sport fishing guides. Permits would be limited to 18 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: Sport Fishing Incidental Use Program — State-licensed sport fishing 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: Sport Fishing — Special use permits would be required for sport fishing 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 46 lakes in designated Wilderness (Figure 26 and Figure 27).

- 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 to 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 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; and floatplane access would be allowed on 6.5 miles of the Chickaloon River (Figure 28).

Snowmachine Access

Snowmachines less than 46 inches wide and less than 1,000 pounds in weight would be allowed in designated areas from December 1 through April 30 when the Refuge Manager determines there is adequate snow cover to protect underlying vegetation and soils. Studies would be conducted with the State of Alaska and other 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.

5.9.4 Funding and Personnel Requirements*Base Funding*

All current management programs would continue under Alternative E, and some new programs would begin. The base Refuge operational budget (\$3,245,000) would continue with additions to cover the new programs.

Additional funds necessary to operate Refuge programs received for annual maintenance (\$312,000) and fire operations (\$528,000) would continue to be needed. To maintain the current level of services and adequately fund new programs, the one-time operations addition in fiscal year (FY) 2007 (\$390,000) would continue to be required to operate at FY 2005 levels, and adjustments would 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, so new funds would be necessary.

Table 11 reflects 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.

Table 11. Alternative E Budget Needs Beyond Current Levels.

Item	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Total Annual Budget Needs	\$5,115,000	\$22,414,410

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 12 identifies the number of staff needed beyond current levels to fully implement Alternative E.

Table 12. Alternative E Staffing Needs Beyond Current Levels.

Action Type	Short-Term Needs (1 – 3 Years)	Long-Term Needs (3 – 15 Years)
Permanent Full-Time Employees	1	26
Permanent Seasonal Employees	5	16
Seasonal Employees	5	30
Volunteers	20	60

Placeholder:

Figure 26

Alternative E

Aircraft Access to Lakes

North

Page 121

Placeholder:

Figure 26

Alternative E

Aircraft Access to Lakes

North

(backside)

Page 122

Placeholder:

Figure 27

Alternative E

Aircraft Access to Lakes

South

Page 123

Placeholder:

Figure 27

Alternative E

Aircraft Access to Lakes

South

(backside)

Page 124

Placeholder:

Figure 28

Alternative E

Aircraft Access to Chickaloon

Page 125

Placeholder:

Figure 28

Alternative E

Aircraft Access to Chickaloon

(backside)

Page 126

6. Environmental Consequences

Table 13. 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 temporal 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

	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
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					
Adverse Impacts	Some site-specific impacts observed	Potentially more site-specific impacts than Alternative A	Potentially more site-specific impacts than Alternative A	Potentially more site-specific impacts than Alternative A	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	More impacts than Alternative A	More impacts than Alternative A	More impacts than Alternative A
Beneficial Impacts	Some long-term, local scale benefits observed	More benefits than Alternative A	More benefits than Alternative A	More benefits than Alternative A	More benefits than Alternative A

7. Evaluation of the Alternatives

7.1 Evaluation Criteria

The alternatives described in the Draft Revised Comprehensive Conservation 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 purpose of the Refuge and other provisions of the Alaska National Interest Lands Conservation Act (ANILCA)?
2. How well does the alternative satisfy the mission of the National Wildlife Refuge System (System, Refuge System)?
3. How well does the alternative contribute to meeting the goals of the Refuge?
4. How do the alternatives address the issues and concerns identified during scoping?
5. How well does the alternative maintain biological integrity, diversity, and environmental health at the Refuge and ecosystem scales and contribute to managing the Refuge as part of an ecosystem?
6. How well does the alternative agree with Alaska Department of Fish and Game (ADF&G) management plans for the area?

Table 14. 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.

Issue / Concern	Alternative A (Current Management)	Alternative B	Alternative C	Alternative D	Alternative E (Preferred Alternative)
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. 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.