

# KODIAK SUBAREA CONTINGENCY PLAN

## SENSITIVE AREAS SECTION

INTRODUCTION .....	D-1
PART ONE Initial Contacts .....	D-3
PART TWO Areas of Environmental Concern.....	D-7
A. Background/Criteria.....	D-7
B. Areas of Major Concern.....	D-8
C. Areas of Moderate Concern .....	D-9
D. Areas of Lesser Concern .....	D-10
PART THREE Resource Sensitivity.....	D-11
PART FOUR Background Information .....	D-20
Introduction.....	D-20
Land Management Maps.....	D-21
A. Land Management Designations.....	D-29
B. Habitat Types .....	D-31
C. Biological Resources.....	D-34
1. Fish and Wildlife .....	D-34
2. Vegetation .....	D-41
3. Biologically Sensitive Areas .....	D-41
D. Human Use Resources .....	D-45
1. Fish Hatcheries and Associated Ocean Net Pens.....	D-45
2. Aquaculture Sites .....	D-45
3. Cultural Resources .....	D-49
4. Subsistence and Personal Use Harvests .....	D-49
5. Commercial Fishing.....	D-49
6. Sport Fishing and Hunting.....	D-50
7. Recreational Sites and Facilities .....	D-51
8. Commercial Tourism .....	D-52
9. Marinas and Ports .....	D-52
10. Fish Processing .....	D-52
11. Logging Facilities.....	D-53
12. Water Intake/Use.....	D-53
E. Wind, Ice and Current Conditions .....	D-54
PART FIVE Key References .....	D-58
PART SIX Areas of Local Concern .....	D-62
ATTACHMENT ONE Resource and Sensitive Area Maps for the Kodiak Subarea	
ATTACHMENT TWO Seabird Colonies	

## Introduction

This section is intended for use by the On-Scene Coordinators during the initial phase of a spill event to assist in ascertaining the location and presence of spill-sensitive biological and cultural resources, services and users in the Kodiak Island subarea. This information is specific to the Kodiak Island subarea. No attempt has been made to duplicate information contained in easily accessible existing documents. This section, therefore, must be used in conjunction with the referenced materials and informational contacts identified herein. More detailed and current data should be available from on-scene resource experts when they become engaged in the response. This information is geared toward early response. If appropriate, natural resource trustees may conduct natural resource damage assessment (NRDA) activities in conjunction with response efforts. Information regarding NRDA should be directed to natural resource trustees identified in the **Unified Plan, Annex E, Tab S**.

Often, the most detailed, up-to-date biological and resource use information will come from people who live and work in the impacted area. People from the local community are often knowledgeable sources for information related to fishing, hunting, non-consumptive outdoor sports, and subsistence use. They may also have a good idea of which spill response techniques (especially exclusion and diversion booming) are practicable under prevailing weather and current conditions.

The Alaska Regional Response Team (ARRT) has developed a series of guidelines (see the Alaska Federal/State Contingency Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan)) covering the decision processes for: application of dispersants, use of *in situ* burning, protection of wildlife, and protection of cultural resources. The ARRT Scientific Support Coordinator has developed a Shoreline Countermeasures Manual for use in clean-up decision making by shoreline type. A series of Environmental Sensitivity Index (ESI) maps, showing selected sensitive resources and shoreline types, have been produced for the subarea for the ARRT Scientific Support Coordinator. These guidelines and tools are not duplicated here.

This section and the guidelines in the Unified Plan are also intended for use by facility/vessel operators in developing industry oil spill prevention and contingency plans. For an operator's facility or area of operation, industry contingency plans describe: (a) environmentally sensitive areas and areas of public concern; (b) how sensitive areas would be prioritized during a spill event; and (c) response strategies to protect sensitive areas at risk. This information within industry plans should be consistent with the subarea plan.

The definition of sensitive resources and their geographic locations requires use of field observations and data available from published and non-published materials or through additional field work. With the limited time and funds available for subarea contingency plan development (there are ten such plans covering the state of Alaska), not all the detailed information necessary to adequately complete the Sensitive Areas Section has been compiled.

The subarea contingency plan for this subarea is scheduled to be reviewed annually and updated as necessary. Issues to be considered during future updates include the following:

- Establish a continuing interagency mechanism to review, update and maintain sensitivity information and priorities.
- Subdivide the area into smaller geographic areas and identify more specifically sensitive seasonal biological and other resource locations.

- Expand and further detail sensitive resources and initial response tactics for the most likely spill scenarios.
- Develop geographic response plans (GRPs) for other priority areas.

Suggestions, comments, and more current information are requested. Please contact either:

Doug Mutter  
U.S. Department of the Interior  
Office of Environmental Policy  
and Compliance  
1689 C Street, Room 119  
Anchorage, Alaska 99501  
(907) 271-5011  
FAX (907) 271-4102

Mark Fink  
Alaska Department of Fish and Game  
Habitat and Restoration Division  
333 Raspberry Road  
Anchorage, Alaska 99518  
(907) 267-2338  
FAX (907) 267-2464

## SENSITIVE AREAS: PART ONE - INITIAL CONTACTS

Agency	Resources	Primary Contact		Alternate Contact	
		Name	Numbers	Name	Numbers
<b>FISH and WILDLIFE and HABITAT RESOURCES</b>					
Alaska Department of Fish and Game	fish, shellfish, birds, terrestrial mammals, marine mammals	Mark Fink	work: 267-2338 fax: 267-2464 emer: 337-7933	Lance Trasky	work: 267-2342 fax: 267-2464 emer: 344-4220
U.S. Department of the Interior	migratory birds, sea otters, polar bears, walrus, endangered species	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer: 800-413-4220	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
U.S. Department of Commerce	sea lions, seals, whales, endangered species	Steve Zimmerman	work: 586-7235 fax: 586-7131 emer: 586-2591	Brad Smith	work: 271-5006 fax: 271-3030 emer: 248-4211
<b>CULTURAL and ARCHAEOLOGICAL SITES</b>					
Alaska Office of History and Archaeology	historic sites, archaeological sites, national register sites	Judy Bittner	work: 269-8715 fax: 269-8908 emer: 274-7165	Robert Shaw	work: 269-8727 fax: 269-8908 emer: 345-5416
U.S. Department of the Interior	archaeological/historical sites in park and wildlife refuge system units, public lands, Native allotments/trust lands; sunken vessels	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer: 800-413-4220	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
<b>LAND OWNERSHIP and CLASSIFICATIONS/DESIGNATIONS</b>					
Alaska Department of Natural Resources	state lands, state parks and recreation areas, state forests, tidelands	Mike Bennett	work: 269-8548 fax: 269-8913 emer: 345-3486	Kristina O'Connor	work: 269-8815 fax: 563-0415 emer: 349-1908
Alaska Department of Fish and Game	state game refuges, state critical habitats	Mark Fink	work: 267-2338	Lance Trasky	work: 267-2342

Agency	Resources	Primary Contact		Alternate Contact	
		Name	Numbers	Name	Numbers
Game			fax: 267-2464 emer: 561-7933		fax: 267-2464 emer: 344-4220
Kodiak Island Borough	Borough lands, zoning	Linda Freed	work: 486-9360 fax: 486-9376 emer: 486-5314	Bud Cassidy	work: 486-9302 fax: 486-9376 emer:
U.S. Department of Transportation	U.S. Coast Guard lands	Kodiak Station Support Center	work: 487-5760		
U.S. Department of the Interior	national parks and preserves, national historic sites, national monuments, national wildlife refuges, public lands, national recreation areas, wild and scenic rivers, wilderness areas, Native trust lands	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer:800-413-4220	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
<b>COMMERCIAL HARVEST</b>					
Alaska Department of Fish and Game	fishing permits	Mark Fink	work: 267-2338 fax: 267-2464 emer: 337-7933	Lance Trasky	work: 267-2342 fax: 267-2464 emer: 344-4220
Alaska Department of Natural Resources	tideland leases, logging on private lands	Mike Bennett	work: 269-8548 fax: 269-8913 emer: 345-3486	Kristina O'Connor	work: 269-8815 fax: 563-0415 emer: 349-1908
Alaska Department of Environmental Conservation	seafood processing	Manny Soares	work: 349-7343 fax: 349-4715 emer: 333-5312	Kit Ballentine	work: 465-5280 fax: 465-5292 emer:
U.S. Department of Commerce	fishing permits	Steve Zimmerman	work: 586-7235 fax: 586-7131 emer: 586-2591	Brad Smith	work: 271-5006 fax: 271-3030 emer: 248-4211
<b>SUBSISTENCE USES</b>					

Agency	Resources	Primary Contact		Alternate Contact	
		Name	Numbers	Name	Numbers
Alaska Department of Fish and Game	statewide subsistence uses	Mark Fink	work: 267-2338 fax: 267-2464 emer: 337-7933	Lance Trasky	work: 267-2342 fax: 267-2464 emer: 344-4220
U.S. Department of the Interior	subsistence uses on Federal lands and all navigable waters; use of sea otters, walrus, polar bears	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer:800-413-4220	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
U.S. Department of Commerce	subsistence use of whales, porpoises, seals, sea lions	Steve Zimmerman	work: 586-7235 fax: 586-7131 emer: 586-2591	Brad Smith	work: 271-5006 fax: 271-3030 emer: 248-4211
<b>RECREATION AND TOURISM USES</b>					
Alaska Department of Natural Resources	state parks and recreation areas, anchorages, campgrounds	Mike Bennett	work: 269-8548 fax: 269-8913 emer: 345-3486	Kristina O'Connor	work: 269-8815 fax: 563-0415 emer: 349-1908
Alaska Department of Fish and Game	sport hunting and fishing	Mark Fink	work: 267-2338 fax: 267-2464 emer: 337-7933	Lance Trasky	work: 267-2342 fax: 267-2464 emer: 344-4220
U.S. Department of the Interior	recreation uses in park and wildlife refuge system units and public lands	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer:800-413-4220	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
<b>WATER INTAKE and USE FACILITIES</b>					
Alaska Department of Environmental Conservation	drinking water wells, treatment and storage; fish processing facilities	Deena Henkins	work: 465-5300 fax: 465-5274 emer: 364-2281	John Truelove	work: 465-5300 fax: 465-5274 emer: 790-3122
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Mark Fink	work: 267-2338 fax: 267-2464 emer: 337-7933	Lance Trasky	work: 267-2342 fax: 267-2464 emer: 344-4220

Agency	Resources	Primary Contact		Alternate Contact	
		Name	Numbers	Name	Numbers
Alaska Department of Natural Resources	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Mike Bennett	work: 269-8548 fax: 269-8913 emer: 345-3486	Kristina O'Connor	work: 269-8815 fax: 563-0415 emer: 349-1908
U. S. Coast Guard	marinas and docks, mooring buoys	Marine Safety Office, Anchorage	work: 271-6700 fax: 271-4689 emer: 271-6700		work: fax: emer

# SENSITIVE AREAS: PART TWO - AREAS OF ENVIRONMENTAL CONCERN

## 1. BACKGROUND/CRITERIA

The following relative priority listing was developed by the Sensitive Areas Work Group, with representatives from state and federal agencies and the private sector. The list identifies priorities for resources by designations of major, moderate, and lesser concern. Resources are not prioritized within each designation. These designations are for consideration in initial spill response activities, they are not applicable to extended cleanup activities. This prioritization scheme must be used in conjunction with spill-specific information (e.g., size and location of spill, type of product, trajectory) to determine the actual protection priorities for that discharge. Specific guidance to On-Scene Coordinators for protecting cultural resources is contained the National Response Team's *Programmatic Agreement of Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan (Programmatic Agreement)*, which will be included as Annex M of the **Unified Plan**.

The following criteria were developed as a tool to establish levels of concern. These criteria are not listed in a priority order.

### CRITERIA FOR RELATIVE PRIORITY RATING

- human economic disruption -- economic/social value; human food source disruption
- mortality -- wildlife, fish, other organisms (how many potentially killed in relation to abundance)
- animal displacement and sensitivity to displacement
- aesthetic degradation
- habitat availability and rarity
- sublethal effects, including sensitivity to physical or toxic effects of oil or hazardous substances and long-term affects to habitat, species, or both
- threatened and endangered species, and/or other legal designation
- persistent concentration of oil or hazardous substances
- reproduction rate or recolonizing potential
- relative importance to ecosystem
- potential for physical contact with spill--pathway of oil or hazardous substances
- resource sensitivity to response countermeasures

**B. AREAS OF MAJOR CONCERN**

Threatened and Endangered Species

Stellar Sea Lion Rookeries and Haulouts

Geomorphology - Coastal Habitat Types

Marshes

Eelgrass Beds

Sheltered Tidal Flats

Sheltered Rocky Shores

Geomorphology - Upland Habitat Types

Streams and Lakes

Riparian Habitats

Sea Otter Concentration Areas (> 20)

Harbor Seal Haulouts (> 10)

Seabird Colonies (> 5,000)

Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas

Eagle Nest Sites

Anadromous Fish Streams

> 25,000 pink salmon spawners

> 15,000 chum salmon spawners

> 5,000 sockeye salmon spawners

> 2,500 coho salmon spawners

> 500 chinook salmon spawners

Hatcheries

Large Freshwater Fish Systems

Herring Spawning Area

Land Management Designations

Federal Lands

Designated Wilderness Areas

State Lands

Tugidak Island Critical Habitat

Cultural Resources/Archaeological Sites

National Historical Landmarks

National Natural Landmarks

Burial Sites

National Register Eligible Village Sites

Intertidal Sites

Subsistence Harvest Areas

High Use Commercial Harvest Areas

## 2. AREAS OF MODERATE CONCERN

### Geomorphology - Coastal Habitat Types

- Gravel Beaches

- Mixed Sand & Gravel Beaches

- Exposed Tidal Flats

- Coarse Grained Sand Beaches

### Sea Otter General Distribution (<20)

### Harbor Seal Haulouts (< 10)

### Stellar Sea Lion General Distribution

### Seabird Colonies (1,000 - 5,000)

### Waterfowl and Shorebird Nesting and/or Molting Concentration Areas

### Anadromous Fish Streams

- 5,000 - 25,000 pink salmon spawners

- 5,000 - 15,000 chum salmon spawners

- 500 - 5,000 sockeye salmon spawners

- 500 - 2,500 coho salmon spawners

- 100 - 500 chinook salmon spawners

### Moderately Sized Freshwater Fish Systems

### Clam Beds

### Bear Spring Concentration Areas

### Sitka Deer and Elk Coastal Feeding Concentration Areas

### Commercial Harvest Areas

### Land Management Designations

- Federal Lands

  - National Parks

  - Wildlife Refuges

- State Lands

  - Afognak State Park

  - Shuyak Island State Park

  - Buskin River State Recreation Area

  - Ft. Abercrombie State Historic Park

  - Woody Island State Recreation Site

  - Pasagshak River State Recreation Site

### Cultural Resources/Archaeological Sites

- National Register Eligible Sites (excluding villages sites)

- Sites Adjacent to Shorelines

**D. AREAS OF LESSER CONCERN**

Geomorphology - Coastal Habitat Types

- Fine-grained Sand Beaches
- Exposed Wave-cut Platforms
- Exposed Rocky Shores

Seabird Colonies (< 1,000)

Raptor Feeding Areas

Waterfowl and Shorebird General Distribution

Bear Fall Concentration Areas

Anadromous Fish Streams

- < 5,000 pink salmon spawners
- < 5,000 chum salmon spawners
- < 500 sockeye salmon spawners
- < 500 coho salmon spawners
- < 100 chinook salmon spawners

General Freshwater Fish Habitat

Land Management Designations

- Federal and State Lands
- Public Lands

Cultural Resources/Archaeological Sites

- Cultural Resources that do not meet National Register Criteria

## **SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY**

See also Part Six - Areas of Local Concern and the Kodiak Island Borough's Sensitive Area Identification Project Report (1997).

The following sensitivity tables were developed by the Sensitive Areas Work Group with representatives from state and federal agencies and the private sector. Not all information is complete at this time. Key references are identified for each table and are listed at the end of the tables. Time periods and/or conditions when resources are of varying levels of concern (most, medium, least) with respect to oil spill impacts are noted in the following tables.

### **GEOMORPHOLOGY**

(references: 6)

<b>CATEGORY</b>	<b>LESSER</b>	<b>MODERATE</b>	<b>MAJOR</b>
<b>COASTAL HABITAT TYPES</b>	Fine-grained Sand Exposed Wave-cut Platforms Exposed Rocky Shores	Gravel Beaches Mixed Sand & Gravel Beaches Exposed Tidal Flats Coarse Grained Sand Beaches	Marshes Eelgrass Beds Sheltered Tidal Flats Sheltered Rocky Shore
<b>UPLAND HABITAT TYPES</b>	To Be Developed	To Be Developed	Streams & Lakes Riparian Habitats

### **THREATENED OR ENDANGERED SPECIES**

(references: 8,9,14)

<b>CATEGORY</b>	<b>LESSER</b>	<b>MODERATE</b>	<b>MAJOR</b>
<b>ENDANGERED SPECIES</b>			Whales: Fin, Blue, Humpback, Sei, and Sperm
<b>THREATENED SPECIES</b>			Birds: Short-tailed Albatross  Marine mammals: Stellar's sea lion  Birds: Aleutian Canada goose



**WHALES and PORPOISES<sup>1</sup>**

(references: 9,10,15)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 10	10 - 50	> 50
SUSCEPTIBILITY	Oct 1 - May 1	Aug 1 - Sept 30	May 1 - July 31
HUMAN HARVEST	Sept 1 - June 1		June 1 - Sept 1

<sup>1</sup> Toothed and baleen whales are present nearshore year round.

**BROWN BEARS**

(references: 2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
SUSCEPTIBILITY	Nov 1 - Apr 30	May 1 - June 30 Sept 1 - Oct 31	July 1 - Aug 30
COMMERCIAL VALUE	Nov 1 - May 31 July 1 - Aug 31	June 1 - June 30	Sept 1 - Oct 31
HUMAN HARVEST	Nov 1 - Apr 15		Apr 15 - Oct 31

**Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Denning												
Feeding in coastal areas												
Feeding along salmon streams												

**BLACK-TAILED DEER**

(references: 2,3,4)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE <sup>2</sup>			
SUSCEPTIBILITY	Apr 1 - Nov 30		Dec 1 - Mar 31
HUMAN HARVEST	Apr 1 - Aug 10 Sept 20 - Dec 31		Jan 1 - Mar 31 Aug 10 - Sept 20

<sup>2</sup> Deer populations fluctuate widely from year to year. In addition, densities vary as a result of snow conditions. Consequently, specific abundance figures will not be established for use in prioritizing the importance of an area.

**Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Calving												
Present near shoreline												

**ELK**  
(references:2,3,4)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE <sup>3</sup>			
SUSCEPTIBILITY	Apr 1 - Nov 30		Dec 1 - Mar 31
HUMAN HARVEST	June 1 - Aug 31	April 1 - May 31	Sept 1 - March 31

<sup>3</sup> There are seven elk herds that utilize various portions of Afognak and Raspberry islands. Depending on the herd and the climatic conditions; abundance may vary widely. As a result, specific abundance figures will not be established for use in prioritizing the importance of an area.

<b>Critical Life Periods</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Calving						====						
In Wintering Areas			=====									===

**CARIBOU/REINDEER**  
(references: 2,3,4,10,12)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE			
SUSCEPTIBILITY			
HUMAN HARVEST	June 1 - Aug 31	April 1 - May 31	Sept 1 - March 31

<b>Critical Life Periods</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Calving						====						
Insect Relief Areas								=====				



**HERRING (including capelin/hooligan)**  
(references: 2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE (Biomass in Tons)	< 500	500 - 5,000	> 5,000
SUSCEPTIBILITY	Oct 1 - Feb 28	March 1 - March 31	April 1 - Sept 30
HUMAN HARVEST	Jan 1 - Feb 28	June 1 - Dec 31	March 1 - May 31

<b>Critical Life Periods</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Congregate to spawn				=====								
Spawning				=====								
Larvae nearshore						=====						
Overwintering		=====								=====		
Summer feeding						=====						
Present in area		=====										

**SALMONIDS**  
(references: 1,2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 5,000 pink < 5,000 chum < 500 sockeye < 500 coho < 100 chinook	5,000 - 25,000 pink 5,000 - 15,000 chum 500 - 5,000 sockeye 500 - 2,500 coho 100 - 500 chinook	> 25,000 pink > 15,000 chum > 5,000 sockeye > 2,500 coho > 500 chinook
SUSCEPTIBILITY	Dec 1 - Jan 31	Feb 1 - Apr 30 Nov 1 - Nov 30	May 1 - Oct 31
SPECIES DIVERSITY	2 or less	2 - 4	4 and greater
HUMAN HARVEST		Oct 10 - May 15	May 15 - Oct 10

<b>Critical Life Periods</b>	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Spawning						=====						
Eggs/fry in gravel				=====				=====				
Out migration of fry				=====								
Adults nearshore <sup>5</sup>								=====				

<sup>5</sup> Chinook salmon are present nearshore during the entire year; however, abundance varies depending on the time of year.

**FRESHWATER FISH SPECIES**

(references: 2,3,4,10)

DOLLY VARDEN

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	no abundance numbers are available		
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

**Critical Life Periods**

	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Adults Near Shore												
Spawning in Streams												
Eggs/fry in gravel												

RAINBOW TROUT

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE			
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

**Critical Life Periods**

	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Spawning												
In freshwater												

STEELHEAD TROUT

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	<350	350-1,900	>1,900
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

**Critical Life Periods**

	<b>J</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>M</b>	<b>J</b>	<b>J</b>	<b>A</b>	<b>S</b>	<b>O</b>	<b>N</b>	<b>D</b>
Spawning												
In freshwater												
Adults												
Juveniles												
Migration Periods												

**CLAMS and OTHER MARINE INVERTEBRATES (CHITONS)**

(references: 2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
SUSCEPTIBILITY			year around
HUMAN HARVEST		May 1 - Aug 31	Sept 1 - Apr 30

**Critical Life Periods**

**J F M A M J J A S O N D**

Spawning

=====

Planktonic larvae

=====

**LEGISLATIVELY DESIGNATED LAND STATUS**

(references: 8,11,12,13)

CATEGORY	LESSER	MODERATE	MAJOR
FEDERAL LANDS	Public Lands	National Parks Wildlife Refuges	Wild & Scenic Rivers Critical Habitats Designated Wilderness Areas
STATE LANDS	Public Lands <sup>6</sup>	State Parks	Tugidak Island Critical Habitat Area

<sup>6</sup> Includes submerged lands out to 3 miles, and historic bays and inlets

**CULTURAL RESOURCES/ARCHAEOLOGICAL SITES**

(references: 11)

CATEGORY	LESSER	MODERATE	MAJOR
HISTORICAL AND ARCHAEOLOGICAL SITES	Cultural Resources that do not meet National Register criteria	National Register eligible sites (excluding villages sites); Sites adjacent to shorelines	National Historical Landmarks; National Natural Landmarks; Burial sites; National Register eligible village sites; Intertidal sites

## REFERENCE DOCUMENTS FOR SENSITIVITY TABLES

1. Alaska Department of Fish and Game. 1994. An atlas to the catalog of waters important for spawning, rearing or migration of anadromous fishes. ADF&G, Div. of Habitat, Juneau.
2. Alaska Department of Fish and Game. 1985. Fish and wildlife life histories, habitat requirements, distribution, and abundance. Southwest region. Volume I. Alaska Habitat Management Guide. ADF&G, Div. of Habitat, Juneau. 545 pp.
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# SENSITIVE AREAS: PART FOUR - BACKGROUND INFORMATION

## INTRODUCTION

The background information contained in this section is a mixture of references to readily available documents, knowledgeable contacts, and data not readily available elsewhere. Industry or local government-generated references that have had agency input and review are incorporated by reference. Additional information on places of concern to local residents is available in Part Six - Areas of Local Concern.

The Kodiak Island Borough sponsored a study resulting in publication of the Sensitive Areas Identification Project Report (1997). The report includes information and maps collected from federal, state, and local agencies; local residents; and resource user groups. ***The 18 color maps from this report are in this plan as Attachment One of the Sensitive Areas Section.*** The map numbers and titles are listed below, and these maps are referenced at various points in the Sensitive Areas Section. (The report is also available from the Kodiak Island Borough, 486-9360.)

Maps in the Sensitive Areas Identification Project Report (1997):

- (1) Herring Spawning, Pollock Spawning, Pollock Juvenile Rearing, and Pink Salmon Anadromous Streams
- (2) Commercial Salmon Seining and Set Net Areas
- (3) Commercial Herring, Pollock, Halibut, Cod and Scallops
- (4) King and Tanner Crab
- (5) Shellfish and Clam
- (6) Harbor Seal Areas
- (7) Sea Otters
- (8) Terrestrial Mammals, Birds, Sea Lions, Brown Bears and Seabirds
- (9) Humpback and Fin Whales
- (10) Gray, Minke and Orca Whales, and Dall's Porpoise
- (11) Ducks, Geese, Swans
- (12) Fall and Winter Recreation Areas
- (13) Spring and Summer and Year-round Recreation Areas
- (14) Marine Subsistence
- (15) Salmon and Freshwater Fish Subsistence
- (16) Currents and Circulation
- (17) Sensitive Areas Identified by Rural Communities
- (18) Sensitive Areas Identified by Focus Groups, Kodiak Community, Resource Agencies

The Alyeska Company has developed a Graphical Resource Database which covers Prince William Sound, the Copper River Delta, and coastal resources from the eastern Kenai Peninsula coast to Shelikof Strait, including Kodiak. The report and the database are available at Alyeska/SERVS, 835-6903.

## **LAND MANAGEMENT MAPS**

The Alaska Department of Natural Resources, under agreement with the Alaska Department of Environmental Conservation, produced digital base and land management maps for each of the subareas using their ARC-INFO based Geographic Information System. The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. For selected areas of high sensitivity and/or risk, seasonal sensitive areas maps for the area have also been produced (in coordination with the National Oceanic and Atmospheric Administration's (NOAA) Environmental Sensitivity Index mapping schema). Contact the NOAA Scientific Support Coordinator (271-3593).

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## **A. LAND MANAGEMENT DESIGNATIONS**

The State of Alaska owns the majority of tide and submerged lands within the state. Tide and submerged lands are those areas located between the mean high tide line and three miles distance offshore. Submerged lands are those located beneath the line of ordinary high water along navigable water bodies. The federal government manages a variety of land areas in the Kodiak Subarea through several different agencies.

The Alaska State Legislature has classified certain areas as being essential to wildlife and fisheries resources. These areas are designated as either a game refuge, critical habitat area or game sanctuary. Management of these essential areas is the responsibility of the Alaska Department of Fish and Game. Legislation pertaining to these lands may be found in Alaska Statutes Title 16, Chapter 20. Legal descriptions of area boundaries can be found in the Alaska Department of Fish and Game publication: State of Alaska Game Refuges, Critical Habitat Areas and Game Sanctuaries. Both state and federal management areas in the Kodiak Subarea are discussed below.

### **1. State**

Tugidak Island State Critical Habitat Area was established in 1988 to ensure the protection and enhancement of fish and wildlife habitat and populations, especially marine mammals, birds, fish, and shellfish. The island has been one of the largest harbor seal haulout and pupping areas in the world with an estimated peak population of over 20,000 seals. In addition, Tugidak Island attracts a great number of waterfowl, shorebirds, tundra swans, and loons. The eelgrass beds and rich marine life found in the island's lagoon attracts thousands of black brant and white-fronted geese, and provides wintering habitat for emperor geese.

Marmot Island Special Use Area was administratively designated in 1990 to minimize human disturbance of Stellar sea lions, which use the eastern beaches of Marmot Island, and to protect and preserve important sea lion habitat. The Stellar sea lion rookeries on the east side of the island were once the largest in Alaska, but have been steadily declining since the early 1980's. Stellar sea lions are listed as threatened under the provisions of the Endangered Species Act. The Alaska Department of Natural Resources maintains management responsibility of special areas, and in the case of the Marmot Island Special Use Area, consults with Alaska Department of Fish and Game.

Shuyak Island State Park was established in 1984, and expanded in 1997, to protect the area's recreational and scenic resources, and the area's fish and wildlife habitat in order to preserve and enhance the continued use of the area for sport and subsistence hunting and fishing, trapping and recreational activities. The park encompasses most of the island's 47,000 acres. There are four public use cabins located on the northwestern side of the park.

Afognak Island State Park was designated in 1994. Afognak State Park, totaling 48,742 acres, is managed by the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation. There is one public use cabin located on the south shore of Pillar Lake. Brown bear, elk, black-tailed deer, beavers, land otter, muskrat and squirrel are all abundant on the island. Marine wildlife found in the nearshore waters of Afognak include sea otters, harbor seals, humpback whales and dall porpoises. Several species of seabirds are also found on Afognak such as tufted and horned puffins, black oystercatchers, and cormorants. Common and red-throated loons, mergansers and harlequin ducks are also abundant. Recreational activities on Afognak island include sport fishing, and hunting, and wildlife viewing.

### **2. Federal**

#### Alaska Maritime National Wildlife Refuge

Alaska Maritime was established in 1980 and consists of over 2,400 islands, headlands, rocks, islets, spires, and reefs along the Alaskan coast, stretching from Southeast Alaska to Cape Lisburne on the Chukchi Sea. The Refuge is synonymous with seabirds. About 75 percent of Alaska's marine birds (15 to 30 million of 55 species) use the Refuge. The Refuge also is home to thousands of sea lions, seals, walrus, and sea otters.

Wildlife viewing, sport fishing, photography and backpacking are primary uses of the Refuge. The Gulf of Alaska Unit of the Refuge extends over 800 miles from Southeast Alaska through Prince William Sound to Kodiak. It includes about 800,00 acres of islands, rocks and forelands along the coast of the Gulf of Alaska. Within the Kodiak area, over 30 islands, islets, and rocks are managed as part of the Refuge.

#### Alaska Peninsula National Wildlife Refuge

Managed by the U.S. Fish and Wildlife Service, the Refuge, established in 1980, lies on the Pacific side of the Alaska Peninsula and covers about 3,500,000 acres. The landscape includes active volcanoes along the Aleutian Range, lakes, rivers, tundra, and rugged coastline. Moose, caribou, wolves, brown bears, and wolverines reside on the Refuge. Sea lions, seals, sea otters (about 30,000), and whales live in the marine environment. Ducks, geese, and shorebirds also thrive in the area, as do several species of fish. Big game hunting and sport fishing are popular uses.

#### Becharof National Wildlife Refuge

Managed by the U.S. Fish and Wildlife Service, the Refuge was created in 1980. The Refuge covers 1,200,000 acres and is dominated by Becharof Lake, the second largest lake in Alaska. The lake is surrounded by low rolling hills, tundra wetlands, and volcanic peaks. Salmon spawning streams attract one of the largest brown bear populations in the state. Moose, caribou, wolves, wolverines, fox, beaver are abundant. Sea otters, sea lions, harbor seals and whales inhabit the marine shoreline. The Refuge is a major source of salmon, grayling and arctic char. Waterfowl are common, as are eagles, peregrine falcons and thousands of seabirds. Big game hunting and sport fishing are primary visitor uses.

#### Kodiak National Wildlife Refuge

Managed by the U.S. Fish and Wildlife Service, the Refuge was created in 1941 and expanded in 1980; it covers 1,800,000 acres on Kodiak, Afognak and other smaller islands. The Refuge is managed to: conserve fish and wildlife, including Kodiak brown bear, salmon, sea otters, sea lions, and other marine mammals and migratory birds; fulfill international treaty obligations; provide for continued subsistence uses; and maintain water quality and quantity.

## Katmai National Park and Preserve

Managed by the National Park Service, the Park and Preserve covers approximately 4,000,000 acres on the Alaska Peninsula. Katmai was established in 1918 as a National Monument, and was expanded and redesignated in 1980. In 1912 Mount Katmai exploded, creating the Valley of Ten Thousand Smokes. Home to huge brown bears, the area also supports significant populations of salmon as well as providing for trophy sport fishing.

### **B. HABITAT TYPES**

Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the National Oceanic and Atmospheric Administration (NOAA) in Environmental Sensitivity Index Guidelines (October 1995). *Currently, there are ESI seasonal maps for the entire subarea, which are available from the Kodiak Island Borough and the ADEC.*

#### **1. Benthic Habitats**

Oil vulnerability is lower in benthic areas than in the intertidal zone since contamination by floating slicks is unlikely. Sensitivity is derived from the species which use the habitat. Benthic habitats have not been traditionally classed by ESI rankings, but are treated more like living resources which vary with season and location. Benthic habitats include: submerged aquatic vegetation beds, large beds of kelp, and coral reefs.

#### **2. Shoreline Habitats**

Habitats (estuarine, large lacustrine and riverine) ranked from least to most sensitive are described below and in Table D-1:

ESI #1--Exposed impermeable vertical substrates: exposure to high wave energy or tidal currents on a regular basis, strong wave-reflection patterns common, substrate is impermeable with no potential for subsurface penetration, slope of intertidal zone is 30° or more, attached organisms are hardy and accustomed to high hydraulic impacts.

ESI #2--Exposed impermeable substrates, non-vertical: exposure to high wave energy or tidal currents on a regular basis, strong wave-reflection patterns regular, substrate is impermeable with no potential for subsurface penetration over most of intertidal zone, slope of intertidal zone is less than 30°, there can be accumulated but mobile sediments at the base of cliff, attached organisms are hardy and accustomed to high hydraulic impacts.

ESI #3--Semi-permeable substrate: substrate is semi-permeable with oil penetration less than 10 cm, sediments are sorted and compacted, slope is less than 5°, sediment and potential for rapid burial mobility is low, surface sediments are subject to regular reworking by waves, there are relatively low densities of infauna.

ESI #4--Medium permeability substrate: substrate is permeable with oil penetration up to 25 cm, slope is between 5° and 15°, rate of sediment mobility I high with accumulation of up to 20 cm of sediments in a single tidal cycle, sediments are soft with low trafficability, low densities of infauna.

ESI #5--Medium to high permeability substrate: substrate of medium to high permeability which allows oil penetration up to 50 cm, spatial variations in distribution of grain sizes with finer ones at high tide line and coarser ones in the storm berm and at toe of beach, 20 percent is gravel, slope between 8° and 15°, sediment mobility is high during storms, sediments are soft with low trafficability, low populations infauna and epifauna except at lowest intertidal levels.

ESI #6--High permeability substrates: substrate is highly permeable with oil penetration up to 100 cm, slope is 10° to 20°, rapid burial and erosion of shallow oil can occur during storms, high annual variability in degree of exposure and frequency of wave mobilization, sediments have lowest trafficability of all beaches, natural replenishment rate is the lowest of all beaches, low populations of infauna and epifauna except at lowest intertidal levels.

ESI #7--Exposed flat permeable substrate: flat (less than 3° accumulations of sediment, highly permeable substrate dominated by sand, sediments are well saturated so oil penetration is limited, exposure to wave or tidal-current energy is evidenced in ripples or scour marks or sand ridges, width can vary from a few meters to one kilometer, sediments are soft with low trafficability, high infaunal densities.

ESI #8--Sheltered impermeable substrate: sheltered from wave energy and strong tidal currents, substrate of bedrock or rocky rubble, variable in oil permeability, slope greater than 15° with a narrow intertidal zone, high coverage of attached algae and organisms.

ESI #9--Sheltered flat semi-permeable substrate: sheltered from wave energy and strong tidal currents, substrate is flat (less than 3° and dominated by mud, sediments are water-saturated so permeability is low, width varies from a few meters to one kilometer, sediments are soft with low trafficability, infaunal densities are high.

ESI #10--Vegetated wetlands: marshes and swamps with various types of emergent herbaceous grasses and woody vegetation over the substrate.

### **3. Upland Habitats**

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills have been identified. A general wetlands classification has been developed by the U.S. Fish and Wildlife Service, National Wetlands Inventory, in Anchorage (786-7011). Considerable mapping of wetlands has been completed, including the entire Kodiak Island Archipelago. These maps are available in a Geographic Information System database. Mapping is in progress for the Katmai coast.

Wetlands maps may also be obtained for the Kodiak urban area, including areas north and south of the city and the Womens Bay area, from the Kodiak Island Borough, Community Development Department (486-9362).

**TABLE D - 1: ESI HABITAT RANKING**

<b>ESI NO.</b>	<b>ESTUARINE</b>	<b>LACUSTRINE</b>	<b>RIVERINE (large rivers)</b>
1 A	Exposed rocky cliffs	Exposed rocky cliffs	Exposed rocky banks
1 B	Exposed sea walls	Exposed sea walls	Exposed sea walls
2	Exposed wave-cut platforms	Shelving bedrock shores	Rocky shoals; bedrock ledges
3	Fine- to medium-grained sand beaches	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
4	Coarse-grained sand beaches	Sand beaches	Sandy bars and gently sloping banks
5	Mixed sand and gravel beaches	Mixed sand and gravel beaches	Mixed sand and gravel bars and gently sloping banks
6 A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6 B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	Not present
8 A	Sheltered rocky shores	Sheltered scarps in bedrock	Vegetated, steeply sloping bluffs
8 B	Sheltered sea walls	Sheltered sea walls	Sheltered sea walls
9	Sheltered tidal flats	Sheltered vegetated low banks	Vegetated low banks
10 A	Saltwater marshes		
10 B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10 C	Freshwater swamps	Freshwater swamps	Freshwater swamps
10 D	Mangroves		

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“Environmental Sensitivity Index Guidelines” (October 1995) NOAA Technical Memorandum NOS ORCA 92

3. BIOLOGICAL RESOURCES

1. **Fish and Wildlife**

The Kodiak subarea has a diverse array of habitats and an equally diverse complement of species that use these habitats. Some of the species found in this region spend only a brief but essential portion of their life cycle here.

Dense concentrations of fish and wildlife often occur at particular locations for brief periods in what may appear to be essentially uniform habitat. These habitats, the species that use them, and the times of the year that they are used are discussed in this section. Part Three - Resource Sensitivity includes tables summarizing critical seasonal life periods for selected species.

(1) Threatened and Endangered Species

Federally listed threatened and endangered species are protected under the Endangered Species Act. Spill response activities that could impact a listed species should be coordinated with the U.S. Fish and Wildlife Service. The Aleutian Canada goose, short-tailed albatross, blue whale, sei whale, fin whale, sperm whale, humpback whale, and Stellar sea lion are also on the State of Alaska's endangered species list. Threatened and endangered species potentially present in the Kodiak Region include:

<u>Common Name</u>	<u>Scientific Name</u>
Short-tailed albatross	<i>Diomedea albatrus</i>
Aleutian Canada Goose	<i>Branta canadensis</i>
<i>leucopareia</i>	
Blue whale	<i>Balaenoptera musculus</i>
Humpback whale	<i>Megaptera novaeangliae</i>
Fin whale	<i>Balaenoptera physalus</i>
Sei whale	<i>Balaena borealis</i>
Sperm whale	<i>Physeter macrocephalus</i>
Stellar sea lion	<i>Eumetopius jubatus</i>

All marine mammals, regardless of whether or not they are on the endangered species list, are protected by the Marine Mammal Protection Act of 1972. Any spill response activities which could affect marine mammals should be coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Although Alaskan bald eagles are not on the endangered species list in Alaska, they are fully protected (including their nests and nest trees) under the Eagle Protection Act of 1940. Spill response activities that could affect bald eagles should be coordinated with the U.S. Fish and Wildlife Service.

## (2) Marine Mammals

Harbor seals are found in the nearshore waters throughout the Kodiak Island Archipelago and along the western shore of Shelikof Strait. Concentrations are also found in the Semidi Islands and at Chirikof Island. Harbor seals tend to concentrate in estuaries and protected waters. Some may seasonally inhabit freshwater streams and lakes. Habitats used for haulouts include cobble and sand beaches, tidal mud flats, offshore rocks and reefs, and ice (frozen heads of bays, in fjords, etc.) when available. Known haulout concentrations occur throughout the Kodiak Island Archipelago. Tugidak Island is one of the larger haulout concentration areas. Haulouts are used for pupping, molting, and resting, and may be used year-round. Pupping occurs from late May through June. Populations of harbor seals, like sea lions, have steadily declined since the mid-1970's. At Tugidak Island, numbers have declined from approximately 17,000 to less than 1500. Less information is available on the reasons for the harbor seal population decline, but suggested theories include nutritional stress or an ecosystem-wide environmental perturbation. (See Map #6 in Attachment One.)

Sea Otters are found along the Barren Islands, the northern Kodiak Island Archipelago (i.e., Shuyak Island, Afognak Island, Marmot Bay, and Raspberry Island), along the northern portion of Kodiak Island southward to Chiniak Bay and Uyak Bay on the eastern side of the island and to Karluk on the western side of the island. At the southern end of Kodiak Island otters are found on the eastern side of Tugidak Island and the straits between Tugidak and Sitkanak Island, and at Alitak Bay. They are also found along the Alaska Peninsula from Cape Douglas south to Cape Nukshak, at Cape Kuliak, Kinak Bay, Cape Kubugaku and at the entrance to Puale Bay near the Kekernoi Islets. Sea Otters are also present on the western side of Chirikof Island. The areas of highest density on Kodiak is in the Whale Pass area. Other concentrations of otters are centered around Alitak Bay and Tugidak Island and the waters between Tugidak and Sitkinak Island at the southern end of Kodiak Island. Sea otters generally range from 5 to 16 km offshore and feed in nearshore waters less than 35 m deep. Breeding occurs year-round, with a peak in September and October. Pupping occurs year-round, with a peak in May. (See Map #7 in Attachment One.)

Stellar Sea Lions occur year-round in the nearshore waters of the Kodiak Island Archipelago. Major sea lion rookeries occur at Marmot Island, Sugarloaf Island in the Barren Islands, Chirikof Island and Chowiet Island in the Simidi Islands. Rookeries also are used as haulouts following the breeding season. Year-round haulout areas occur on Sitkinak and Sitkalidak Islands. Other known haulout concentration

areas occur in the Barren Islands, Sea Otter Island (east of Shuyak Island), on Long Island in Chiniak Bay, at Cape Chiniak, in Ugak Bay, on Twoheaded Island, at Cape Ikolik, Semidi Islands, Chirikof Island, and at Cape Ugat. Other haulouts occur at scattered locations in the Kodiak Island Archipelago. Haulouts generally are used from May through October, although some may be used year-round. Sea lions begin concentrating at rookeries in mid-May and peak in mid-to-late June. Pupping occurs from late May to early July. Male territoriality on the rookeries diminishes in July as breeding and pupping activities are concluded.

The Stellar sea lion (*Eumetopias jubatus*) was reclassified in 1997 by the National Marine Fisheries Service as two distinct populations under the Endangered Species Act (62 FR 24345) and was listed as threatened pursuant throughout its range that extends from California and associated waters to Alaska, including the Gulf of Alaska and Aleutian Islands and into the Bering Sea and North Pacific and into Russian waters and territory (62 FR 24345). The Stellar sea lion population segment that occurs west of 140°W longitude near Cape Suckling, Alaska has been reclassified as endangered (62 FR 24345). The threatened classification applies to for the remainder of the U.S. Stellar sea lion population (62 FR 24345).

The National Marine Fisheries Service has designated critical habitat areas that include rookeries, major haulout areas and associated terrestrial, air, and aquatic habitat (see the following maps). Critical habitat includes a terrestrial zone that extends 3,000 feet (0.9 km) landward from the baseline or base point of each major rookery or haulout in Alaska. It also includes an air zone that extends 3,000 feet (0.9 km) above the rookery and haulout measured vertically from sea level. The aquatic critical habitat includes a zone that extends 3,000 feet (9.0 km) seaward in state and federally managed waters from the baseline or base point of each major rookery or haulout in Alaska that is east of 144°W longitude. Critical habitat includes an aquatic zone that extends 20 nautical miles (nm) (37 km) seaward in State and Federally managed waters from the baseline or base point of each major haulout in Alaska that is west of 144° longitude. There are three special aquatic foraging areas in Alaska including the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area. The Shelikof Strait area includes the area between the Alaska Peninsula and Tugidak Island, Sitkinak, Aiaktulik, Kodiak, Raspberry, Afognak, and Shuyak Islands; bounded on the west by Cape Kumlik and the southwestern tip of Tugidak Island and bounded on the east by Cape Douglas and the northernmost tip of Shuyak Island. The critical habitat of the Bogoslof area includes the Bering Sea shelf north of the Aleutian Islands. Critical habitat of the Seguam Pass area

in the Aleutians includes the area between 52°00 N and 53°00 N and between 173°30 W and 172°30 W (50 CFR 226). (See Map #8 in Attachment One.)

Baleen Whales in the area include gray, humpback, fin, minke, sei, and blue whales.

Humpback whales are commonly found nearshore along Kodiak Island. Aggregations of humpback whales commonly occur in Marmot Bay, Whale Passage and Shelikof Strait from May through October. Feeding concentrations of humpbacks also occur from the Barren Islands along the coast of the Kodiak Archipelago to Sitkalidak Island. Concentrations of humpbacks have also been observed in the waters south of Alitak Bay, near Kupreanof and Viekoda Bays, and near Cape Ikolik. Spring migration of humpbacks occurs in Shelikof Strait along the coast of the Alaska Peninsula. (See Map #9 in Attachment One.)

Fin whales are found on summer feeding grounds over the continental shelf and in the Gulf of Alaska and in portions of Lower Cook Inlet and Shelikof Strait and along the outer banks of the Kodiak Archipelago. Major year round concentrations of fin whales (including females with calves) occur in western bays of the Kodiak Island, including the waters near Spiridon Bay, Uyak Bay, Uganik Bay, and Kupreanof Strait and Shelikof Strait as far south as Chirikof Island. (See Map #9 in Attachment One.)

Gray whales The migratory path of the gray whale takes most of the eastern Pacific population nearshore along the eastern edge of Kodiak Island Archipelago during their annual spring and fall migrations. Numbers of gray whales are highest during April, May, November, and December. Migrating gray whales may be found very near to shore, often within 6 kilometers. During the fall concentrations have been observed near Foul Bay on the western side of Afognak Island to Raspberry Island. (See Map #10 in Attachment One.)

Minke whales are concentrated during the summer months in the Gulf of Alaska and over the continental slope, especially in the shallow nearshore coastal waters of Kodiak Island. Minke whales have been observed at the entrances to Spiridon and Uyak Bays, in Katmai Bay, and Womens Bay. (See Map #10 in Attachment One.)

Uncommon whales Sei whales are common during the summer months in the Gulf of Alaska in early May, and off the coast of the Kodiak archipelago. The presence of blue whales in this area is rare. Whaling records of the northern right whale indicate that this whale occurred in the waters to the east and south of Kodiak Island from May through September.

Sightings of this whale are extremely rare due to its decimated population. Any sightings of northern right whales should be reported to the National Marine Fisheries Service or the U.S. Fish and Wildlife Service.

Toothed whales in the area include Dall and harbor porpoises, Pacific white-sided dolphins, and Orca (killer) whales. Several species of beaked whales, Risso's dolphin, pilot whales, and sperm whales have been recorded in these waters, but are generally pelagic and rarely sighted.

Orca whales concentrate in offshore waters to the east of Kodiak Island and Afognak Island in the Gulf of Alaska. These whales are also present near Kukak Bay on the Alaska Peninsula. (See Map #10 in Attachment One.)

Harbor porpoise are seasonally abundant in bays on the south and west sides of Kodiak Island, specifically in Autak Bay, Womens Bay and Chiniak Bay. There are also very common in certain bays on the west side of Shelikof Strait such as in Kinak Bay. Their calving season is poorly documented but probably includes late June as well as July and early August.

Dall's porpoise inhabit deeper waters than harbor porpoise and are found year-round in waters surrounding the Kodiak Island Archipelago. Dall's porpoise are more abundant in Shelikof Strait and the western waters of Afognak and Shuyak Islands than in the eastern portion of this region. (See Map #10 in Attachment One.)

Pacific white-sided dolphins are seasonally abundant in Alaska waters and are most common during the summer months at Portlock Bank to the northeast of Afognak Island in the Gulf of Alaska. They are also present off the Alaska Peninsula between Cape Nukshuk and Cape Kuliak. On the eastern side of Kodiak Island they are present in Ugak Bay, Kiliuda Bay, and the waters between Sitkalidak Island and Two-Headed Island.

### (3) Terrestrial Mammals

Brown bears are found throughout Kodiak, Afognak, Raspberry, Sitkalidak, and Shuyak Islands. Brown bears do not occur on Marmot Island, the Trinity Islands, or the Barren Islands. Spring concentration areas include the Driver Bay area on Raspberry Island. On Kodiak Island, spring concentrations of bears occur along portions of Uganik Bay, Uganik Passage, and Terror Bay, at the head of Uyak Bay, near the mouth of the Ayakulik River, at the heads of Alitak Bay, at the head of Kaiugnak Bay, at the heads of Ugak Bay, and at Eagle Harbor. On the Alaska Peninsula brown bears concentrate on beaches from Cape Douglas to Cape Kilokak. Concentrations of bears occurs along most all anadromous fish streams when salmon are present.

Brown bears may emerge from dens as early as mid-March. From mid-April to late July, bears concentrate along beaches and in grassland areas, especially grass flats, sedge meadows, and saltwater bogs. Feeding on salmon begins around mid-May, with the most intensive use of salmon occurring during July and August. Use of salmon by a few bears may continue into December. Denning begins in late October and early November, with most bears denned by mid-December. Some bears may remain active year-round.

A unique situation occurs on the Aliulik Peninsula of southeastern Kodiak Island, where bear densities approach 1 bear/square mile. A recent study has shown these bears to have an unusually high dependence on beaches for food. The vegetation on the Aliulik Peninsula does not appear to be as rich in either herbaceous vegetation or major berry species as are other areas of Kodiak. Consequently, these bears appear to feed heavily on amphipods found in the beach gravel and drift kelp. Some bear scats have been found to contain nearly 100% amphipods. In addition, bears in this area appear to spend less time in dens than in other parts of Kodiak and some bears are actively feeding on the beaches even in the winter months. There are extensive kelp patches on the east side of the peninsula and several collector beaches are

particularly favored by bears on that side. The beaches on the west side are not quite as heavily used, but several beaches are regularly used. Until salmon appear in late July in the Humpy Creek and Seven Rivers, these bears spend the majority of their foraging effort on beaches. (*See Map #8 in Attachment One.*)

Roosevelt elk occur on Raspberry and Afognak Islands. During winter, elk use spruce timbered areas on south and southeast-facing slopes adjacent to beach fringes. Winter foraging also occurs in grass and on heath-dominated vegetation, vegetation types that are distributed sporadically along the entire coast.

Sitka Black-tailed deer occur throughout the Kodiak Island Archipelago with the exception of the Trinity and Barren Islands, Ugak Island, Twoheaded Island, and Aiaktalik Island. Most deer generally move into alpine areas in late June and remain in alpine and subalpine ranges into September. Deer generally winter in habitat just below snowline. During severe winters, deer may congregate on the beaches. Windblown capes and bluffs at the mouth of bays and along ocean entrances are favored for wintering areas throughout the Kodiak Island Archipelago. Fawns are born in late May to early June.

Mountain goat generally inhabit the northeastern one-third of Kodiak Island. Small bands have been seen as far south and west as Kaiugnak Bay and Uyak Bay.

Feral reindeer/caribou occur in small scattered herds from the Karluk Lake drainage south and west. The Ayakulik/Red River flats from Red Lake north to Halibut Bay and Grant's Lagoon are the favored habitat of these animals.

Furbearers. Red squirrel are most common in the spruce forests of Kodiak. Arctic ground squirrel are most common on Woody Island and in the Buskin River vicinity. Beaver occur throughout the riparian areas of the Kodiak Island Archipelago with the exception of the Trinity Island group, the Barren Islands, and Marmot Island. Snowshoe hare and muskrat were also introduced to the Kodiak area.

Short-tailed weasel are also known as ermine. This mammal is an active predator. The short-tailed weasels fur turns completely white during the winter and reaches about 14 to 16 inches in length.

Red Fox are common on Kodiak and Afognak Island and all along the Alaska Peninsula. Red fox are a common scavenger on the shoreline areas and feed on carrion as well as birds and small mammals. They are also regularly seen near seabird colonies where they feed on the eggs and young of seabirds.

River Otter, smaller than the sea otter, occur throughout the Kodiak Region. This otter is primarily observed near freshwater streams, rivers and lakes but also appears in the nearshore marine waters. The river otter feed mostly on fish such as salmon and trout but will also prey on eggs and young at offshore seabird colonies.

#### (4) Birds

Ducks, both divers and dabblers, are found throughout the year in the Kodiak Island Archipelago. Major concentrations of ducks are found in protected coastal estuarine waters, salt marshes, tidal flats, and riverine habitats. Dabblers are typically found at the heads of bay and lagoons, whereas the divers are found along the rocky shorelines or the outer portions of the bays. The Kodiak Island Archipelago contains important wintering concentration areas used by many species of waterfowl. The largest concentrations of ducks found in the area occur in winter. Portions of Tugidak and Sitkinak Islands are used by ducks as spring and fall concentration areas as well as the heads of Womens Bay, Middle Bay, and Kalsin Bay in the southern portions of Chiniak Bay. (*See Map #11 in Attachment One.*)

Geese. Estuaries, lagoons, river deltas, marshes, and tidelands support only small numbers of migrating geese on Kodiak Island. Canada geese have been introduced on Shuyak Island and the population appear to be increasing. Pacific brant use the lagoon habitats such as Sukhoi Lagoon at the southern end of Kodiak and on Tugidak and Sitkanak Islands during spring migration. Some emperor geese winter along the coast of Kodiak Island from late September to May with the larger concentrations at the southern end of the island. (*See Map #11 in Attachment One.*)

Tundra swans generally are distributed throughout the lowland areas of Shuyak, Afognak, Kodiak, and Tugidak Islands in suitable habitat. Spring concentration areas occur at the heads of Pasagshak and Kalsin bays. Year-round residency and nesting by tundra swans occur in the Karluk River lowlands. Known nesting areas include the lowlands north of Fraser Lake, the Little River lowlands, the Dog Salmon Creek lowlands, the Red River lowlands, the Ayakulik River lowlands, the lowlands from the mouth of the Ayakulik River south to Alitak Lagoon, the Aliulik Peninsula, Aiaktalik Island, and Tugidak Island. Trumpeter swans have also been observed. (*See Map #11 in Attachment One.*)

Seabirds. Numerous seabird nesting colonies are found throughout the Kodiak Island Archipelago and along the Alaska Peninsula. Large nesting colonies occur in the Barren Islands and the Semidi Islands to the southwest of Kodiak Island. Most species lay eggs in June or early July and most of the young have fledged by the end of September. Most nesting seabirds leave the breeding colonies by October to spend the winter in offshore areas.

Bald Eagles are distributed throughout the Kodiak Island Archipelago, with numerous active nests along the coastlines of most islands. Bald eagles occur year-round in the area. Bald eagles begin nesting from late March through May. Eggs hatch from early May through late June. Young eagles fledge from early July through late August. Feeding areas include sea beaches and rocky coastlines, freshwater anadromous fish streams and lakes, and terrestrial habitats. They feed on both live prey and carion and will feed on refuse at garbage dumps.

Other Raptors. Peale's peregrine falcon, a non-migratory sub-species of peregrines, occurs year-round in the area but only rarely nests on Kodiak Island. This raptor does nest in the Barren Islands and in association with seabird colonies on the Alaska Peninsula. Other raptors that occur in the area include rough-legged hawks, northern goshawks, golden eagles, northern harriers, and short-eared hawk, and boreal owls.

(5) Fish

Salmon. Pink, chum, sockeye, coho, and chinook salmon spawn in streams found on Kodiak, Afognak, Raspberry, Shuyak, and the Trinity Islands. Adult salmon are present in bays and estuaries from mid March through early October, depending on the species of salmon and the stream system. Adults are present in freshwater from mid May through mid December. Salmon fry generally emerge from the stream gravels from mid March through early June. Juvenile coho, chinook, and sockeye salmon remain in freshwater for one year before venturing to the sea.

Pacific Herring move inshore to spawn in the Kodiak area from early April to late July. Spawning occurs in intertidal and subtidal areas. Areas with kelp or eelgrass usually are the preferred spawning substrates. Herring use virtually all bays and protected waters in the Kodiak Island Archipelago as rearing, feeding, and wintering areas. Along the Alaska Peninsula herring spawn at Wide Bay, Paule Bay, Cape Kubugaku, Katmai Bay, Kukuk Bay, and Amalik Bay.

Groundfish (cod, walleye pollock, and Pacific halibut) occur in waters surrounding the Kodiak Island Archipelago. Known summer concentrations of cod and walleye pollock occur in waters off Marmot Bay and Chiniak Bay, and from Sitkalidak Island to Sitkinak Island. Concentrations of cod also occur in Shelikof Strait along the western side of Kodiak Island from the area near Karluk to Chirikof Island. Spawning concentrations of walleye pollock are found in southern Shelikof Strait in March and April.

Cod are also found in the Gulf of Alaska east of Afognak and Kodiak Islands, to the east of Ugak Island, east of Sitkalidak Island, between Sitkalidak Island and Twoheaded Island and east of Sitkinak Island. Spawning concentrations of Pacific halibut occur southeast of Sitkalidak Island and southeast of Cape Chiniak.

Halibut juvenile rearing grounds also include an area surrounding Aiktalik Island and Sitkinak Strait, and from northwest of Tugidak Island to north of Chirikof Island.

Other Fish. Rainbow trout and steelhead are native to specific stream systems in the Kodiak-Afognak area. Important native rainbow trout waters include the Portage, Afognak, Upper and Lower Malina, Uganik, Karluk, Fraser, and Ayakulik (Red) lake-river systems. Steelhead are distributed in a number of lake-river systems but are relatively abundant only in the Karluk and Ayakulik (Red) rivers. Rainbow trout generally spawn during May and June. Steelhead generally spawn between March and May. Steelhead juveniles remain year-round in freshwater from one to four years.

Dolly Varden, both resident and anadromous races, occur in streams throughout the Kodiak Island Archipelago. Dolly Varden spawn from September through December. Fry emerge from the gravels in April and May. Juvenile and some adult Dolly Varden remain in freshwater year-round.

(6) Shellfish

Tanner Crab inhabit the entire Kodiak area shelf to 365 meters. Concentrations of tanner crab occur in the Gulf of Alaska to the east of Afognak and Kodiak Islands and in Shelikof straits east of Puale Bay and Alinchak Bay. There are also tanner crabs in Olga Bay at the southern end of Kodiak Island.

Red King Crab occur throughout the entire Kodiak area to a depth of 365 meters. Inshore and nearshore areas are most critical for king crab spawning. Offshore regions such as Portlock Bank, Marmot Flats, Alitak Flats, and the Albatross Banks are important. The shallow region surrounding Chirikof Island north to the Trinity Islands is significant for both the spawning and rearing of red king crab. Red king crab are also present from Cape Douglas to Portage Bay in Shelikof Strait.

Blue king crab regularly occur only in Olga Bay.

Dungeness crab inhabit all bottom areas shallower than 100 meters, with a distinct preference for sand or mixed substrate bottoms. Dungeness crabs occur in Shelikof Strait from Cape Douglas to approximately Cape Igvak along the Alaska Peninsula. They also occur on Raspberry Strait, Kizhuyak Bay, Sharatin Bay, Monashka Bay, near Kodiak City in Womens Bay, Middle Bay, and Kalsin Bay. Dungeness occur on the eastern side of Kodiak Island in Barry Lagoon, and from Narrow Cape are to Olga Bay on the south side of Kodiak Island. Dungeness area also concentrated in the waters surrounding Tugidak and Sitkinak Islands. Along the west coast of Kodiak these crabs are found from Viekoda Bay to Cape Ikolik.

Shrimp. Pandalid shrimp (northern pink shrimp or deep sea prawn; humpy shrimp or flexed shrimp; spot shrimp or spot prawn; coonstripe shrimp; sidestripe shrimp or giant red) are distributed throughout most major bays and certain nearshore and offshore areas along Kodiak and Afognak Islands. Known shrimp egg hatching and rearing areas include Olga Bay and off Alitak Bays at the southern end of Kodiak Island, Uyak and Uganik Bays on the east side Kodiak. Bays on the east side of Kodiak Island important to shrimp include Kaiugnak Bay, Three Saints Bay, Kiliuda Bay, Sitkalidik Strait area, Ugak Bay, Kalsin and Middle Bays in Chiniak Bay, and Kazakof, Izhut, Tonki Bays in Marmot Bay. Perenosa Bay on Shuyak Island is also important for shrimp.

Razor Clams are found intertidally to a depth of several meters on exposed beaches consisting of fine or coarse sand with some glacial silt or gravel. Areas with known concentrations of razor clams include some isolated beaches on Raspberry Island; beaches along the outer regions of Uyak Bay, beaches of Ocean Bay, Bumble, and Gurney Bays, north of Cape Alitak on Tanner Head, beaches on Tugidak Island, Sitkinak Island, and Ocean Beach on Sitkalidak Islands, and beaches in small areas within Ugak and Chiniak Bays. On the Alaska Peninsula, extensive razor clam beaches occur in the Swikshak River area, Hallo Bay and Katmai Bay.

Scallops are found throughout much of the deep water areas around the Kodiak Archipelago and along the Alaska Peninsula with areas of concentration near Hallo Bay and Katmai Bay on the Alaska Peninsula.

## 2. Vegetation

There are no species of threatened or endangered plants within the Kodiak Island Borough. Below is a listing of plants that are considered rare and sensitive. These status of these plants is tracked by the University of Alaska Natural Heritage Program. For further information contact the University of Alaska Natural Heritage Program in Anchorage at 257-2780.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Specific Area</u>
<i>Ligusticum calderi</i>	Calder's lovage	Karluk
<i>Cochlearia sessilifolia</i>	Sessile - leaf scurvy grass	Kodiak
<i>Gentianella propinqua ssp aleutica</i>	Aleutian four - parted gentian	Karluk
<i>Romanzoffia unalaschensis</i>	Unalaska mist maid*	Afognak/Karluk
<i>Androsace alaskana</i>	Alaska rock - jasmine	Afognak
<i>Dodecatheon pulchellum ssp alaskanum</i>	Alaskan pretty shooting star*	Kodiak
<i>Carex lenticularis var dolia</i>	Goose - grass sedge*	Kodiak
<i>Eleocharis nitida</i>	Slender spike - rush	Kodiak
<i>Scirpus subterminalis</i>	Water bulrush	Afognak
<i>Platanthera chorisiana</i>	Choriso bog - orchid*	Afognak
<i>Phyllospadix serrulatus</i>	Serrulate surf grass	Kaguyak/Trinity Is.

\* These plants are also listed on the U.S. Forest Service Sensitive Species Listing

## 3. Biologically Sensitive Areas

The Alaska Department of Fish and Game initiated a project in 1996 to map 68 of the most environmentally sensitive areas (MESAs) for wildlife along Alaska's coast. This information is for contingency planning purposes and does not cover the complete coastline on sensitive areas that other organizations may identify.

Maps entitled "Most Environmentally Sensitive Areas along the Coast of Alaska," were published by the Alaska Department of Fish & Game (1997) and are available in hard copy and digital format from the Alaska Department of Fish and Game, Habitat and Restoration Division, in Anchorage at 267-2338.

A list of these sensitive areas in the Kodiak Subarea and a map referencing their location follows.

**Listing of the  
Most Environmentally Sensitive Areas  
in the Kodiak Subarea**

37. Semidi Islands
  - seabird colonies (>2.4 million birds)
  - waterfowl spring and fall staging and winter concentrations
  - sea lion haulout and rookery (344 pups)
  - Alaska Maritime National Wildlife Refuge
  
38. Kujulik Bay - this site is in the Bristol Bay Subarea
  
39. Tugidak Island
  - razor clam concentrations
  - seabird colonies (>3,700 birds)
  - waterfowl spring and fall staging
  - harbor seal haulout
  - Tugidak Island State Critical Habitat Area
  
40. Perenosa Bay/Seal Bay (Afognak Island)
  - salmon concentrations
  - herring spawning
  - seabird colonies (>4,800 birds)
  - waterfowl winter concentrations
  - harbor seal haulouts
  - sea lion haulout and/or rookery
  - sea otter concentrations
  - Alaska Maritime National Wildlife Refuge
  
41. Marmot Island
  - seabird colonies (>2,100 birds)
  - harbor seal haulouts
  - sea lion haulout and rookery (2,199 pups)
  - sea otter concentrations
  
42. Barren Islands
  - seabird colonies (>480,000 birds)
  - harbor seal haulouts
  - sea lion haulouts and rookery (1,638 pups)
  - sea otter concentrations
  - Alaska Maritime National Wildlife Refuge

**MOST ENVIRONMENTALLY SENSITIVE AREAS MAP  
for the KODIAK SUBAREA**

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4. HUMAN RESOURCES USES

**1. Fish Hatcheries and Associated Ocean Net Pens**

There are currently two hatcheries in the Kodiak Archipelago, and both facilities are operated with funds provided by the Kodiak Regional Aquaculture Association. Hatchery locations are shown in the Hatchery Location Map on the next page.

Kitoy Bay Hatchery, located on Afognak Island at the head of Kitoy Bay, produces pink, chum, sockeye, and coho salmon for the enhancement of the Kodiak commercial purse-seine salmon fishery. In addition, the hatchery provides coho salmon fingerlings for programs designed to create additional salmon fisheries along the Kodiak road system. In 1991, Kitoy Bay Hatchery released over 125 million salmon, including 124.1 million pink salmon fry.

Pillar Creek Hatchery, located approximately 7 miles from the city of Kodiak, was built in 1990. The hatchery was designed as a 20 million sockeye salmon egg incubation facility. The hatchery will create new fisheries for the Kodiak Island seiners and gillnet fishermen by stocking several barren lake systems with sockeye salmon fry from donor stocks. The first returns from Pillar Creek Hatchery are expected in 1994.

Hatchery-related activities most vulnerable to spill damage include fry rearing and release, terminal harvests, and egg takes. The timing of these activities varies by species so it is difficult to generalize about the periods of highest vulnerability, however, spring and summer tend to be the most critical periods. The hatchery managers can be contacted for specific information on the timing of activities at the following:

Kitoy Bay Hatchery	Pillar Creek Hatchery
486-6559	486-4730 or 486-1872

(ADF&G/Kodiak)

**2. Aquaculture Sites**

Several commercial aquatic farms have been permitted in the Kodiak Island Archipelago for raising blue mussels and possibly Pacific oysters, but none are in current operation. Mariculture farms are vulnerable to spill damage on a year-round basis since the shellfish are suspended from anchored rafts and are submerged continuously in the water column. The timing of the harvest varies.

For more information on aquaculture, contact:



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# HATCHERY LOCATION MAP

Hatchery location map side 2

### **3. Cultural Resources**

The Kodiak Subarea contains a multitude of known and unidentified archaeological and historic sites. Oil spills and hazardous substance releases may result in direct and/or indirect impacts to those cultural resources. On-Scene Coordinators (OSC) are responsible for ensuring that response actions take the protection of cultural resources into account and that the statutory requirements for protecting cultural resources are met. Annex M of the **Unified Plan** outlines OSC responsibilities for protecting cultural resources and provides an expedited process for compliance with Section 106 of the National Historic Preservation Act during the emergency phase of a response. A local resource for cultural resources information is the Alutiiq Museum, Kodiak, 486-7004.

### **4. Subsistence and Personal Use Harvest**

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the Kodiak area. Generally, a subsistence economy is one in which the customary and traditional uses of fish, wildlife and plant resources contribute substantially to the social, cultural and economic welfare of families in the form of food, clothing, transportation and handicrafts.

A number of federal and state agencies manage subsistence resources in Alaska. Regulations regarding subsistence harvest may undergo substantial modification in the near future. Current information on harvest regulations for state lands can be obtained from the Alaska Department of Fish and Game.

Maps #14 and #15 in Attachment One indicate marine and freshwater subsistence areas. This information can be used during a spill event to identify the specific food sources at risk of contamination.

For specific local information on the locations and seasons of subsistence harvests, contact the village or tribal governments, listing provided in the Resources Section, Community Profiles.

For more information contact James Fall or Craig Mishler at the Subsistence Division of the Alaska Department of Fish & Game in Anchorage at 267-2353.

### **5. Commercial Fishing**

Commercial fishing is an important part of the culture and economy of Kodiak. Salmon and herring are two of the primary commercial fisheries in this subarea. Other commercially viable fisheries include crab, cod, pollock, and several ground fish species.

Commercial fisheries openings and closing are managed by both state and federal agencies, and vary by year and season. The Alaska Department of Fish and Game manages the approximately 800 streams in Kodiak in which salmon migration and spawning has been documented. Commercially harvested salmon stocks include chum, pink, coho, sockeye and chinook.

Maps of key commercial fishing areas are available in multiple ADFG publications, the *Alaska Habitat Management Guide Reference Maps, Southwestern Region, Vols. I and II* and the *Alaska Habitat Management Guide, Southwestern Region Map Atlas*. Specific information on which species are currently being harvested may be obtained from ADFG, Division of Commercial Fisheries Management and Development in Kodiak at 486-1825. There are also several active commercial fishing industry groups in Kodiak who may be able to provide specific information on

the location and timing of fish runs as well as local tide and current conditions. These organizations are listed in the Resources Section of this plan.

See Maps #1 through #5 in Attachment One for commercial fishing resources, including herring spawning, pollock spawning, anadromous fish streams, salmon seining and set net areas, king and tanner crab fishing areas, and shellfish and clam harvest areas.

The timing of commercial fisheries openings/closings in Kodiak can be generalized as follows:

SALMON (seine and set net):	June through September
HERRING sac roe:	Mid-April through June
HERRING food or bait:	August through February
DUNGENESS CRAB:	May through December
TANNER CRAB:	January through March
GROUND FISH:	year-round, varies by species
SHRIMP pot:	year-round
SHRIMP trawl:	June through February
SCALLOPS:	June through March
HALIBUT:	IFQ fishery; year-round

For index salmon stream escapement data, see Attachment Two.

## **6. Sport Fishing and Hunting**

Important sport fishing rivers and streams in the Kodiak Archipelago include: the Buskin River, Salonie Creek, the American River, the Olds River, Roslyn Creek, the Pasagshak River, the Saltery River, the Uganik River, the Dog Salmon River, the Ayakulik (Red) River, the Karluk River, and the Afognak River.

The king salmon run in the Kodiak area occurs between June 1 through July 10th with the peak occurring around mid-June. Fishing for king salmon occurs primarily on the Karluk and Red (Ayakulik) Rivers. The red salmon run generally occurs between June 10 and August 1 on the Buskin, Pasagshak and Saltery Rivers. These three rivers can all be accessed by the road system on Kodiak. The runs on the Pasagshak and Saltery Rivers occur later than the run on the Buskin River. Red runs also occur on the Karluk, Red River, Uganik, Fraser, Upper Station and Litnik Rivers. Pink salmon are the most abundant fish on Kodiak and generally run between July 20 and August 20th. Pink salmon are plentiful in most of the streams on Kodiak, however the most productive streams are on the road system and include the Buskin, Russian, Salonie, American, Olds, Roslyn, and Saltery Rivers. The silver salmon run occurs from Mid-August through September in the Kodiak Archipelago. The run occurs earlier on the northern islands of Afognak and Shuyak than on the south end of Kodiak Island and peaks in early September. The more popular systems on Afognak and Shuyak include Shangin Bay, Carry Inlet, Big Bay, Paul's Bay, and Litnik which are accessible by boat and plane. Silver fishing on the Kodiak road system are abundant by the first of September and generally peak later in the month. Natural runs occur in the Buskin, Pasagshak, American, Olds, Roslyn, and Saltery Rivers. The hatchery runs of silvers occur along Mill Bay, Mission, and Mayflower beaches. Larger silver runs also occur in the Uganik, Spiridon, Karluk, Red and Olga Bay Rivers.

Other sport fishing on Kodiak includes dolly varden, rainbow trout, steelhead and halibut. May and mid-July are the best times to catch dollys. In May, along the road system the best places to fish include the Buskin, Pasagshak, and Saltery Rivers. In June, salt water beaches for fishing

dollies are Mission, Mill Bay, and Monashka Beach. From mid-July through October, the Buskin River offers dolly varden fishing. The American and Olds Rivers are also spawning grounds that offer good fishing along the road system. Deer hunters also encounter good dolly varden fishing in the fall where tributaries enter large lakes.

There are 16 tributaries that the Alaska Department of Fish and Game has identified that support steelhead populations on the Kodiak Archipelago. The Karluk and Ayakulik Rivers are thought to contain the largest populations of steelhead on Kodiak and are also the most popular with sport fisherman. The fall run of steelhead begin entering Kodiak Island freshwater tributaries in early September. The steelhead overwinter in lakes and rivers and spawn in April-June, while adults that survive return to the sea in June and July. All flowing waters are closed to sport fishing for rainbow trout and steelhead fishing during the spawning season from April 1 to June 14. The best time to fish for steelhead is mid to late October. A catch and release fishery was established in 1996 on the Buskin River and lake during the months of November and December. For the remainder of the year this river is closed to steelhead and rainbow trout fishing in the Buskin river and the lake.

Approximately 30 lodges are located throughout the Kodiak Subarea that cater to sport fishing and hunting activities. Sport Fishing guides operating within the Kodiak National Wildlife Refuge on Kodiak, Uganik, and Afognak Islands are approved by the refuge

Halibut fishing around Kodiak Island occurs from May through September. Well known fishing spots near Kodiak City include waters near Spruce Cape, Long Island, Woody Island, Cape Chiniak, and Whale Pass. There are approximately 16 charter boat services that operate in the Kodiak Island area.

The Kodiak Island Borough lies within Game Management Units 8 and 9. Game Management Unit 8 includes all islands southeast of the centerline of Shelikof Strait, including Kodiak, Afognak, Whale, Raspberry, Shuyak Spruce, Marmot, Sitkalidak, Amook, and Chirkof Islands, the Trinity Islands, the Semidi Islands and the Barren Islands. Brown bear, caribou, deer, elk and goat are harvested in this unit. Game Unit 9 includes the Alaska Peninsula and adjacent islands. Black and brown bear as well as caribou, moose, sheep, wolf and wolverine are hunted in this unit.

## **7. Recreational Sites and Facilities**

There are six Alaska State Parks in the Kodiak Subarea. These include the Buskin River State Recreation Site, Fort Abercrombie State Historic Site, and Pasagshak State Recreation site, which are accessible by the road system on Kodiak. Shuyak Island State Park, Woody Island State Recreation Site, and Afognak Island State Park can only be reached by boat or float plane.

The Katmai National Park and Preserve, Alaska Peninsula National Wildlife Refuge, Becharof National Wildlife Refuge, Alaska Maritime National Wildlife Refuge, and the Kodiak National Wildlife Refuge are also located in the Kodiak Subarea. Most are accessible by boat or plane only.

Maps #12 and #13 in Attachment One identify seasonal recreational areas in the Kodiak Subarea.

For information regarding state parks in the Kodiak Subarea contact the Department of Natural Resources, Division of Parks & Outdoor Recreation, in Kodiak at 486-6339. For information concerning the Katmai National Park and Preserve contact their Coastal Unit Office in Kodiak at

486-6730. For information about the Kodiak National Wildlife Refuge and public use cabins contact their Visitor Center in Kodiak at 487-2600.

## **8. Commercial Tourism**

Commercial tourism in the Kodiak Archipelago revolves primarily around wildlife viewing. Visitors can reach Kodiak by only sea or air. Transportation is available to Kodiak from Anchorage and Homer on commercial aircraft. The Alaska Ferry System also serves the City of Kodiak. The City of Kodiak is the main attraction for visitors, who can then depart from the city on fishing charters and wildlife cruises. Accommodations for visitors are most plentiful on the road system on the northern end of Kodiak Island. Bear viewing on Kodiak attracts visitors off the road system via air taxis from the City of Kodiak. Longer stays at lodges, cabins and camps offer opportunities for wildlife viewing, bird watching, sport fishing, sea kayaking, hiking, and mountain biking. Cruise ships occasionally visit Kodiak. For more information contact the Kodiak Island Convention and Visitors Bureau at 486-4782.

## **9. Marinas and Ports**

There are few marinas and ports in the Kodiak Island Borough. The largest port is at the City of Kodiak which accommodates large commercial fishing vessels and fish processors, a charter boat fleet, U.S. Coast Guard facilities and vessels, and private boats. There are small boat harbors at Port Lions and Old Harbor. The village of Ouzinkie has docking facilities for the Alaska Ferry, but does not have a boat harbor. There are no marinas or ports at Larsen Bay, Akhiok, and Karluk. Harbor office contact information is listed in the Resources Section.

## **10. Fish Processing**

The companies listed below are canneries and major processors with permits issued by the State of Alaska:

Ocean Beauty, Inc., Kodiak 486-5791  
Kodiak Salmon Packers, Inc., Larsen Bay 486-2250  
Alaska Pacific Seafoods, Kodiak 486-3234  
Alaska Fresh Seafoods, Inc., Kodiak 486-5749  
Cook Inlet Processing-Gibson Cove, Kodiak 486-6385  
Faros Seafoods, Inc., Kodiak 486-4156  
Shelikof Plant-International Seafoods, Kodiak 486-4768  
Marine Way Plant-International Seafoods, Kodiak 486-4768  
Kodiak Seaside Seafoods, Kodiak 486-8575  
Queen Fisheries-Kodiak Plant, Kodiak 481-5799  
Ursin Seafoods, Inc., Kodiak 486-5724  
Western Alaska Fisheries, Inc., Kodiak 486-4112  
Emerald Isle Gourmet Seafoods, Kodiak 486-4857  
Kodiak Abattior, Kodiak 487-2359  
Ouzinkie Tribal Fisheries, Ouzinkie 680-2259

**11. Logging Facilities**

Logging activities occur in several locations in the Kodiak Subarea. The following organizations can be contacted with requests for specific information on location and timing of logging activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Current Log Transfer Facilities (LTFs) or logging camps are:

<u>Location</u>	<u>Operator</u>	<u>Phone</u>	<u>Fax</u>
Chiniak (logging camp)	Lesnoi, Inc. (In Kodiak)	486-8191	486-8181
Afognak Island:			
Kazakof/Danger Bay	ANC/Ben Thomas Logging	379-1119	379-1161
Big Sandy Lake	Koncor/Silver Bay Logging	381-2000	381-2003

Also: Afognak Native Corporation (ANC) in Kodiak at 486-6014 - (fax 486-2514)  
Koncor Forest Products in Anchorage at 562-3335 - (fax 562-0599)

**12. Water Intake/Use**

The following table was generated by the Alaska Department of Environmental Conservation, Drinking Water and Water Treatment Section. The systems below include public permitted water use facilities by index number, source (groundwater, surface water, purchased water), facility name, and facility location. Additional information about facility owners can be obtained from the Drinking Water and Water Treatment Section at (907) 465-5300.

<u>Name of System</u>	<u>Location</u>	<u>State ID No.</u>	<u>Source</u>
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Available on request
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### 3. WIND, ICE AND CURRENT CONDITIONS

The following information gives an overview of wind, tide and current conditions for the Kodiak Subarea. Much of the available data is general in nature and should be supplemented by area-specific updates and information from local residents. Included in this section are data on tidal ranges and maps of net surface currents. **Also, Map #16 in Attachment One provides current and circulation information for Kodiak and Shelikof Strait.** In addition, local tide tables can be used to predict the times of ebb and flood tides for several points within the Kodiak Subarea. It is important to be aware that parts of the northern portion of the Kodiak Subarea use the Seldovia tide table.

#### 1. Currents

As indicated in Figures D-1 and D-2, the Alaska Current circulates in a counter-clockwise gyre in the Gulf of Alaska. Accordingly, spills in outer coast areas can generally be expected to travel along the coast in a northwesterly direction. However, tidal currents, winds and fresh water runoff can exert significant effects on net surface currents in many areas. Near Kodiak the Alaska Current is approximately 75 kilometers wide and generally follows the shelf break. Net current circulation in Shelikof Strait follows the same counterclockwise direction as currents entering the Straits from Cook Inlet and the western Gulf of Alaska. The current appears to be more organized in the western portion of the gulf. East of Middleton Island this current is a broad weak, westward flow. Satellite photos depict a wide, unorganized flow at the head of the gulf and a narrowing toward Kodiak. Overall, surface waters in the Alaska Current remain cohesive for hundreds or, possibly, thousands of miles.

Precipitation in the northern Gulf of Alaska adds approximately 2-3 meters of fresh water to the surface coastal waters in a 12-month period. River runoff accounts for another 2-3 meters.

A narrow, intense coastal current extending from southeast Alaska to Kodiak Island results from the density gradient created by freshwater runoff. The current is modified by wind stress which produces downwelling conditions throughout most of the year. From the Copper River/Prince William Sound area through the Shelikof Strait and westward to the end of the Alaska Peninsula, this narrow coastal current continues.

Although tidally induced currents are factors in determining net surface currents, tidal currents are not usually important in long distance transport since they are oscillatory in nature. As mentioned, wind and freshwater runoff are additional variables which must be taken into account when estimating spill trajectories. In some cases, tidal currents will be counteracted by these variables and will not be the deciding factor in spill transport.

## **2. Winds**

In many cases, spill trajectory is determined primarily by winds, especially when currents are weak. Winds are typically from the south and southeast, with an average velocity of 5 to 35 knots.

## **3. Spill Trajectory**

The trajectory of a spill is the result of the interaction of these several forces. This interaction is often complex and difficult to predict. The National Oceanic and Atmospheric Administration is capable of generating sophisticated spill trajectory models and has had considerable experience in this area. Requests for this service should be directed to the NOAA Scientific Support in Anchorage at 271-3593 (after hours pager, 275-3134).

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**FIGURE D-1: SEA SURFACE CURRENT MAP - Summer**

insert map (xeroxed)

**FIGURE D-2: SEA SURFACE CURRENT MAP - Winter**

insert map - xeroxed

## SENSITIVE AREAS: PART FIVE - KEY REFERENCES

The following documents will provide information on critical fish and wildlife concentrations. A reference for tidal current data is also included. The information contained in these documents is not, for the most part, duplicated in this regional plan. The Alaska Department of Fish and Game office in Anchorage has a set of the documents published by their Department. Also, copies of the starred documents may be obtained, for a fee, from:

Ridgway's Fast Copy Center  
600 Arctic Blvd.  
Anchorage, AK  
561-1555 (phone)  
562-6162 (FAX)

### *Documents:*

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Alaska Department of Natural Resources: Rich McMahan, Anchorage, 762-2377

National Park Service: George Dickison, Anchorage, 257-2489

U.S. Fish and Wildlife Service: Catherine Berg, Anchorage, 786-3598

U.S. Geological Survey: Tom Smith, Kodiak, 487-4961

Kodiak Island Borough: Linda Freed, Kodiak, 486-9360

Alyeska Pipeline Service Company/SERVS: Sharon Hillman, Valdez, 835-6903

## **SENSITIVE AREAS: PART SIX - AREAS OF LOCAL CONCERN**

The Kodiak Island Borough received a grant to ensure up-to-date, local knowledge is integrated into this edition of the Kodiak Subarea Contingency Plan, Sensitive Areas Section. Traditional or local knowledge is a term used to describe information primarily possessed by local residents gained from experience in living on the land and water of the Kodiak Subarea. Local knowledge includes, but is not limited to, expertise on topics related to storms and ocean currents; distribution and behavior of fish and wildlife; and historic and current use of the land and waters for subsistence activities and other traditional uses, especially historic commercial and recreational fisheries.

State and federal and agencies have historically relied on western scientific research and engineering when making decisions related to oil spill prevention and response. In doing so, they often overlook the knowledge of local residents that is based on years, even generations, of experience and observation. The agencies cooperating in preparation of the Sensitive Areas Section of the plan have committed to incorporation of local knowledge of the residents of the subarea. Not only can this information help ensure that areas and activities important to local residents are addressed in spill prevention and response planning, but that local knowledge of physical and biological characteristics will improve spill response efficiency and application of appropriate spill response techniques.

Dames & Moore worked in conjunction with the Kodiak Island Borough, Alaska Department of Fish and Game, and the Department of the Interior to develop survey and meeting methodologies for obtaining, documenting, and incorporating local knowledge into the SCP. The methodology included a project newsletter, pre-meeting contact, development of a survey instrument, and the community and focus group meetings.

Community meetings were held in six rural communities on Kodiak Island: Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. Focus group meetings on specific topics were held in the City of Kodiak along with a general community meeting; a meeting was held with each of the following organizations and coastal users.

- Lodge Operators
- Charter Boat Owners/Operators
- Kodiak Salmon Group
- Recreational Users/Environmental Groups
- Local Government Agencies/Native Corporations
- Oil Industry Watchers
- Alaska Dragger Association
- Kodiak Regional Aquaculture Association

The series of six community and eight focus group meetings in Kodiak and the rural communities highlighted the fact that the marine environments of Kodiak Island and the adjacent Alaska Peninsula support a tremendous variety of natural resources and that the people living in these areas place very high values on these resources. The full report *Kodiak Island Borough Sensitive Areas Identification Project* (June 30, 1997), containing resource summaries from the meetings, associated maps, and references can be obtained through the Community Development Department of the Kodiak Island Borough, 710 Mill Bay Road, Kodiak, AK, 99615, 907-486-9360.

*Summaries of the sensitive areas identified in the meetings are provided below and in Table D-2, and is graphically summarized on Maps #17 and #18 in Attachment One.*

**Akhiok:** In the case of an oil spill and with limited oil spill equipment, the sensitive areas selected by the participants included Kempff Bay northwest of Akhiok (for sea urchins), Tanner Head for razor clams, butter clam beaches on small islands off of Akhiok, Moser Bay (salmon), Snug Cove between Akhiok and Moser Bay (subsistence), and Sukhoi Lagoon (waterfowl and subsistence). Residents indicated these should have a very high priority.

**Alaska Draggers Association:** Sensitive areas selected by the draggers focused on habitat for groundfish and halibut and consisted of both bays and open water areas. The areas selected included Kukak Bay on the west side of Shelikof Strait and spawning areas in: Shelikof Strait (pollock); on the east side of Kodiak Island, Raspberry Strait, Kupreanof Strait, and Marmot Bay (pollock and cod); and Uyak Bay, Uganik Bay, Perenosa Bay, Womens Bay in Chiniak Bay, Ugak Bay, Olga Bay, and Deadman Bay (juvenile fish).

**Charter Boat Owners/Operators:** Areas selected as important to sportfishing and marine recreation which deserve some type of protection in the event of a spill included coastal areas on the road system, such as Holiday Beach, the rocks off of Long Island (sea lion haulouts), the Cape Chiniak bird colonies, Litnik, the back side of Hog Island in Marmot Bay, and the east entrance to Whale Pass. Other areas of importance included Womens Bay, the mouth of the Buskin River, Danger Bay, Marka Bay, and the head of Kazakof Bay.

**Karluk:** In the event of oil spill, with limited resources for response the sensitive areas selected were based primarily on subsistence. These included the Sturgeon River, Karluk Lagoon, Halibut Bay, and Grant Lagoon. Karluk Lagoon was by far the highest priority.

**Kodiak:** According to the participant, sensitive areas around the community of Kodiak center on coastal areas accessible by road, such as Monashka Bay, the Baskin River, and other local beaches. Kalsin and Middle Bays were considered sensitive areas for juvenile fish as well as other resources.

**Kodiak Regional Aquaculture Association:** Based on the importance to one or more fishery resources, areas were designated as priorities for protection in the event of an oil spill. They included the following: Marmot Bay (nursery area for several species of commercial importance), the west end of Sitkalidak Strait (herring, groundfish, halibut), Sitkalidak Island areas (herring), Uyak Bay (herring spawning), Uganik Bay (herring spawning), Alitak Bay (nursery area for herring, shrimp, salmon, and forage fish), Kukak Bay on the Alaska Peninsula (herring and shrimp), Little River Lagoon and beach, and Ayakulik Lagoon and beach.

**Kodiak Salmon Group:** Sensitive areas selected by the Kodiak salmon focus group included all major anadromous fish streams. Areas selected for reasons other than salmon included Mission Beach and the west side of Shuyak Island.

**Larsen Bay:** The extreme tides in Larsen Bay make many areas difficult to protect in the event of an oil spill. In general, participants agreed that the most practical beaches to protect, in the event of a spill, would be Brown's Lagoon, Humpy Creek, and Telrod Creek. Participants identified the following Sensitive Areas for Larsen Bay: from the outer part of Larsen Bay to the end of Larsen Bay, from the northern tip of Amok Island to the southern tip of Amok Island, from Carlson Point to Zacker Bay, the Chiefkof area, from Hook Point to the head of Spiridon Bay, and from the islands south of Amok Islands to the head of Uyak Bay. Residents voiced serious concerns about the habit of barges and other vessels using Uyak Bay as a safe harbor when the weather becomes rough in the Shelikof Straits. This activity greatly increases the threat of a spill in Larsen Bay.

**Lodge Owners:** The focus group participants selected a large number of areas which deserve some initial protection in the event of an oil or hazardous material spill, mostly entire bays, which they felt would be

adversely affected and subsequently would affect their local industry. For the Alaska Peninsula on the west side of Shelikof strait, these included Katmai Bay, Hallo Bay, Kukak Bay, Kafliia Bay and Geographic Harbor. On the west side of Kodiak Island, sensitive areas included: Karluk River and Lagoon, the head of Uyak Bay, Spiridon Bay and River, South Arm of Uganik Bay, Uganik River, Mink Point, Village Islands, and Zachar Bay and River. On the east side of Kodiak Island in the Ugak Bay area, sites delineated as sensitive included: Hidden Bay (Basin), Saltery Cove, Pasagshak Bay, Portage Bay, and Eagle Harbor. In the Afognak Island area, sensitive areas included Whale Pass (high priority), Paramanof Bay, Selief Bay (four lodges), Malina Bay, Pauls Bay, Big Waterfall Bay, Litnik, and Muskomee Bay.

**Local Government Agencies/Native Corporations:** A large number of areas were selected by this focus group as sensitive for one or more resources. On the Alaska Peninsula (west side of Shelikof Strait), sensitive areas included: Geographic Harbor, Amalik Bay, Hallo Bay, and Kukak Bay. Areas on the road system included Buskin River, Point Abercrombie, Monashka Bay, Pasagshak Bay, and Chiniak Bay areas including Womens, Kalsin, and Middle Bays, Termination Point, and the north end of Long Island. For salmon resources, sensitive areas selected included Olga Bay, Uganik Bay, Uyak Bay, Kitoi Bay (hatchery), and the Karluk River and Lagoon. Other areas selected for resources (recreation and subsistence) included Litnik, Paramanof Bay, and Sitkalidak Strait. Sensitive areas selected for marine mammals included Marmot Island and all of Marmot Bay (whale and sea lions), Uyak and Uganik Bays (whales), the Barren Islands (seabirds, whales, and sea lions), Semedi Islands (seabirds), Tugidak Island (harbor seal), and all the Trinity Islands and surrounding waters (waterfowl, marine mammals).

**Oil Industry Watchers Group:** When asked which areas which would be considered sensitive and should be prioritized in the case of an oil spill (assuming limited resources), the areas selected included: the areas between Kodiak City and the mouth of Womens Bay, Cape Chiniak to the east side of Kalsin Bay (waterfowl), and Ugak Strait (marine mammals). Recreational areas which should have a high priority include Cook Lagoon on Long Island, Monashka Beach, Mayflower Beach, Pasagshak Beach, the entrance to Big Bay, and Fossil Beach.

**Old Harbor:** Sensitive areas or areas of special concern in the case of an oil spill with limited oil spill equipment were delineated by people at the meeting. The highest priorities were associated with important subsistence areas. Most of the areas were either located on Sitkalidak Strait or Sitkalidak Island. These areas included: Barling Bay south through Fox Lagoon, all of Sitkalidak Strait, Ocean Beach (Bay), and Partition Cove (east side Sitkalidak Island), Port Hobron, Tanginak Anchorage (north side Sitkalidak Island), Shearwater Bay (in Kiliuda Bay), Newman Bay (west side Sitkalidak Island), Kiavak Bay, Big Creek on Kaiugnak Bay, Mouse Island, and Seal Bay (west of Cape Barnabas).

**Ouzinkie:** The participants were asked at the end of the meeting that if they had a limited amount of oil boom to protect areas of greatest importance to the communities in the event of an oil or hazardous material spill, what areas would be highest on the priority list. The areas of most concern involved those used for subsistence gathering activities. These included the Camel Rock area, Sourdough Flats, a salmon stream just south of town, and the west side of Spruce Island from the Narrows to the Zapadni Point. Other sensitive areas include Icon Bay at the eastern end of the island for its historical significance.

**Port Lions:** The participants in the meeting were asked what areas they would like protected if there was a spill, and if there were limited resources to protect sensitive areas. The areas selected were primarily associated with subsistence and included Settler Cove at Port Lions, clam beds at the end of the runway at Port Lions, the head of Kizhuyak Bay, and Litnik at the head of Afognak Bay.

**Recreational Users/Environmental Groups:** All areas on the road system with access to the coast are heavily used for recreation and should receive some level of protection in the event of an oil or hazardous substance spill. Other areas included: the mouth of Big Bay on Shuyak Island, Foul Bay on the west side of Afognak

Island, all of Chiniak Bay (a heavily used area), the heads of Kalsin and Middle Bays (juvenile halibut and forage fish), and Anton Larson Bay (due to road access).

As illustrated in the following table, there is a considerable amount of overlap in the sensitive areas selected by the different focus groups. Marmot Bay, Chiniak Bay, Kalsin Bay, Middle Bay, and Womens Bay were selected by most of the focus groups. Other areas of overlap included Uyak Bay, Whale Pass, Litnik at the head of Afognak Bay, the mouth of the Buskin River, and Pasagshak Bay and Beach in Ugak Bay. When totaled, the selected sensitive areas covered a significant portion of the Kodiak Archipelago.

**TABLE D-2**  
**SUMMARY OF SENSITIVE AREAS SELECTED BY**  
**COMMUNITY REPRESENTATIVES AND FOCUS GROUPS**  
**Kodiak Island Borough, 1997**

Community/Group	Sensitive Areas
Akhiok	Kempff Bay, Tanner Head, small islands off Akhiok, Moser Bay, Snug Cove, and Sukoi Lagoon
Alaska Draggers	Kukak Bay and spawning areas in Shelikof Strait, the east side of Kodiak Island, Uyak Bay, Uganik Bay, Raspberry Strait, Kupreanof Strait, Marmot Bay, Perenosa Bay, Womens Bay, Olga Bay, Deadman Bay, and Ugak Bay.
Charter Boat Owners/Operators	Cape Chiniak, Litnik, Hog Island in Marmot Bay, Whale Pass, Womens Bay, mouth of Buskin River, Danger Bay, Marka Bay, the head of Kuskoff Bay and coastal areas accessible by road.
Karkuk	Karluk Lagoon, Sturgeon River, Halibut Bay, and Grant Lagoon
Kodiak	Kalsin Bay, Middle Bay, Buskin River, Monashka Bay, and all beach areas accessible by road system.
Kodiak Regional Aquaculture Association	Marmot Bay, west end of Sitkalidak Strait, Sitkalidak Island areas, Uyak Bay, Uganik Bay, Alitak Bay, Kukak Bay, Little River Lagoon/beach, and Ayakulik Lagoon/beach.
Kodiak Salmon Group	All salmon streams, Mission Beach, and west side of Shuyak Island.
Larsen Bay	Brown's Lagoon, Humpy Creek, Telrod Creek, Larsen Bay from outer Larsen Bay to end, from northern tip of Amok Island to southern tip of Amok Island, from Carlson Point to Zacker Bay, the Chiefkof area from Hook Point to head of Spiridon Bay, from islands south of Amok Island to head of Uyak Bay.
Local Government Agencies/Native Corporations.	Alaska Peninsula - Geographic Harbor, Hallo Bay, Kukak Bay, and Amalik Bay.  West side Kodiak Island- Karluk River and Lagoon, Uyak Bay, Uganik Bay, and Olga Bay.  East side Kodiak Island - All of Chiniak Bay (Kalsin, Middle, and Womens Bays), Termination Point, north Long Island, Buskin River, Point Abercrombie, Monashka Bay, Pasagshak Bay, and Sitkalidak Strait.  Afognak Island Area - Litnik, Paramanof Bay, Marmot Island, Marmot Bay, and Kitoi Bay.  Barren Islands, Semedi Islands, and Trinity Islands (especially Tugidak Island)
Lodge Owners	Alaska Peninsula - Katmai Bay, Hallo Bay, Kukak Bay, Kafliia Bay, and Geographic Harbor.

Community/Group	Sensitive Areas
	<p>West side Kodiak Island- Karluk River and Lagoon, head of Uyak Bay, Spiridon Bay and River, South Arm of Uganik Bay, Ugainik River, Mink Point, Village Island, and Zachar Bay and River.</p> <p>East side Kodiak Island - Hidden Bay, Saltery Cove, Pasagshak Bay, Portage Bay, and Eagle Harbor.</p> <p>Afognak Island Area - Whale Pass, Paramanof Bay, Selief Bay, Malina Bay, Pauls Bay, Big Waterfall Bay, Litnik and Muskomee Bay.</p>
Oil Industry Watchers	Womens Bay, Cape Chiniak to east side of Kalsin Bay, Ugak Strait, Cook Lagoon on Long Island, Monashka Beach, Mayflower Beach, Pasagshak Beach, and Fossil Beach.
Old Harbor	Barling Bay, Sitkalidak Strait, Ocean Beach, Partition Cove, Port Hobron, Tanginak, Anchorage, Shearwater Bay, Newman Bay, Kiavak Bay, Big Creek, Mouse Island, and Seal Bay (Cape Barnabas).
Ouzinkie	Camel Rock , Sourdough Flats, west side of Spruce Island, Icon Bay, and the fish stream south of Ouzinkie
Port Lions	Settler Cove, head of Kizuyak Bay, Litnik, and the clam beds at end of runway
Recreational Users/Environmental Groups	Coastal areas with road access, mouth of Big Bay on Shuyak Island, Foul Bay, all of Chiniak Bay, heads of Kalsin and Middle Bays, and Anton Larson Bay

# **SENSITIVE AREAS: ATTACHMENT ONE**

## **RESOURCE AND SENSITIVE AREA MAPS For the KODIAK SUBAREA**

- MAP #1: Fishery Resources - Herring Spawning, Pollock Spawning, Pollock Juvenile Rearing, Anadromous Fish Streams (pink salmon)
- Accompanied by a List of the Estimated Average Annual Peak Index Counts for Salmon Streams in the Kodiak Subarea from Aerial Surveys (1967 – 1994)
- MAP #2: Commercial Fishing Areas - Salmon Seining and Set Net Areas
- MAP #3: Commercial Fishing Areas - Herring, Pollock, Halibut, Cod, Scallops
- MAP #4: Fishery Resources - King and Tanner Crab
- MAP #5: Fishery Resources - Shellfish, Clam
- MAP #6: Marine Mammals - Harbor Seal Areas
- MAP #7: Marine Mammals - Sea Otters
- MAP #8: Marine Mammals, Terrestrial Mammals and Birds, Sea Lions, Brown Bears, & Seabirds
- MAP #9: Marine Mammals - Humpback Whales, Fin Whales
- MAP #10: Marine Mammals - Gray Whales, Dall=s Porpoise, Minke Whales, Orca Whales
- MAP #11: Waterfowl - Ducks, Geese, Swans
- MAP #12: Recreation Areas - Fall, Winter
- MAP #13: Recreation Areas - Spring/Summer, Year-round
- MAP #14: Subsistence - Marine
- MAP #15: Subsistence - Salmon, freshwater fish
- MAP #16: Currents and Circulation
- MAP #17: Sensitive Areas - Rural Communities
- MAP #18: Sensitive Areas - Focus Groups, Kodiak community, resource agencies
- MAP #19: Biological Hotspot Sites – as Identified by ADF&G (page D-43)

## **SENSITIVE AREAS: ATTACHMENT TWO**

### **U.S. FISH AND WILDLIFE SERVICE**

#### **Seabird Colonies**

The Alaskan Seabird Colony Catalog is an automated database that contains the distributions of breeding seabirds and the relative size of all the colonies in Alaska. The data reports indicating estimated species composition and numbers for seabird colonies of Kodiak Island/Shelikof Straight are summarized from the catalog. The maps display colony locations. The Alaska Seabird Colony Catalog is maintained by the U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Marine and Coastal Bird Project, in Anchorage. Questions or comments regarding the information contained in the Alaska Seabird Colony Catalog should be directed to Vivian Mendenhall or Shawn Stephensen at (907) 786-3444.