

**COOK INLET
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-8
D. Areas of Lesser Concern	D-9
PART THREE Resource Sensitivity.....	D-10
PART FOUR Background Information	D-20
Introduction.....	D-20
Land Management Maps.....	D-20
A. Land Management Designations.....	D-27
B. Habitat Types	D-30
C. Biological Resources.....	D-34
1. Fish and Wildlife.....	D-34
2. Vegetation.....	D-37
3. Biologically Sensitive Areas.....	D-37
D. Human Use Resources.....	D-41
1. Fish Hatcheries and Associated Ocean Net Pens.....	D-41
2. Aquaculture Sites.....	D-44
3. Cultural Resources.....	D-47
4. Subsistence and Personal Use Harvests.....	D-47
5. Commercial Fishing.....	D-50
6. Sport Fishing and Hunting.....	D-52
7. Recreational Sites and Facilities.....	D-52
8. Commercial Tourism.....	D-56
9. Marinas and Ports.....	D-56
10. Fish Processing.....	D-56
11. Logging Facilities.....	D-59
12. Water Intake/Use.....	D-59
E. Wind, Ice and Current Conditions.....	D-60
PART FIVE Significant Data Gaps and Information Needs...	D-65
PART SIX Key References.....	D-66

ATTACHMENT ONE Water Intake/Use

SENSITIVE AREAS: 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 Cook Inlet Subarea. This information is specific to the Cook Inlet Subarea and was compiled by a multi-organization Sensitive Areas Work Group. No attempt has been made to duplicate information contained in easily accessible existing documents. The Sensitive Areas 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 and does not attempt to evaluate injury or damage which may result from a spill, nor does it prioritize resources for later restoration efforts.

Often, the most detailed, up-to-date biological and resource use information will come from people who live and work in the affected 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 (contained in the **Unified Plan**) covering the decision processes for the application of dispersants, the use of *in situ* burning, the protection of wildlife, and the protection of cultural resources. The ARRT Scientific Support Coordinator has developed a Shoreline Countermeasures Manual for use in cleanup decision-making by shoreline type. A series of Environmental Sensitivity Index (ESI) maps, showing selected sensitive resources and shoreline types for selected areas, have also been produced 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 was compiled. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies. Plans are being developed to further conduct information gathering, compilation, prioritization, and presentation to add to the information required in this section for the next update.

The Cook Inlet Spill Prevention and Response, Inc. (CISPRI) undertook a substantial effort to develop and refine a sensitive areas database in their Technical Manual (Section 3.10, January 1994). CISPRI developed the material with input from federal and state agencies who will continue to review the information for accuracy. The Sensitive Areas Work Group decided to use the CISPRI information as the basis for part of this Sensitive Areas Section. This information is used with the permission of CISPRI.

The data presented here is available for CISPRI use on the Visual Information Response System (VIRS).

The information presented herein is draft and has not undergone formal local, state or federal agency review, update or approval.

The joint Federal-State Subarea Contingency Plan for this subarea is scheduled to be updated every five years. Much can be done in these updates to improve the data and its presentation, such as:

- Complete work identified in Part Five, Significant Data Gaps and Information Needs, to adequately address sensitive areas and resources.
- Establish a continuing interagency mechanism to review, update and maintain sensitivity information and priorities.
- Fund staff/materials to compile data and prepare materials for presentation in the Subarea Contingency Plans.
- 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.

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

Doug Mutter
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
FISH and WILDLIFE and HABITAT RESOURCES					
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	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer: 333-0489	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
U.S. Forest Service	endangered plants	Larry Hudson	work: 271-2525 fax: 271-3992 emer: 349-3875	Gary Lehnhausen	work: 271-2560 fax: 271-3992 emer: 345-2391
CULTURAL and ARCHAEOLOGICAL SITES					
Alaska Office of History and Archaeology	historic sites, archaeological sites, national register sites	Judy Bittner	work: 269-8715 fax: 269-8907 emer: 274-7165	Robert Shaw	work: 269-8727 fax: 269-8907 emer: 337-5689
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: 333-0489	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
U.S. Forest Service	archaeological sites in national forests	Larry Hudson	work: 271-2525 fax: 271-3992	Gary Lehnhausen	work: 271-2560 fax: 271-3992

Agency	Resources	Primary Contact		Alternate Contact	
		Name	Numbers	Name	Numbers
			emer: 349-3875		emer: 345-2391
U.S. Department of Defense	archaeological sites in military reservations		work: fax: emer:		work: fax: emer:
LAND OWNERSHIP and CLASSIFICATIONS/DESIGNATIONS					
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, sanctuaries, and critical habitat areas	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	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: 333-0489	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
U.S. Department of Defense	military installations and reservations	Jim Laird	work: 552-3268 fax: 552-4855 emer: 552-4860		work: fax: emer:
U.S. Forest Service	national forests, research natural areas, national monuments	Larry Hudson	work: 271-2525 fax: 271-3992 emer: 349-3875	Gary Lehnhausen	work: 271-2560 fax: 271-3992 emer: 345-2391
COMMERCIAL HARVEST					
Alaska Department of Fish and Game	fishing	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	tideland leases, logging, aquafarm locations	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
SUBSISTENCE USES					
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: 333-0489	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
RECREATION AND TOURISM USES					
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

Agency	Resources	Primary Contact		Alternate Contact	
		Name	Numbers	Name	Numbers
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: 333-0489	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726
U.S. Forest Service	for national forests: cruise ships and tour boats, campgrounds, trails, public use cabins	Larry Hudson	work: 271-2525 fax: 271-3992 emer: 349-3875	Gary Lehnhausen	work: 271-2560 fax: 271-3992 emer: 345-2391
WATER INTAKE and USE FACILITIES					
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 and release sites	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	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Mike Bennett	work: 269-8548 fax: 269-8923 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
U.S. Forest Service	logging camps and log transfer facilities in national forests	Larry Hudson	work: 271-2525 fax: 271-3992 emer: 349-3875	Gary Lehnhausen	work: 271-2560 fax: 271-3992 emer: 345-2391

SENSITIVE AREAS: PART TWO - AREAS OF ENVIRONMENTAL CONCERN

A. 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 clean-up 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 will be included in **Annex M of the Unified Plan**. Data gaps in the index are discussed later in this section in Part Five, Significant Data Gaps and Information Needs.

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 threatened 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

2. AREAS OF MAJOR CONCERN

Threatened or Endangered Species Habitats
Shoreline Geomorphology - Coastal Habitat Types
Marshes
Sheltered Tidal Flats
Sheltered Rocky Shores
Sea Otter Concentration Areas (>20)
Harbor Seal Haulouts (>10)
Sea Lion Rookeries and Haulouts
Large Seabird Colonies (>5,000)
Waterfowl and Shorebird Spring and/or Fall Concentration

Areas

Eagle Nest Sites
Large Anadromous Fish Streams (>50,000 Spawners)
Intertidal Salmon Spawning Areas
Hatcheries
Herring Spawning Areas
Land Management Designations
Federal
Wilderness
Wild and Scenic Rivers
National Natural Landmarks
State
Refuges
Sanctuaries
Critical Habitat Areas
Cultural Resources/Archaeological Sites
National Historic Landmarks
Burial Sites
National Register Eligible Village Sites
Intertidal Sites
Subsistence Harvest Areas
High Use Commercial Fishing Areas
High Use Recreational Areas

C. AREAS OF MODERATE CONCERN

Species of Concern Habitats (Possible Threatened or Endangered)

Shoreline Geomorphology - Coastal Habitat Types
Gravel Beaches
Mixed Sand and Gravel Beaches
Exposed Tidal Flats
Coarse-Grained Sand Beaches
Sea Otter General Distribution Areas (<20)
Sea Lion General Distribution Areas
Harbor Seal Haulouts (<10)
Seabird Colonies (1,000-5,000)

Waterfowl and Shorebird Nesting and Molting Concentration Areas

Anadromous Fish Streams (500-50,000 Spawners)

Clam Beds

Bear Spring Concentration Areas

Land Management Designations

Federal

National Parks

National Wildlife Refuges

State

State Parks

Cultural Resources/Archaeological Sites

National Register Eligible Sites (Other Than Village Sites)

Sites Adjacent To Shorelines

Commercial Fish Harvest Areas

Recreational Use Areas

D. AREAS OF LESSER CONCERN

Shoreline 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 Areas

Bear Fall Concentration Areas

Anadromous Fish Streams (<500 Spawners)

Land Management Designations

Federal

Public Lands

National Forests

National Preserves

State

General Public Lands

SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY

See also the CISPRI Technical Manual, section 3.10.

See also the Environmental Sensitivity Index maps produced for the Alaska Regional Response Team Scientific Support Coordinator.

The following sensitivity tables were developed by representatives from state and federal agencies and the private sector. Not all information is complete at this time. Key references that are readily available are identified for each table and 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.

SHORELINE GEOMORPHOLOGY
(references: 4,7)

CATEGORY	LEAST	MEDIUM	MOST
COASTAL HABITAT TYPES	Fine-Grained Sand Beaches Exposed Wave-Cut Platforms Exposed Rocky Shores	Gravel Beaches Mixed Sand & Gravel Beaches Exposed Tidal Flats Coarse Grained Sand Beaches	Marshes Sheltered Tidal Flats Sheltered Rocky Shores
LAKE AND RIVER HABITAT TYPES	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/banks in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
UPLAND HABITAT TYPES	To Be Developed	To Be Developed	To Be Developed

THREATENED OR ENDANGERED SPECIES
(references: 8,9,10,11)

CATEGORY	LEAST	MEDIUM	MOST
ENDANGERED SPECIES			WHALES: Humpback, Fin, Blue, Sei, Sperm, Northern right BIRDS: Short-tailed albatross, American peregrine falcon
THREATENED SPECIES			MAMMALS: Steller sea lion BIRDS: Spectacled eider, Aleutian Canada goose
SPECIES OF CONCERN		BIRDS: Harlequin duck, Kittlitz's murrelet, Marbled murrelet, Northern goshawk, Olive-sided flycatcher, Steller's eider MAMMALS: North American lynx PLANTS: <i>Taraxacum carneocoloratum</i>	

SEA OTTERS

(references: 1,4,12)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE		< 20	> 20
SUSCEPTIBILITY			year around
HUMAN HARVEST	year around		

Critical Life Periods

Present nearshore

Pupping

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

HARBOR SEALS

(references: 1,4,9,11)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE (ON HAULOUTS)	< 5	5 - 10	> 10
SUSCEPTIBILITY		year around	
HUMAN HARVEST	November - March 15	June 15 - Oct 31	March 15 - June 15

Critical Life Periods

Pupping

Molting

On haulouts

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

STELLER SEA LIONS

(references: 1,4,11)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE (ON HAULOUTS)	< 15	15 - 30	> 30
SUSCEPTIBILITY	Oct. - April	May - Sept.	
HUMAN HARVEST	November - March 15	June 15 - Oct. 31	March 15 - June 15

Critical Life Periods

Pupping

Molting

On rookeries

On haulouts

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

WHALES
(references: 4,9)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE			
SUSCEPTIBILITY		-Beluga spring and fall concentrations -Gray migration corridor off coast	
HUMAN HARVEST			

Belugas:

Critical Life Periods	<u> J F M A M J J A S O N D </u>
Present nearshore	=====
Calving	===

BEARS
(references: 1,11)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE			
SUSCEPTIBILITY ^{1,2,3}	Nov. 1 - April 15	April 15 - May 30 Aug. 16 - Oct. 31	June 1 - Aug. 15
COMMERCIAL VALUE	Nov. 1 - April 15	June 1 - Aug. 31	April 15 - June 1 & Sept. 1 - Oct. 31
HUMAN HARVEST	Nov. 1 - April 15		April 15 - Oct. 31

1. Bear densities and susceptibility to oil impacts increases through spring as more individuals emerge from dens and move to coastal areas.
2. Bear densities and susceptibility to oil impacts decreases through the summer depending upon the availability of fish in lower reaches of streams.
3. Most bear hunting opportunities are closed during the summer period, however, bear viewing opportunities in some areas peak during the summer period.

Critical Life Periods	<u> J F M A M J J A S O N D </u>
Denning	=====
Spring coastal concentrations	=====
Salmon stream concentrations	=====

HERRING (including capelin/hooligan)

(references: 1,4)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE (Biomass in Tons)	< 500	500 - 5,000	> 5,000
SUSCEPTIBILITY	Oct 1 - Feb 28	March and September	April 1 - Aug 31
HUMAN HARVEST ¹			April 1 - May 31

Critical Life Periods

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

Spawning

=====

Present nearshore

=====

1. Capelin and hooligan.

SALMON

(references: 1,3,11)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE	< 500 spawners	500 - 50,000	> 50,000
SUSCEPTIBILITY	Dec 1 - Mar 1	Feb 1 - April 30 Nov 1 - Dec 31	May 1 - Oct 31
SPECIES DIVERSITY	2 or less	2 - 4	4 and greater
HUMAN HARVEST		Nov 1 - March 31	May 15 - Oct 15 (UCI) May 1 - Oct. 31 (LCI) ¹

UCI = Upper Cook Inlet: area north of the latitude of Anchor Point

LCI = Lower Cook Inlet: area south of latitude of Anchor Point

Critical Life Periods

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

Adults nearshore

=====

Spawning

==

=====

Eggs/young development

=====

Smolt outmigration

=====

1. Sport fishing off Homer Spit.

(references:)

TO BE DEVELOPED

CATEGORY	LEAST	MEDIUM	MOST
NON- CONSUMPTIVE USES			
UNIQUE FISHING SITES			
TIMBER INDUSTRY			
MINERAL USE AREAS			

1. Species specific harvest times and human use concerns are addressed under individual species headings.

REFERENCES FOR TABLES

1. Alaska Habitat Management Guides Reference maps - Southcentral Region (Alaska Department of Fish and Game, Habitat Division, 1986)
2. U.S. Fish and Wildlife Service Seabird Catalog 1978
3. An Atlas of the Catalog of Waters Important to the Spawning, Rearing and Migration of Anadromous Fish Southcentral Region (Alaska Department of Fish and Game, updated annually)
4. Environmental Sensitivity Index (ESI) Maps for Quads in Cook Inlet (RPI for NOAA)
5. National Oceanic and Atmospheric Administration Nautical Charts
6. U.S. Fish and Wildlife Service - bald eagle nest site database
7. Alaska Regional Profiles - Southcentral Region (University of Alaska, Arctic Environmental Information and Data Center, 1974)
8. U.S. Fish and Wildlife Service (Ron Britton)
9. National Marine Fisheries Service (Brad Smith)
10. U.S. Forest Service (Ray Thompson)
11. Alaska Department of Fish and Game (Claudia Slater)
12. U.S. Fish and Wildlife Service marine mammals database
13. Alaska Department of Natural Resources (Kristina O'Connor)
14. National Park Service (Bud Rice)
15. State of Alaska Refuges, Critical Habitat Areas, and Sanctuaries (Alaska Department of Fish and Game, Habitat Division, 1991).
16. Nancy Lethcoe, Personal Communications, 1994

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-generated references that have had agency input and review are incorporated by reference.

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 subarea 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).

Insert land management designation maps--1 of 6 pages

Insert land management designation maps--2 of 6 pages

Insert land management designation maps--3 of 6 pages

Insert land management designation maps--4 of 6 pages

Insert land management designation maps--5 of 6 pages

Insert land management designation maps--6 of 6 pages

A. LAND MANAGEMENT DESIGNATIONS

1. State

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 Alaska State Legislature has classified certain areas as being essential to fish and wildlife populations and public uses of these resources. These areas are designated as either a game refuge, critical habitat area or game sanctuary. Management of these essential areas is the joint responsibility of the Departments of Fish and Game and Natural Resources. 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.

Several of these areas exist in the Cook Inlet Region and are listed below, along with a brief summary of their biological and public use values.

McNeil River State Game Sanctuary was established in 1967 to protect concentrations of brown bears which gather to feed on migrating salmon in July and August. Wildlife viewing is popular.

McNeil River State Game Refuge was created in January 1993 adjacent to the northern boundary of the McNeil River State Game Sanctuary.

Kachemak Bay State Critical Habitat Area was established in 1974 to protect the rich marine habitat which supports numerous fish, shellfish and marine mammals. Tens of thousands of waterfowl, shorebirds and seabirds are present in the spring, summer, and fall. Many waterfowl also overwinter in the area. The bay supports commercial and sport fishing, subsistence marine mammal hunting and fishing, and provides many recreational opportunities.

Fox River Flats State Critical Habitat Area was established in 1972 and serves as a resting and feeding area for thousands of migrating waterfowl and shorebirds during the spring and fall. The area is popular for waterfowl hunting in the fall.

Anchor River/Fritz Creek State Critical Habitat Area was established in 1985 and provides one of the few major moose overwintering areas on the southern Kenai Peninsula. The area also provides opportunities for hunting, fishing, wildlife viewing and winter sports.

Clam Gulch Critical Habitat Area was established in 1976 to protect dense beds of razor clams. The area provides opportunities for clam digging and commercial and sport fishing.

Kalgin Island State Critical Habitat Area was established in 1972 to protect habitat used by migrating waterfowl and shorebirds during the spring and fall.

Redoubt Bay State Critical Habitat Area was established in 1989 to protect migrating and nesting waterfowl populations during the spring, summer and fall. Tule white-fronted geese and trumpeter swans are species of special concern.

Willow Mountain State Critical Habitat Area was established in 1989 to protect exceptional fish and wildlife habitat and to provide opportunities for hunting, trapping and recreation.

Trading Bay State Game Refuge was established in 1976 to protect habitat used by large numbers

of waterfowl migrating through in the spring and fall and nesting in the summer. The area is used for moose calving in the spring, as a spring and fall feeding area for bears, and as a salmon spawning and rearing area. The area is also used for hunting and commercial and sport fishing. This area is of critical importance for subsistence waterfowl and moose hunting by Tyonek residents.

Susitna Flats State Game Refuge was established in 1976 to protect areas used by spring and fall concentrations of migrating shorebirds and waterfowl and summer populations of nesting waterfowl. The refuge also encompasses moose calving areas, spring and fall bear feeding areas and salmon spawning and rearing areas. The area is popular for hunting, wildlife viewing and sport fishing. This area is also important for marine mammal feeding and resting, and is used by beluga and seal hunters.

Goose Bay State Game Refuge was established in 1975 to protect the wetlands used as a spring and fall stopover for migrating waterfowl. The refuge is popular for waterfowl hunting in the fall.

Palmer Hay Flats State Game Refuge was established in 1975 and expanded in 1985 to protect dense spring and fall concentrations of migrating waterfowl. The area also provides moose habitat and salmon spawning and rearing areas. Sport fishing, hunting and wildlife viewing are popular.

Anchorage Coastal Wildlife Refuge was originally established in 1971 and expanded and re-named in 1988 to protect large and diverse bird populations. Peak numbers occur during the spring migration and include waterfowl and shorebirds. The area is extremely popular for wildlife viewing and fall waterfowl hunting.

2. Federal

Chugach National Forest The nation's second largest National Forest at 5.6 million acres is the Chugach, which extends from the Kenai Peninsula for 200 miles to the Bering Glacier. Sport, subsistence and commercial fishing; hunting; sightseeing; outdoor recreation; boating; hiking; and wildlife habitat are some of the primary uses of the Forest.

Katmai National Park and Preserve About 120 miles of the lower Cook Inlet coast lies within the legislated boundaries of this park between Kamishak River and Sukoi Bay on Cape Douglas. The threatened Steller sea lion hauls out just north of Cape Douglas, and Shaw Island serves as a significant seabird colony and harbor seal rookery. Most of the park's coast is designated wilderness. The park is known for its brown bears, sport fishing, volcanoes, and scenery. The coastal area has become increasingly popular for wilderness bear viewing and photography.

Kenai Fjords National Park The Park features the Harding Icefield and a glacier-carved shoreline along the Gulf of Alaska. Moose, black bear, mountain goats, Steller sea lions, harbor seals, killer whales, many species of whales, porpoises, sea otters and thousands of sea birds inhabit the Park and its surrounding waters. The Park is about 670,000 acres in size. Tour boat excursions, sport fishing, sailing, wilderness sea kayaking, hiking, and photography are popular activities.

Lake Clark National Park and Preserve Set along western Cook Inlet where the Alaska Range and the Aleutian Range meet, the 4 million acre area includes 50-mile long Lake Clark. Glaciers, two active volcanoes, waterfalls and jagged peaks provide an array of scenery. An important red salmon spawning ground, the area is habitat for brown and black bear, caribou, moose, Dall sheep, and trout. River running, hiking, and other outdoor recreation is available in the Park and Preserve.

Alaska Maritime National Wildlife Refuge The Gulf of Alaska Unit of the Refuge includes some of the islands, rocks and forelands along the coast of the Gulf of Alaska. Alaska Maritime 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. 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, photography and backpacking are primary uses of the Refuge. The Refuge was established in 1980.

Chisik Island is managed by the Alaska Maritime National Wildlife Refuge. The island is 10.5 kilometers in length and is located at the mouth of Tuxedni Bay. The largest known colonies of murre, puffins, and kittiwakes found in Cook Inlet occupy the cliff habitat on the island. The island is protected with Wilderness status and has a Class I Air Quality designation. Response efforts on Chisik Island must be conducted in direct consultation with the Fish and Wildlife Service.

Kenai National Wildlife Refuge The Refuge, located on the Kenai Peninsula, contains nearly 2 million acres, including 1.35 million acres designated as Wilderness. The spawning areas within the Refuge support approximately 40% of the Cook Inlet commercial fishing industry and the Refuge is underlain with important oil and gas resources. From tidal marsh to alpine ridge, various natural habitats support a wide variety of wildlife, including wolves, moose, Dall sheep, mountain goat, caribou, coyotes, brown/grizzly bear, black bear, trumpeter swans, lynx, wolverine, beaver, many other small mammals, and 146 species of resident and migratory birds. Four species of salmon spawn here and the refuge also supports many resident fish.

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).

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 and large beds of kelp.

2. Shoreline Habitats

Habitats (estuarine, large lacustrine and riverine) ranked from least to most sensitive (see the following table) are described below:

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 degrees or greater, 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 degrees, 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 degrees, 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 degrees, rate of sediment mobility is high with accumulation of up to 20 cm of sediments in a single tidal cycle, sediments are soft with low traffic ability, 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 gravel, slope between 8 to 15 degrees, sediment mobility is high during storms, sediments are soft with low traffic ability, 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 degrees, 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 traffic ability 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 degrees) 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 traffic ability, 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 degrees 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 degrees) 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 traffic ability, 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 has been identified. The U.S. Fish and Wildlife Service, National Wetlands Inventory, in Anchorage has developed a general wetlands classification. Considerable mapping of wetlands has been completed, some of which is available in a Geographic Information System database (see the following figure).

National Wetland Inventory
ESIC/USGS
Anchorage
786-7011

ESI HABITAT RANKING

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE (large rivers)
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		

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

Wetland status map figure here

C. BIOLOGICAL RESOURCES

1. Fish and Wildlife

The Cook Inlet Subarea is rich in biological resources. In addition to supporting a sizeable commercial fishing industry, subsistence users, hunters, and sport and personal-use fishermen. All take advantage of the Inlet's resources.

Several million waterfowl, seabirds and shorebirds are found in the area seasonally, with populations peaking during the spring and fall migrations. Areas at Chisik, Barren, Barwell, Pye and Chiswell Islands and Cape Resurrection support Major seabird nesting colonies. Critical waterfowl staging and nesting habitat are present throughout wetland areas bordering the Inlet. Significant populations of bald eagles also nest in coastal areas.

Large populations of harbor seals, Steller sea lions, sea otters and whales feed and reproduce in the Lower Inlet/Kenai Fjords area and harbor seals and belugas feed on salmon in the upper Inlet during the summer months. Several species of endangered whales migrate through the lower Cook Inlet and offshore areas. Major sea lion rookeries are found in the Barren and Pye Islands and several smaller haulouts are scattered throughout the area.

Dense concentrations of marine organisms are present, including all five species of Pacific salmon, herring, crab, shrimp, clams, mussels and a variety of intertidal organisms. Kachemak Bay is especially rich in marine life.

Several species of large terrestrial mammals are abundant. Brown and black bear, moose, Dall sheep and mountain goats are common in the region. In addition, herds of caribou are present in the Nelchina and Kenai Peninsula areas. Threatened and endangered species potentially present in the subarea are:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Occurrence</u>
Fin whale	<i>Balaenoptera physalus</i>	Seasonal, offshore
Humpback whale	<i>Megaptera novaenagliae</i>	Seasonal
Blue whale	<i>Balaenoptera musculus</i>	Offshore
Northern right whale	<i>Eubalaena glacialis</i>	Rare, offshore
Sei whale	<i>Balaenoptera borealis</i>	Offshore
Sperm whale	<i>Physeter macrocephalus</i>	Offshore
Steller sea lion	<i>Eumetopias jubatus</i>	Resident
American peregrine falcon	<i>Falco peregrinus anatum</i>	Suspected resident
Short-tailed albatross	<i>Diomedea albatrus</i>	Possible visitor
Spectacled eider	<i>Somateria fischeri</i>	
Aleutian Canada goose	<i>Branta canadensis leucopareia</i>	

Species of concern which may be found in the area are:

North American lynx	<i>Felis lynx canadensis</i>
Harlequin duck	<i>Histrionicus histrionicus</i>
Kittlitz's murrelet	<i>Brachyramphus brevirostris</i>
Marbled murrelet	<i>Brachyramphus marmoratus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Olive-sided flycatcher	<i>Contopus borealis</i>
Steller's eider	<i>Polysticta stelleri</i>

Salmon Escapement Estimates (1991) For Principal Waters in Cook Inlet

Water	Kings	Coho	Sockeye	Pinks	Chum
Amakdedori Creek			1,700	10,000	<500
Anchor River	2,000	4,000		100	
Anderson Beach			500		
Aurora Lagoon		<100		<1,000	
Barabara Creek				10,853	
Big Kamishak		<5,000	2,400	24,800	100
Bishop Creek		<1,000	1,000-5,000	<1,000	
Bradley River/Sheep Creek		<2,000		<500	
Brown's Peak				16,700	
Bruin Bay			100	117,400	7,000
Chenik Lake			10,189		
China Poot				7,100	
Cottonwood Creek		2,000			7,300
Crescent River			80,128		
Deep Creek	1,000	2,000		<1,000	
Dogfish Lagoon				9,322	3,108
Douglas Beach			75		1,500
Douglas River		5,000	900	10,000	10,000
English Bay		<1,000	8,000	5-10,000	
Fish Creek			46,910		
Fitz Creek					1-20,000
Fox Creek		3,000			
Fox River		1,400			
Humpy Creek		100		51,899	
Iniskin Bay		<500		1,000	8,400
Jakalof Creek				2,273	175
Kasilof River	3,500	1,000	166,990		

Water	Kings	Coho	Sockeye	Pinks	Chum
Kenai River	20,000	30,000	520,283		
Little Kamishak		<20	<50	11,700	12,300
McNeil River	<50		5,000		21,700
Mikfik Lake		1,000	8,000		200
Ninilchik River	1,400	1,000-2,000		<1,000	
Packers Creek			25,849		
Polly Creek		1,500			2,500
Port Chatham				23,776	1,334
Port Graham		200		28,966	1,064
Sadie Cove				1,043	1
Seldovia River		<100		34,000	<1,000
Stariski Creek	500	500		100	
Strike Creek					2,700
Sugarloaf Creek				450	1,800
Sunday Creek				17,700	2,000
Susitna River			149,402		
Swanson River		1,000-5,000	<1,000	<1,000	
Tutka Lagoon				16,820	112
Tutka Bay				103,100	
Tutka Bay Head				4,666	147
Ursus Cove Stream		1,500		1,000	6,900

2. Vegetation

There is one plant species of concern which may be found in the area:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Occurrence</u>
N/A	<i>Taraxacum carneocoloratum</i>	

3. Biologically Sensitive Areas

The Alaska Department of Fish and Game initialized a project in 1996 to map some 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 or sensitive areas that other organizations may identify.

The Alaska Department of Fish & Game will be publishing these maps under the title of "Most Environmentally Sensitive Areas along the Coast of Alaska." In July of 1998, the maps for MESAs in the Cook Inlet Subarea will be available in hard copy and digital format from:

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

Each of these sensitive area maps covers a 1:250,000 scale U.S. Geological Survey quadrangle map. A list of the sensitive areas in the Cook Inlet Subarea and a map referencing their location is provided below.

**Location Map for Oil Spill Contingency Planning
Most Environmentally Sensitive Areas for the Cook Inlet Subarea**

**Oil Spill Contingency Planning Most Environmentally Sensitive Areas
("Biological Hotspots")
along the Coast of the Cook Inlet Subarea**

43. Chenik Head to Silver Beach (Kamishak Bay)
 - salmon concentrations
 - herring spawning
 - seabird colonies (>1,800 birds)
 - harbor seal haulout
 - sea otter established population (500-1000 animals)
 - brown bear feeding concentrations
 - McNeil River State Wildlife Sanctuary and State Game Refuge

44. Redoubt Bay
 - salmon concentrations
 - waterfowl and shorebird spring and fall staging
 - harbor seal haulouts
 - brown bear feeding concentrations
 - Redoubt Bay State Critical Habitat Area

45. Kalgin Island
 - salmon concentrations
 - razor clam concentrations (south end)
 - waterfowl and shorebird spring and fall staging
 - harbor seal haulout
 - Kalgin Island State Critical Habitat Area

46. Trading Bay
 - salmon concentrations
 - waterfowl and shorebird spring and fall staging
 - harbor seal haulouts
 - brown bear feeding concentrations
 - Trading Bay State Game Refuge

47. Susitna Flats
 - salmon concentrations
 - waterfowl and shorebird spring and fall staging
 - harbor seal haulouts
 - belukha whale feeding concentrations
 - brown bear feeding concentrations
 - Susitna Flats State Game Refuge

48. Anchorage Flats
 - salmon concentrations
 - waterfowl and shorebird spring and fall staging
 - belukha whale feeding concentrations
 - Anchorage Coastal State Wildlife Refuge

49. Goose Bay
 - salmon concentrations
 - waterfowl and shorebird spring and fall staging
 - belukha whale feeding concentrations
 - Goose Bay State Game Refuge

50. Palmer Hay Flats
 - salmon concentrations
 - waterfowl and shorebird spring and fall staging
 - Palmer Hay Flats State Game Refuge

51. Mouth of the Kenai River¹
 - salmon concentrations
 - waterfowl and shorebirds spring and fall staging
 - belukha whale feeding concentrations
 - Kenai River Special Management Area

52. Clam Gulch
 - salmon concentrations
 - razor clam concentrations
 - waterfowl and shorebird spring staging
 - Clam Gulch State Critical Habitat Area

53. Kachemak Bay
 - salmon concentrations
 - herring spawning
 - razor clam concentrations
 - waterfowl and shorebird spring and fall staging and winter concentrations
 - seabird colonies (>18,000 birds)
 - harbor seal haulouts
 - sea otter concentrations
 - Kachemak Bay and Fox River Flats State Critical Habitat Areas

¹ Area heavily weighted by highly significant commercial and/or subsistence fisheries.

D. HUMAN RESOURCE USES

1. Fish Hatcheries and Associated Ocean Net Pens

Currently, seven fish hatcheries are in the Cook Inlet Region. All five species of Pacific salmon, steelhead and rainbow trout are produced.

The Cook Inlet Aquaculture Association (CIAA) owns the Eklutna, Trail Lakes, Crooked Creek, Port Graham, and Tutka Bay hatcheries. The State of Alaska (managed by the Alaska Department of Fish and Game) owns the remaining hatcheries. The CIAA also funds portions of the operations at the Big Lake Hatchery, which is owned and operated by the State. Hatchery locations are indicated below.

The hatchery activities most vulnerable to spill damage include fry rearing and release, terminal harvests and egg takes. However, since the timing of these activities varies by hatchery and species, it is difficult to generalize about the timing of activities, although spring and summer will tend to be the most critical periods. Hatchery managers should be contacted for specific information. Contact numbers are listed in the following table.

HATCHERIES OWNED BY THE STATE OF ALASKA

<u>Hatchery, City, Phone & Operator</u>	<u>Species</u>
Big Lake Hatchery Big Lake 892-6816 Operator: ADFG	sockeye and coho
Ft. Richardson Hatchery Ft. Richardson 428-1347/1348 Operator: ADFG	rainbow trout, steelhead, coho and chinook
Elmendorf Hatchery Anchorage 274-0065 Operator: ADFG	chinook and coho

HATCHERY OWNED BY COOK INLET AQUACULTURE ASSOCIATION

Eklutna Hatchery Soldotna 745-5692 Operator: CIAA	pink, chum and coho
Trail Lakes Hatchery Moose Pass 288-3606 Operator: CIAA	sockeye, chinook and coho
Crooked Creek Hatchery Kasilof 262-4159 Operator: CIAA	sockeye, coho, chinook and steelhead
Tutka Bay Hatchery Homer 235-8486 Operator: CIAA	pink, chum and sockeye
Port Graham Hatchery Port Graham Operator: CIAA	pink and sockeye

hatchery site map here

2. Aquaculture Sites

Commercial aquatic farms are concentrated in the Kachemak Bay area. These farms are primarily raising blue mussels. The number of applications for aquatic farm permits is on the rise and the number of farms may increase significantly in the near future. The locations of the currently (1993) permitted shellfish farms are indicated in the map and table below.

Aquatic farms are vulnerable to spill damage on a year-round basis since the shellfish are commonly suspended from anchored rafts and are continuously submerged in the water column. The timing of the harvest varies. For more information contact:

Aquaculture Coordinator
Alaska Department of Fish and Game
Juneau
465-6150

Don McKay
Alaska Department of Fish and Game
Anchorage
267-2279

Mike Ostasz
Alaska Department of Environmental Conservation
Anchorage
269-7638

Janetta Pritchard
Alaska Department of Natural Resources
Anchorage
269-8546

aquafarm map here

Aquatic Farm/Kachemak Bay

Map ID No.	ADL #	Permittee Name	Phone #	General Location	Latitude	Longitude	Species
1	226108	Poindexter, Al	235-1034	Port Chatham	59 ⁰ 12'45"	59 ⁰ 12'45"	Oyster, mussels
2	225573	Eason, Bob	235-7483	Kasitsna Bay	59 ⁰ 28'	151 ⁰ 33'	Oyster, mussels
3	225228	Perea, Richard	235-7101 (Doug Stuart)	Jakalof Bay	59 ⁰ 33'	151 ⁰ 31'	Oyster, mussels, little neck clams, scallops
4	225298	Jim Henning/ Banta, Joe	522-3808	Jakalof Bay	151 ⁰ 31'	59 ⁰ 27'	Oyster, mussels
5	225292	Bess, Tony/Cheryl	235-7133	Jakalof Bay	151 ⁰ 32'	59 ⁰ 27'	Oyster, mussels
6	225271	Paine, Luther/Brent	272-1029	Jakalof Bay	151 ⁰ 32'	59 ⁰ 27'	Oysters
7	225560	Fell, Don/Maryann	235-7133	Little Jakalof Bay	59 ⁰ 28'	151 ⁰ 31'	Oysters
8	225561	Seims, Gary	272-7156	Peterson Bay	59 ⁰ 34'25"	151 ⁰ 16'15"	Oyster, mussels
9	225547	Hartley, Bob/Diane	243-8934 or 235-4269	Peterson Bay	59 ⁰ 34'55"	151 ⁰ 15'	Oyster, mussels
10	225563	Bader, Ron/Marie	235-8644 or 345-1864	Peterson Bay	59 ⁰ 34'31"	151 ⁰ 15'30"	Oyster, mussels
11	225884	Miller, Brian	296-2246	Halibut Cove	59 ⁰ 35'15"	151 ⁰ 12'30"	Oyster, mussels
12	225871	Halpin, Bob	235-8937	Halibut Cove	59 ⁰ 35'15"	151 ⁰ 12'30"	Oyster, mussels
13	225564	Bradley, Mark	776-5498	Halibut Cove	59 ⁰ 36'30"	151 ⁰ 12'30"	Oyster, mussels
14	225552	Sidelinger, Kevin	296-2217 or 235-6494	Halibut Cove	59 ⁰ 35'06"	151 ⁰ 11'04"	Oyster, mussels
15	226098	Tomingas, Henery	345-6126	Thumb Cove	60 ⁰ 45"	149 ⁰ 18'30"	Oyster, mussels
16	225562	Gilbert, Ovr	561-4187 or 345-0829	Thumb Cove	59 ⁰ 59'48"	149 ⁰ 18'04"	Oyster, mussels

3. Cultural Resources

The Cook Inlet 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.

4. Subsistence and Personal Use Harvests

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the Cook Inlet Subarea. A subsistence economy may be defined as follows:

...an economy 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. Sharing of resources, kinship-based production, small scale technology and the dissemination of information about subsistence across generational lines are additional characteristics.

Prior to 1990, the State of Alaska made all decisions regarding the management of subsistence resources and harvest rights. In 1990, federal agencies became responsible for managing subsistence resources on federal lands and in federal waters. As a consequence, the number of agencies involved in managing subsistence resources and uses has increased. Regulations regarding subsistence harvest can also be expected to 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. Therefore, in the event of a spill, more extensive coordination will be required in order to address subsistence resources.

For more information contact:

James Fall or Ron Stanek
Subsistence Division
Alaska Department of Fish and Game
Anchorage
267-2353

The following communities and organizations should be contacted for specific information on the locations and seasons of subsistence harvests:

<u>Organization</u>	<u>Phone</u>
Alexander Creek, Inc.	243-5323
Caswell Native Association	345-6626
Chickaloon-Moose Creek Native Association	746-2548
Chugach Alaska Corporation	563-8866
Cook Inlet Regional Incorporated	274-8638
Eklutna Inc.	276-5701
English Bay Corporation	281-2220
Gold Creek-Susitna	733--2329
Kenaitze Tribe	283-3633
Knikatu Inc.	376-2845
Montana Creek Native Association	258-1093
Nanwalek Traditional Council (English Bay)	281-2228
Native Village of Tyonek	583-2201
Nikolaevsk Village	235-5983
Ninilchik Tribal Council	567-3313
Point Possession Inc.	563-1848
Port Graham Corporation	284-2212
Port Graham Village Council	284-2227
Salamatof Native Association	283-7864
Seldovia Native Association	234-7625
Seldovia Traditional Council	234-7625

COOK INLET PERSONAL USE HARVESTS

Personal use harvests in the Cook Inlet Subarea may potentially* occur as follows:

Shrimp fishery	all year
Dungeness crab fishery	June 16 - Oct. 31
King crab fishery	June 1 - March 15
Tanner crab fishery	all year
Clam fishery	all year
Herring fishery	
Northern and Central districts	April 1 - May 31
All other districts	all year
Smelt fishery	
In salt water	April 1 - May 31
In fresh water	April 1 - June 15
Salmon dip net fisheries	
Kenai River	By emergency order
Kasilof River	By emergency order
Fish Creek	By emergency order
China Poot Creek	July 1 - July 31
Coho salmon set net fisheries	
Southern district	August 16 - Sept 15
Portions of Central and Northern districts	Last three weekends of September
Sockeye salmon set net fishery	
Kasilof River	June 21 - closed by emergency order

***NOTE:** All personal use fisheries may be opened or closed by emergency order if the Alaska Department of Fish and Game ascertains that conditions warrant such actions. Also, harvest regulations and seasons can change from year to year. The dates given above indicate periods when fisheries are commonly, but not always, open.

5. Commercial Fishing

The following table provides seasonal information on the major commercial fisheries. It must be remembered that all fishing seasons are subject to emergency openings and closures and that most seasons are only open for a portion of the time specified in the regulations. Also, fishing regulations and seasons can change from year to year. Specific information on which species are currently being harvested may be obtained from the Alaska Department of Fish and Game's Division of Commercial Fisheries in Anchorage.

Maps of key commercial fishing areas are available in the previously referenced Alaska Department of Fish and Game publications, the Alaska Habitat Management Guide Reference Maps, Southcentral Region, Vol. 1 and 2 and the Alaska Habitat Management Guide, Southcentral Region Map Atlas.

Economically speaking, the salmon fishery is the most important commercial harvest activity. The Upper Cook Inlet sockeye drift net fishery generally brings the greatest cash return. Set net and pink salmon seine harvests are also economically significant. The Lower Cook Inlet herring sacroe and halibut fisheries are also productive.

The following groups can be contacted with requests for specific information on location and timing of fish as well as local current conditions. 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.

Alaska Setnetter's Association
Anchorage
345-5666

Cook Inlet Fishermen Fund
Ninilchik
567-3951

Kenai Peninsula Fishermen's Association
Soldotna
262-2492

United Cook Inlet Drift Association
Kenai
283-3600 / FAX: 283-3306

Alaska Shellfish Grower's Association
Anchorage
248-7709

Northern District Set Netter's Association of Cook Inlet
Anchorage
276-8222

COMMERCIAL FISHERIES TIMING COOK INLET REGION

Times are approximated	J	F	M	A	M	J	J	A	S	O	N	D
SALMON												
Seine												
Drift Net												
Set Net												
HERRING												
AAC Roe												
Bait												
HALIBUT												
GROUNDFISH												
CRAB												
Dungeness												
SHRIMP												
CLAMS												

6. Sport Fishing and Hunting

Sport Hunting and fishing activities are significant throughout the Cook Inlet region.

TO BE DEVELOPED

7. Recreational Sites and Facilities

a. Parks, Picnic Areas, and Campgrounds

STATE: Name & Nearest Community

Chugach State Park, Anchorage
Anchor River State Recreation Area, Anchor Point
Anchor River State Recreation Site, Anchor Point
Stariski State Recreation Site, Anchor Point
Big Lake North State Recreation Site, Big Lake
Big Lake South State Recreation Site, Big Lake
Rocky Lake State Recreation Site, Big Lake
Kachemak Bay State Park and Wilderness Park, Homer
Bernice Lake State Recreation Site, Kenai
Captain Cook State Recreation Area, Kenai
Deep Creek State Recreation Area, Ninilchik
Ninilchik State Recreation Area, Ninilchik
Bonnie Lake State Recreation Site, Palmer
Finger Lake State Recreation Site, Palmer
Kepler-Bradley Lakes State Recreation Area, Palmer
King Mountain State Recreation Site, Palmer
Long Lake State Recreation Site, Palmer
Matanuska Glacier State Recreation Site, Palmer
Moose Creek State Recreation Site, Palmer
Summit Lake State Recreation Site, Palmer
Wolf Lake State Recreation Site, Palmer
Caines Head State Recreation Area, Seward
Driftwood Bay State Marine Park, Seward
Horsehoe Bay State Marine Park, Seward
Safety Cove State Marine Park, Seward
Sandspit Point State Marine Park, Seward
Sunny Cove State Marine Park, Seward
Clam Gulch State Recreation Area, Soldotna
Crooked Creek State Recreation Site, Soldotna
Johnson Lake State Recreation Area, Soldotna
Kasilof River State Recreation Site, Soldotna
Kenai River Special Management Area, Sterling
Denali State Park, Talkeetna
Montana Creek State Recreation Site, Talkeetna
Independence Mine State Historical Park, Wasilla
Little Susitna River Public Use Facility, Wasilla
Nancy Lake State Recreation Area, Willow
Nancy Lake State Recreation Site, Willow
Willow Creek State Recreation Area, Willow
McNeil River State Game Sanctuary Campground

FEDERAL: Name & Nearest Community

(Also see the list below of sites for Kenai Fjords National Park)

Hidden Lake Campground, (FWS) Cooper Landing
Lower Skilak Campground, (FWS) Cooper Landing
Quartz Creek Campground, (USFS) Cooper Landing
Russian River Campground, (USFS) Cooper Landing
Russian River Ferry Campground, (FWS) Cooper Landing
Upper Skilak Lake Campground, (FWS) Cooper Landing
Begich Boggs Visitor Center, (USFS) Girdwood
Bertha Creek Campground, (USFS) Girdwood
Black Bear Campground, (USFS) Girdwood
Granite Creek Campground, (USFS) Girdwood
Tenderfoot Campground, (USFS) Girdwood
Williwaw Campground, (USFS) Girdwood
Tern Lake Campground, (USFS) Moose Pass
Trail River, (USFS) Moose Pass
Cooper Creek Campground, (USFS) Seward
Crescent Creek Campground, (USFS) Seward
Exit Glacier Campground/Visitor Center, (NPS) Seward
Kenai Fjords Visitor Center, (NPS) Seward
Porcupine Campground, (USFS) Seward
Primrose Campground, (USFS) Seward
Ptarmigan Campground, (USFS) Seward
Schooner Bend Campground, (USFS) Seward
Jim's Landing Campground, (FWS) Soldotna
Kenail Wildlife Refuge Visitor Center, (FWS) Soldotna
Swanson River Campground, (FWS) Sterling
Watson Lake Campground, (FWS) Sterling

b. Public Use Cabins

(Also see the list below of sites for Kenai Fjords National Park)

TO BE DEVELOPED

c. Public Anchorages and Moorings

(Also see the list below of sites for Kenai Fjords National Park)

Mouth of the Kenai River
Mouth of the Kasilof River
Mouth of Deep Creek
Kachemak Bay behind the spit
Halibut Cove
Sadie Cove
Tutka Bay
Kasitsna Bay
Jakolof Bay

KENAI FJORDS NATIONAL PARK: SENSITIVE RECREATION SITES DATA

Site Name	Use	Latitude	Longitude
-----------	-----	----------	-----------

Seward Visitor Center	Visitor Contact	60°07'05"	149°26'15"
Aialik Bay Ranger Station	Visitor Contact	59°51'00"	149°39'30"
Nuka Bay Ranger Station	Visitor Contact	59°37'40"	150°19'15"
Aialik Bay Public Use Cabin	Public Use Cabin	59°53'15"	149°39'15"
Holgate Public Use Cabin	Public Use Cabin	59°49'50"	149°46'15"
Delight Public Use Cabin	Public Use Cabin	59°32'43"	150°20'09"
North Arm Public Use Cabin	Public Use Cabin	59°33'45"	150°31'20"
Bulldog Cove	Campsite	59°53'55"	149°34'15"
North Porcupine	Landing	59°52'32"	149°34'59"
Porcupine Cove	Campsite	59°51'40"	149°35'05"
Three Hole Point	Campsite	59°46'10"	149°38'45"
Bear Cove	Campsite	59°47'30"	149°36'50"
South Tooth Cove	Campsite	59°48'29"	149°38'31"
Tooth Cove	Campsite	59°49'05"	149°38'35"
North Tooth Cove	Campsite	59°50'00"	149°38'20"
South Coleman Bay	Campsite	59°51'18"	149°39'28"
Abra Cove	Campsite	59°53'50"	149°38'45"
Aialik Head	Landing	59°56'40"	149°40'59"
Pederson Lagoon Spit	Campsite	59°49'50"	149°48'00"
Quicksand Cove	Campsite	59°47'15"	149°46'05"
McMullen Cove	Campsite	59°45'50"	149°45'55"
Verdant Cove	Campsite	59°42'00"	149°44'00"
NW East Moraine	Campsite	59°44'35"	149°52'10"
Northeastern Glacier	Campsite	59°47'30"	150°01'00"
Redstone Glacier	Campsite	59°49'00"	150°02'00"
NW Otter Cove North	Campsite	59°43'50"	149°58'10"
NW Otter Cove South	Campsite	59°41'10"	149°56'40"
Paguna East	Landing	59°38'15"	150°02'28"
Paguna Head	Landing	59°41'32"	150°07'58"
Paguna West	Landing	59°39'27"	150°06'20"
Taroka East	Landing	59°37'22"	150°08'15"
Taroka West	Landing	59°37'10"	150°09'45"
Cloudy Mountain Spit	Landing	59°35'20"	150°06'40"
Thunder Bay	Landing	59°34'48"	150°10'17"
Chance Cove	Landing	59°34'48"	150°18'45"
Delight Spit	Campsite	59°34'48"	150°20'39"
South Desire Creek	Landing	59°34'48"	150°18'31"
Site Name	Use	Latitude	Longitude
Desire Creek	Campsite	59°34'50"	150°18'16"

Delusion Creek	Campsite	59°38'25"	150°16'29"
Upper McCarthy Fjord	Campsite	59°44'17"	150°12'50"
Dinglestadt Glacier	Campsite	59°39'13"	150°18'16"
James Lagoon	Campsite	59°33'39"	150°24'20"
Ariadne Cove	Campsite	59°28'27"	150°30'14"
Surprise Bay South	Landing	59°29'15"	150°29'15"
Palisade Lagoon	Campsite	59°31'45"	150°28'33"
Surprise Bay West	Campsite	59°30'20"	150°29'40"
Quartz Bay	Campsite	59°31'17"	150°31'07"
North Arm Cabin Site	Landing	59°33'45"	150°31'20"
North Arm Storm Mountain	Landing	59°35'55"	150°32'38"
Shelter Cove	Campsite	59°30'20"	150°38'09"
Shelter Cove South	Landing	59°30'00"	150°35'35"
Yalik Bay	Campsite	59°28'20"	150°39'12"
Agnes Cove	Anchorage	59°46'15"	149°34'00"
Paradise Cove	Anchorage	59°45'40"	149°35'00"
Three Hole Bay	Anchorage	59°47'00"	149°36'30"
Coleman Bay	Anchorage	59°51'45"	149°38'00"
Quicksand Cove	Anchorage	59°47'00"	149°46'30"
Verdant Cove	Anchorage	59°42'00"	149°44'50"
Northwestern Lagoon	Anchorage	59°39'38"	149°45'55"
Thunder Bay	Anchorage	59°39'08"	149°48'49"
McArthur Pass North Bay	Anchorage	59°41'50"	149°46'50"
Moonlight Bay	Anchorage	59°46'30"	149°56'45"
Midnight Cove	Anchorage	59°30'45"	150°11'00"
Desire Creek	Anchorage	59°38'32"	150°21'10"
Surprise Bay	Anchorage	59°29'15"	150°29'15"
Quartz Bay	Anchorage	59°31'00"	150°31'30"
Pilot Harbor	Anchorage	59°35'00"	150°30'00"
Shelter Cove	Anchorage	59°31'20"	150°38'09"
Fire Cove	Anchorage	59°39'38"	149°45'55"
Taz Basin	Anchorage	59°39'08"	149°48'49"
Crater Bay	Anchorage	59°41'50"	149°46'50"

Latitude given in degree/minute/second North and Longitude given in degree/minute/second West. Park Contact: Jeff Troutman, Chief, Resource Management Division, Kenai Fjords National Park, 907-224-3175

8. Commercial Tourism

TO BE DEVELOPED

9. Marinas and Ports

(See the Resources Section)

10. Fish Processing

The companies listed below are canneries and processors with permits issued by the Alaska Department of Environmental Conservation.

Anchorage

Alaska Live Crab Co.
243-0156

Alaska Sasuage Co.
562-3636

10th and M Seafoods
272-3474

Alaska Smoked Salmon Int'l.
349-8234

Anchorage Cold Storage
264-0231

Aqua Tech
279-0752

Arctic Seafoods
561-5350

Central Seafoods Co.
562-0705

Favco, Inc.
278-1525

French Gourmet of Alaska, Inc.
No number

Eagle River

Sagaya Corp.
561-5173

Specialty Fish Products
563-5031

Teddy's Tasty Meats
562-2320

Toho America
248-6678

Trapper's Creek, Inc.
561-8088

Yamaya Seafoods
563-5588

Great Northern Sea Products, Inc.
522-4182

Great Northern Sea Products, Inc.
272-4335

North Alaska Fisheries
561-2671

Sahalee of Alaska, Inc.
349-4151

Alaskan Gourmet, Inc.
563-3752

Icy Bay Seafoods
696-2552

Mike's Quality Meats
696-1888

Wayward Wind Seafoods
694-2413

Halibut Cove

Saltry, Inc.
296-2223

Chenik F/V
235-6494

Homer

Alaska Custom Seafoods, Inc
235-7512

Coal Point Trading Co.
235-3877

Dragnet Fisheries
235-6023

HIS Catch Value Added Products
235-7101

Kachemak Fish Packers
235-5493

Olga Dawn at Katch Seafoods
235-4335

Sahalee of Alaska, Inc.
349-4151

Samer-I Seafoods
235-6767

Seward Fisheries, Inc.
238-8107

Katch Seafoods, Inc.
235-6241

Bay Blue Mussel Farm

Kenai

Dragnet Fisheries - Kenai

235-2165

Northern Lights Oyster Co.
235-7133

Kachemak Bay Oyster Co.
235-6210

Lion of Judah F/V
235-7101

Indian

Indian Valley Meats, Inc.
653-7511

Kasilof

Ed's Kasilof Seafoods, Inc.
262-5116

R&J Seafood
283-9246

Carlson Seafoods
262-1746

Cook Inlet Processing-Kasilof
776-8174

Inlet Salomon/Inlet Fisheries
262-4730

Trans-Aqua International, Inc.
283-7322

Kenai

Alaska Choice Seafood
563-4666

The Fish Site
248-9502

Kenai Custom Seafood
283-9109

Pacific Eagle Seafoods
262-3935
283-4069

Fishhawk Fisheries of Alaska
283-3626

Inlet Fisheries, Inc.
283-9275

Pacific Star Seafoods, Inc.
283-7787

Royal Pacific Fisheries, Inc.
283-9370

Salamatof Seafoods, Inc.
283-7000

Wards Cove Packing, Co.
283-9278

Select Seafoods of Alaska
776-5498

Jaws F/V
262-2778

Nikiski

Cook Inlet Processing - Nikiski
776-8174

Pacific Alaska Seafoods, Inc.
776-8050

Ninilchik

Deep Creek Custom Packing, Inc.
567-3980

Seldovia

Eagle Rock Sea Farms
234-7498

Seward

J-Dock Fish Co.
224-7272
Smoke'n Alaska Seafoods
224-7180

Seward Fisheries, Inc./Icicle Seafoods
224-3381

Pristine Products
772-2628

Soldotna

Eagle Smokehouse
262-7007

Echo Lake Lockers
262-4155

Peninsula Processors
262-4513

Tustemena Smoke House
260-3401

Echo Lake Gourmet Meats
283-9456

Resurrecton Bay Seafoods
224-3366

Wasilla

Colony Gourmet Kitchen
373-1144

11. Logging Facilities

TO BE DEVELOPED

12. Water Intake/Use

See Attachment One for a list of water intake/use permits generated from a database maintained by the Alaska Department of Environmental Conservation.

E. WIND, ICE AND CURRENT CONDITIONS

The following information gives an overview of wind, tide and current conditions for Cook Inlet (additional information is provided in the Background Section). 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. In addition, if the user obtains a current edition of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) tide current tables for the Pacific Coast of North America, it will be possible to predict the times of ebb and flood tides for several points within the Cook Inlet area.

1. Alaska Current

As indicated in the figure below, the Alaska Current circulates in a counter-clockwise gyre in the Gulf of Alaska. Accordingly, spills along the outer Kenai coast can be expected to travel in a westerly direction. A large mass of water is pushed through Kennedy Entrance and circulates through the Lower Inlet, as evidenced by the path taken by the T/V *Exxon Valdez* spill. The net outflow of water from the Inlet exits along the west side into Shelikof Strait. The effects of the Alaska Current on net drift can be altered by tidal currents, winds and freshwater runoff.

2. Tidal Currents and Rips

Cook Inlet has swift tidal currents and tidal ranges of up to 37 feet. The resulting circulation patterns within the Inlet are highly complex. As indicated in the figure below, surface waters will generally travel up the east side of the Inlet with the flood tide and down the west side with the ebb tide. Spills can be spread several miles up and down the Inlet on the ebb and flood tides. Tide rips also play a key role in the transport of marine spills, as evidenced during the T/V *Glacier Bay* and T/V *Exxon Valdez* spill incidents.

The following figure indicates major tide rips in lower Cook Inlet. Observations indicate that oil, along with considerable debris, accumulate in the rips. Oil caught in the rips also was observed to submerge and then re-surface several miles away.

Though tidal currents are only one variable in the determination of net drift, the unusual strength of the currents within the Inlet often makes them the primary factor in spill transport until and unless the spill enters the open ocean. The fact that tidal currents are highly complex and imperfectly understood makes trajectory analysis difficult in many cases.

3. Winds

Winter winds tend to be from the north and northeast and summer winds are usually out of the south and southwest. Mean winter wind speeds range from 4 to 40 knots while summer wind speeds average from 4 to 10 knots. Severe winter storms are common in the area, with winds up to 100 knots occurring over open water.

4. Spill Trajectory

The trajectory of a spill is the result of the interaction of the forces described above. This interaction is often complex and difficult to predict. The NOAA is capable of generating sophisticated spill trajectory models and has had considerable experience in this area. Requests for this service should be directed to:

John Whitney
Scientific Support Coordinator
National Oceanic and Atmospheric Administration
Ocean Assessments Division
510 L Street, #100
Anchorage, AK 99501

working hours: 907/271-3593 or after hours (pager): 907/275-3134

5. Ice

Sea ice is a common occurrence between November and April, with maximum icing in early February. Shorefast ice commonly occurs in the bays along the west side of the Inlet. The upper Inlet, especially around Knik and Turnagain Arm tidal flats, has dense concentrations of pack ice. Severe icing often occurs as far south as Drift River. During breakup, large chunks of river ice and sea ice can be swept through the Inlet. These ice conditions, in addition to strong currents and high winds, can present extreme navigational hazards as well as hamper or prevent spill cleanup operations. Moving ice can also be forced between tankers and the loading dock, putting a great deal of strain on mooring lines.

6. Data Sources

Hood and Zimmerman (eds). 1986. Gulf of Alaska: Physical Environment and Biological Resource. (Gulf of Alaska net surface currents)

LaBelle, J.C. and J.L. Wise. 1983. Alaska Marine Ice Atlas.

National Climatic Data Center (NDC) and Arctic Environmental Information and Data Center (AEIDC). 1988. Climatic Atlas, Volume I: Gulf of Alaska. (wind roses, tidal range data and map)

U.S. Department of Commerce (NOAA). 1989. Tide Current Tables 1990: Pacific Coast of North America and Asia. (tidal current data and information)

insert current figure here

insert current figure here

insert current figure here

SENSITIVE AREAS: PART FIVE - SIGNIFICANT DATA GAPS AND INFORMATION NEEDS

- (a) Detailed mapping and verification of non-developed recreation sites in the region: their location, type/degree of use, and susceptibility to spill injury.
- (b) Information about upland habitat types, their sensitivity to spills, and their capability to be protected and/or cleaned.
- (c) Information about sport hunting and fishing.
- (d) Locations of mussel beds.
- (e) Information about commercial tourism.
- (f) Locations of tidewater log transfer sites.
- (g) Updates to salmon escapement information.
- (h) Sensitivity information about caribou.
- (i) Develop sensitivity information and categories for human uses (e.g., non-consumptive, unique fishing sites, timber and mineral uses)

SENSITIVE AREAS: PART SIX - KEY REFERENCES

The following documents will provide information on critical fish and wildlife concentrations and other resource data. 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 these documents, and may have extra copies of volumes 1 and 2 of the Alaska Habitat Management Guide, Southcentral Region. The ADF&G and Research Planning Institute color atlases, however, are in short supply and color copies may have to be made. Also, copies of the starred documents may be obtained for a fee from:

Anchorage Reprographics Center, Inc.
302 E. Fireweed Lane
Anchorage, AK
272-5571 (phone)
277-5779 (FAX)

Documents:

Alaska Department of Fish and Game. 1985. Alaska Habitat Management Guide, Southwest Region, Vol. 1 and 2. (Description of life histories, habitat requirement, distribution, abundance and human uses of fish and wildlife).

Alaska Department of Fish and Game. 1985. Alaska Habitat Management Guide, Southwest Region Map Atlas. (1:1,000,000 scale color maps of fish and wildlife distribution).

*Alaska Department of Fish and Game. 1985. Alaska Habitat Management Guide Reference Maps, southwest Region, Vol. 1-4. (1:250,000 scale maps of fish and wildlife distribution and human use).

*Alaska Department of Fish and Game. 1994. An Atlas to the Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes, Southwest Region. (Maps of locations of anadromous streams and species known to utilize them).

Alaska Department of Fish and Game. 1991. State of Alaska Refuges, Critical Habitat Areas, and Sanctuaries. (Maps of these specially designated state lands).

Cook Inlet Spill Prevention and Response, Inc. 1993. Technical Manual.

Environmental Protection Agency and National Oceanic and Atmospheric Administration. 1994. Environmental Sensitivity Mapping for Developing and Evaluating Spill Response Plans. Working Paper Review Draft.

Michel, J. and J. Dahlin. 1993. Guidelines for Developing Digital Environmental Sensitivity Index Atlases and Databases. National Oceanic and Atmospheric Administration.

Michel, J. and S. Christopherson and F. Whipple. 1994. Mechanical Protection Guidelines. National Oceanic and Atmospheric Administration and U.S. Coast Guard.

Minerals Management Service. 1992. Shipwrecks of the Alaskan Shelf and Shore.

Minerals Management Service. 1989. Offshore Scientific and Technical Publications.

Minerals Management Service. 1990. Outer Continental Shelf Environmental Assessment Program Comprehensive Bibliography.

Research Planning Institute, Inc. 1985. Sensitivity of Coastal Environments and Wildlife to Spilled Oil. Cook Inlet/Kenai Peninsula, Alaska. An Atlas of Coastal Resources. (Color Atlas)

Research Planning Institute, Inc. Cook Inlet Sensitive Areas. (four seasonal summary maps)

U.S. Department of Commerce (NOAA). (Current Year's Edition). Tidal Current Tables: Pacific Coast of North America and Asia.

Geographic Information System (GIS) Databases:

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

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

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

U.S. Forest Service: Zane Cornett, Anchorage, 271-2750

National Oceanic and Atmospheric Administration: John Whitney, Anchorage, 271-3593

(This page intentionally blank)

SENSITIVE AREAS: ATTACHMENT ONE

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Water Intake/Use

The following table was generated by the Alaska Department of Environmental Conservation, Drinking Water and Water Treatment Section. They include 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>
-----------------------	-----------------	---------------------	---------------

Available on request
