

ALEUTIANS SUBAREA CONTINGENCY PLAN

SENSITIVE AREAS SECTION

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SENSITIVE AREAS: INTRODUCTION

This section is intended for use by the On-Scene Coordinators (OSC) 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 this subarea. This information is specific to this 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 resources trustees may be conducting natural resource damage assessment (NRDA) activities in conjunction with response activities. Information regarding NRDA activities should be directed to the natural resources trustees or to their appointed NRDA Liaison.

Often, the most detailed, up-to-date biological and resource use information will come from people who live and work in the impacted area. Residents from the local community are often knowledgeable sources for information related to local oceanographic or weather conditions that may be beneficial during a response.

The Alaska Regional Response Team (ARRT) has adopted several documents (see the *Alaska Federal/State Contingency Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan)*) that address decision making to help protect sensitive areas and resources. These documents (and their locations) include:

- *ARRT Oil Dispersant Guidelines for Alaska (see Unified Plan, Annex F, Appendix 1)*
- *In Situ Burning Guidelines for Alaska (see Unified Plan, Annex F, Appendix 2)*
- *Wildlife Protection Guidelines for Alaska (see Unified Plan, Annex G, Appendix 1)*
- *Alaska Implementation Guidelines for Federal OSCs for the Programmatic Agreement on Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan Protection of Historic Properties (see Unified Plan, Annex M)*

In addition, Federal OSCs in Alaska are working in cooperation with the U.S. Department of the Interior and the National Marine Fisheries Service (NMFS) to ensure response activities are conducted meet Endangered Species Act requirements, in accordance with the 2001 *Inter-Agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act National Oil and Hazardous Substances Pollution Contingency Plan* (see *Unified Plan, Annex K*).

In addition, Annex N of the *Unified Plan* includes *Shoreline Cleanup and Assessment Guidelines*, which provide helpful information on cleanup options by shoreline type.

Section G of this Subarea Contingency Plan contains site-specific Geographic Response Strategies (GRSs) for use by responders in protecting key sensitive areas.

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. The information in industry plans should be consistent with the subarea contingency 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 fieldwork. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies. 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 about every possible resource at risk is included. Future updates to this document will continue to add information relevant to response activities.

Many of the maps presented in this section are available online at:
www.asgdc.alaska.gov/maps/cplans/subareas.html.

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



Scientific Support Coordinator
NOAA Emergency Response Division
49000 Army Guard Road
G Wind, Room 216
JBER, Alaska 99505
Phone: 428-4143



Alaska Department of Fish and Game
Division of Habitat
333 Raspberry Road
Anchorage, Alaska 99518
Phone: 267-2342
Fax: 267-2499

SENSITIVE AREAS: PART ONE – INFORMATION SOURCES

AGENCY	RESOURCES	POINT OF CONTACT
Fish and Wildlife and Habitat Resources		
Alaska Department of Fish and Game	Fish, shellfish, birds, terrestrial mammals, marine mammals	Division of Habitat Anchorage - 267-2342
U.S. Department of the Interior	Migratory birds, sea otters, polar bears, walrus, endangered species, anadromous fish in freshwater, bald eagles, wetlands	Office of Environmental Policy & Compliance Anchorage - 271-5011
U.S. Department of Commerce, National Marine Fisheries Service	Sea lions, seals, whales, endangered marine species and listed anadromous fish in marine waters	Protected Resources Division Juneau - 586-7235
U.S. Department of Commerce, National Marine Fisheries Service	Essential fish habitat	Habitat Conservation Division Juneau - 586-7636
U.S. Department of Commerce, National Marine Fisheries Service	Effects of oil on fisheries resources, hydrocarbon chemistry, dispersants	Alaska Fisheries Science Center Auke Bay Laboratory - 789-6000
University of Alaska	Rare and endangered plants	Alaska Natural Heritage Program Anchorage - 257-2785
Cultural and Archaeological Sites		
Alaska Department of Natural Resources	Historic sites, archaeological sites, national register sites	Alaska Office of History and Archaeology Anchorage - 269-8721
U.S. Department of the Interior	Archaeological/historical sites in park and wildlife refuge system units, public lands, Native allotments/trust lands; sunken vessels	Office of Environmental Policy & Compliance Anchorage - 271-5011
Shoreline Types		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	Shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage - 428-4160 or 428-4131
Land Ownership and Classifications/Designations		
Alaska Department of Natural Resources	State lands, state parks and recreation areas, state forests, tidelands	Division of Mining, Land, and Water Anchorage - 269-8565
Alaska Department of Fish and Game	State game refuges, state critical habitats	Division of Habitat Anchorage - 267-2342
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	Office of Environmental Policy & Compliance Anchorage - 271-5011
U.S. Department of Defense	Military installations and reservations	Alaska Command Anchorage - 552-3944
Local Governments: –Aleutians East Borough –Aleutians West Coastal Resource Service Area	Municipal and private lands, and rights-of-way Coastal program special areas, plans, policies	For the current local government and tribal contact information, go to <i>B. Resources Section, Part One Community Profiles</i>
Commercial Harvest		
Alaska Department of Fish and Game	Fishing permits, seasons	Division of Commercial Fisheries Kodiak - 486-1825

AGENCY	RESOURCES	POINT OF CONTACT
Alaska Department of Natural Resources	Tideland leases	Division of Mining, Land, and Water Anchorage - 269-8565
Alaska Department of Environmental Conservation	Seafood processing	Division of Environmental Health Anchorage - 269-7644
U.S. Department of Commerce National Marine Fisheries Service	Fishing permits, seasons	Protected Resources Division Anchorage - 271-5006
Subsistence, Personal, and Sport Uses		
Alaska Department of Fish and Game	Subsistence and personal uses statewide and navigable waters, sport hunting and fishing	Division of Sport Fish Kodiak - 486-1880
U.S. Department of the Interior	Subsistence uses on Federal lands and reserved waters; subsistence uses of: sea otters and migratory birds	Office of Environmental Policy & Compliance Anchorage - 271-5011
U.S. Department of Commerce	Subsistence use of: whales, porpoises, seals, sea lions	Protected Resources Division Anchorage - 271-5006
Recreation and Tourism Uses		
Alaska Department of Natural Resources	State parks and recreation areas, anchorages, boat launches, campgrounds, State public lands	Division of Parks and Outdoor Recreation Fairbanks - 451-2695
Alaska Department of Fish and Game	Sport hunting and fishing	Division of Wildlife Conservation Kodiak - 486-1880
Alaska Department of Commerce, Community & Economic Development	Seasonal events and activities, travel, outdoor activities, local visitor bureaus, tourism industries	Alaska Office of Tourism Development Juneau - 465-5478
U.S. Department of the Interior	Recreation uses in park and wildlife refuge system units and Federal public lands	Office of Environmental Policy & Compliance Anchorage - 271-5011
WATER INTAKE AND USE FACILITIES		
Alaska Department of Environmental Conservation	Public drinking water wells, treatment, and storage, fish processing facilities	Division of Water Anchorage - 269-7601
Alaska Department of Fish and Game	Hatcheries, ocean net pens and release sites, aquaculture	Division of Habitat Anchorage - 267-2342
Alaska Department of Natural Resources	Tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Juneau - 465-3400
U.S. Coast Guard	Marinas and docks, mooring buoys	Sector Anchorage 428-4200

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 prioritizes resources into 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 OSCs for protecting cultural resources is contained in *Unified Plan, Annex M*.

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 (number potentially killed in relation to abundance)
- Animal displacement and sensitivity to displacement
- Aesthetic degradation
- Habitat availability and rarity
- Sub-lethal 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 re-colonizing 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 or Endangered Species Habitats:
 - Sea Otter Concentration Areas (> 20) and General Distribution
 - Steller Sea Lion Rookeries or Haul-outs
 - Steller's eiders overwintering sites
 - North Pacific Right Whale Critical Habitat
- Geomorphology - Coastal Habitat Types:
 - Marshes
 - Eelgrass Beds
 - Sheltered Tidal Flats
 - Sheltered Rocky Shores
- Geomorphology - Upland Habitat Types:
 - Streams and Lakes
 - Riparian Habitats
- Harbor Seal Haul-out Areas (> 10)

- Northern Fur Seal Rookeries
- Walrus Haul-out/Concentration Areas
- Caribou Calving and Insect Relief Areas
- Seabird Colonies (> 5,000)
- Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas
- Eagle Nest Sites
- Large Anadromous Fish Streams:
 - > 500 Chinook salmon
 - > 5,000 sockeye salmon
 - > 2,500 coho salmon
 - > 25,000 pink salmon
 - > 15,000 chum salmon
- Subsistence Harvest Areas
- High Commercial Use Areas
- High Recreational Use Areas
- Land Management Designations:
 - Federal:
 - Wilderness
 - Wild and Scenic Rivers
 - National Natural Landmarks
 - State:
 - Refuges (Izembek State Refuge)
 - Sanctuaries
 - Critical Habitat Areas (Port Moller and Port Heiden Critical Habitats)
- Cultural Resources/Archaeological Sites:
 - National Historic Landmarks
 - Burial Sites
 - National Register Eligible Village Sites
 - Intertidal Sites

C. AREAS OF MODERATE CONCERN

- Species of Concern Habitats (Potential Threatened or Endangered)
- Geomorphology - Coastal Habitat Types:
 - Gravel Beaches
 - Mixed Sand and Gravel Beaches
 - Exposed Tidal Flats
 - RIPRAP
 - Coarse Grained Sand Beaches
- Sea Otter General Distribution Areas (<20)
- Foraging/Transit Habitat for Minke Whales, Killer Whales, Dall's Porpoise, and Harbor Porpoise
- Harbor Seal Haul-out Areas (5-10)
- Northern Fur Seal Offshore Concentration Areas
- Seabird Colonies (1, 000 – 5,000)
- Waterfowl and Shorebird Nesting or Molting Concentration Areas
- Bear Concentration Areas
- Anadromous Fish Streams:

- 100-500 Chinook salmon
- 1,000-5,000 sockeye salmon
- 500-2,500 coho salmon
- 5,000-25,000 pink salmon
- 5,000-15,000 chum salmon
- Moderately Sized Freshwater Fish Systems
- Clam Beds
- Caribou Migration Routes
- Other Subsistence Harvest Areas
- Other Commercial Harvest Areas
- Other Recreational Use Areas
- Land Management Designations:
 - Federal: National Wildlife Refuges (Izembek and Alaska Maritime)
 - State: State Parks
- Native Allotments
- Cultural Resources/Archaeological Sites:
 - National Register Eligible Sites (Other Than Village 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
- Harbor Seal Haulouts (< 5)
- Walrus General Distribution Areas
- Seabird Colonies (< 1,000)
- Waterfowl and Shorebird General Distribution Areas
- Anadromous Fish Streams:
 - < 100 Chinook salmon
 - < 1,000 sockeye salmon
 - < 500 coho salmon
 - < 5,000 pink salmon
 - < 5,000 chum salmon
- General Freshwater Fish Habitats
- Land Management Designations:
 - Federal: Public Lands
 - State: General Public Lands
- Other Cultural Resources

E. AREAS OF CONCERN FOR INVASIVE RATS

All islands within the scope of this plan were originally rat-free, but accidental introductions have had major adverse impacts to island wildlife, birds, and humans which can last much longer than the effects of a spill. Shipwrecks and the well-intentioned transport of spill response material can be a primary means of introducing cargo-riding rats to pristine settings which can forever alter islands. Responders

should be aware of this possibility and be prepared to take defensive measures to prevent accidental introductions. All of the islands within the Aleutians subarea are rat-free, with the exception of:

- Attu
- Shemya
- Kiska
- Amchitka
- Adak
- Great Sitkin
- Kagalaska
- Atka
- Unalaska
- Sedanka
- Amaknak
- Akutan

F. AREAS OF LOCAL CONCERN

The Aleutians East Borough, has identified several Special Use Areas based on unique, environmentally vulnerable, or commercially important fish and wildlife resources and habitats (see the following maps). Commercial fishing is a key use in many of these areas. These include:

Designation Area	Reason for Designation
Port Moller/Herendeen Bay and Bear River Special Use Area	Five species of salmon are found in this area; sockeye and chum are the most important. Large numbers of herring and other forage fish pass through the area, and this is a major herring spawning area. Red king and Dungeness crab are in the area, and this is an important nursery for halibut and sole. The area contains several seabird colonies. Shorebirds and waterfowl migrate through the area in spring and fall. Harbor seals haul-out in the area, as do walrus on Walrus Island. Sea otters are present. Gray whales migrate through the area.
Nelson Lagoon Special Use Area	Significant numbers of Chinook, coho, chum and sockeye salmon are found here. Dungeness and red king crab are here, and clams are harvested for subsistence use. A large seabird colony is on the Kudobin Island. This is a major staging area for fall shorebird migration, and for waterfowl migration staging and feeding. Harbor seals, sea otters and gray whales are found here.
Izembek Lagoon Special Use Area	This large estuarine system supports one of the largest eelgrass beds in the world. This is a major chum and sockeye salmon area and a rearing area for red king crab. This is a major staging, feeding, molting, nesting and wintering area for shorebirds and waterfowl. The world's population of black brant stage here, as do most of the emperor geese, cackling geese, and female Steller's eider. This is a key haul-out and breeding area for harbor seals. Sea otters frequent the area.
Bechevin Bay Special Use Area	The area contains king crab spawning grounds and sees substantial use by waterfowl and shorebirds for migration staging, feeding molting nesting and wintering. This is a key haul-out and breeding area for harbor seals. Sea otters frequent the area. The area is also important for spring feeding by brown bears.
Unimak Pass Special Use Area	This area sees large numbers of adult salmon pass through as they migrate to streams in Bristol Bay and Western Alaska. Juvenile salmon migrate through the area to the north Pacific. The area is also a major migration route for ducks,

Designation Area	Reason for Designation
	geese, seabirds and marine birds. Humpback, fin, and gray whales, as well as northern fur seals use the area in spring and fall.
Pavlof/Canoe Bay Special Use Area	This is a key salmon and herring spawning area. King, tanner, and Dungeness crabs are present, as are shrimp and groundfish. Seabirds nest here and waterfowl also use the area. Brown bears concentrate here.
Anadromous Fish Stream Special Use Area	Anadromous fish streams support spawning populations of fish, which are essential for the region's commercial fisheries. Associated lakes and tributaries are also important fish habitat. This area includes all streams identified in the Anadromous Waters Catalog produced by the Alaska Department of Fish and Game an interactive map is available on the Internet at www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive .
Unalaska Bay	This is a traditional use area of the Aleuts and contains numerous archaeological and historic sites, including Amaknak Island, which is a National Historic Landmark for World War II military activities. The recent commercial growth in the area during recent years has put pressures on local recreational, subsistence and personal uses of resources in the area.
Chernofski Harbor	This is an important fish and wildlife habitat area, which contains archaeological and historic sites. The area has been studied for possible commercial development.

SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY

The following sensitivity tables were developed by the State and Federal Natural Resources Trustees with legislative responsibility for management and protection of these resources. This includes the following agencies: NMFS, U.S. Fish and Wildlife Service (USFWS), National Park Service, Bureau of Land Management, Alaska Department of Fish and Game (ADF&G), and Alaska Department of Natural Resources. This information is a summary derived from recent field studies, research reports, long-term monitoring, stakeholder input, and local knowledge. Periods and/or conditions when resources are of varying levels of concern (low, medium, high) with respect to affects from an oil spill are noted in the following tables. Susceptibility for each group of animals is year round unless otherwise noted in the Seasonal Sensitivity row that is added for the appropriate animal group.

Geomorphology

Category	Low	Medium	High
Coastal Habitat Types	<ul style="list-style-type: none"> • Fine-Grained Sand • Exposed Wave-cut Platforms • Exposed Rocky Shores 	<ul style="list-style-type: none"> • Gravel Beaches • Mixed Sand & Gravel Beaches • Exposed Tidal Flats • Coarse Grained Sand Beaches 	<ul style="list-style-type: none"> • Marshes • Eelgrass Beds • Sheltered Tidal Flats • Sheltered Rocky Shores
Lake and River Habitat Types	<ul style="list-style-type: none"> • Exposed Rocky Cliffs & Banks • Bedrock Shores & Ledges, Rocky Shoals • Eroding Scarps/Banks in Unconsolidated Sediment • Exposed Man-Made Structures 	<ul style="list-style-type: none"> • Sand Beaches & Bars • Mixed Sand & Gravel Beaches/Bars • Gravel Beaches/Bars • Gently Sloping Banks • Exposed Flats • Riprap 	<ul style="list-style-type: none"> • Sheltered Scarps in Bedrock • Vegetated Steep Sloping Bluffs • Sheltered Man- Made Structures • Vegetated Low Banks • Sheltered Sand & Muddy Substrates • Marshes

Threatened or Endangered Species

Category	Low	Medium	High
Endangered Species			Whales: Fin, Blue, Sei, Humpback, Gray, Sperm, and North Pacific right Pinnipeds: Steller sea lion Birds: Short-tailed albatross, Eskimo curlew Plant: Aleutian shield fern
Threatened Species			Marine mammals: Northern sea otter Birds: Steller's eider, Spectacled eider
Species of Concern			Birds: Kittlitz's murrelet
Protected Species			Bald eagles, Golden eagles, All marine mammals and migratory birds

Steller's Eider Critical Life Periods

Winter Resident	Oct 1 – July 31
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Spectacled Eider Critical Life Periods

Winter Resident	Nov 1 – June 30
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Sea Otters

Category	Low	Medium	High
Abundance			> 20 and general distribution
Human Harvest	Year round		

Sea Otter Critical Life Periods

Present Nearshore	Year Round
Pupping	May 1 – June 30

Harbor Seals

Category	Low	Medium	High
Abundance	< 5	5 - 10	> 10
Human Harvest		May 1 - June 30	Jan 1 - Apr 30 July 1 - Dec 31

Harbor Seal Critical Life Periods

Pupping	May 15 – June 30
Molting	Aug 1 – Sept 15
On Haul-outs	Year Round

Steller Sea Lions

Category	Low	Medium	High
Abundance (on haul-out)	< 15	15 - 30	> 30
Human Harvest	June 1 - Aug 31	Apr 1 - May 31 Sept 1 - Sept 30	Oct 1 - Mar 31

Stellar Sea Lion Critical Life Periods

Pupping	May 15 – July 31
Molting	Aug 1 – Sept 30
On Rookeries	May 1 – Sept 30
On Haul-outs	Year Round

Northern Fur Seal

Category	Low	Medium	High
Human Harvest	Sept 1 - May 31		June 1 - Aug 31

Northern Fur Seal Critical Life Periods

Pupping	June 15 – July 31
On Rookeries	June 1 – Nov 30

Walrus

Category	Low	Medium	High
Human Harvest	No to little human use		

Walrus Critical Life Periods

Molting	March-August
Calving Period	April-July
On Haul-outs	June-October

Whales and Porpoises ask NMFS—susceptibility useful? Year round most species

Category	Low	Medium	High
Abundance	< 10	10 - 50	> 50
Seasonal Sensitivity	Oct 1-May 1	Aug 1-Sept 30	May 1-July 31
Human Harvest	Year around (salvage)		

Whale and Porpoises Critical Life Periods

Presents Nearshore	Year round
Calving	May 1 – July 31

Brown Bears

Category	Low	Medium	High
Seasonal Sensitivity	Nov 1 - Apr 30	May 1 - June 30 Sept 1 - Oct 31	July 1 - Aug 31
Human Harvest*	Closed except by limited permit only (See Annual ADF&G report for specific harvest information)		

* Open season fall of odd years and spring of even years (i.e., fall '95, spring '96). No known subsistence harvest.

Brown Bear Critical Life Periods

Denning	Jan 1 – March 31
Feeding in Coastal Area	April 15 – June 30
Feeding along Salmon Streams	Aug 1 – Oct 31

Caribou/Reindeer

Category	Low	Medium	High
Abundance ¹	Year round		
Seasonal Sensitivity	Sept 1 - May 15		May 16 - Aug 31
Human Harvest	Apr 1 - July 31 (Caribou)	Feb 1 - Mar 31 Oct 1 - Oct 31(Caribou) Mar 1 - Aug 31 Nov 1 - Dec 31(Reindeer)	Aug 1 - Sept 30 Nov 1 - Jan 31(Caribou) Jan 1 - Feb 28 Sep 1 - Oct 31 (Reindeer)

¹There are three caribou herds (i.e., North Alaska Peninsula Herd, South Alaska Peninsula Herd, and the Adak Herd) that inhabit portions of this region, while reindeer are found on Atka, Unimak and the Pribilof islands. Depending on the herd abundance may vary widely. As a result, specific abundance figures have not been established for use in prioritizing protection sites.

Caribou and Reindeer Critical Life Periods

Calving	May 15 – June 30
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Moose

Category	Low	Medium	High
Abundance	Very few, if any, moose are present in GMU 9D and 10, which represent this area. Therefore their abundance and susceptibility would be low.		
Human Harvest	No Open Season. No Subsistence Use.		

Moose Critical Life Periods

Calving	May 1 – June 30
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Loons and Grebes

Category	Low	Medium	High
Abundance	< 10	10-100	> 10
Seasonal Sensitivity	May 16 – Aug 14	April 15 – May 15 Aug 15 – Oct 31	Nov 1 – April 14

Loon and Grebe Critical Life Periods

Spring Migration	April 15–May 15
Fall Migration	Aug 15– Oct 31
Winter Concentrations	Jan 1 – April 30 Oct 15 – Dec 31

Waterfowl (Ducks and Geese)

Category	Low	Medium	High
Abundance	Abundance figures are not available		
Seasonal Sensitivity	Nov 1 - Jan 31 ⁵	Feb 1 - April 14 May 16 - Aug 14	April 15 - May 15 Aug 15 - Oct 31
Species Diversity	1 – 3	4 – 6	> 6
Human Harvest	June 1 - Aug 31	Dec 1 - Dec 31	Jan 1 - May 31 Sept 1 - Nov 30

In Areas of Local Concern, (e.g. Izembeck lagoon) where waterfowl concentrate in the winter, their susceptibility would be high.

Waterfowl Critical Life Periods

Spring Migration	April 15 – May 15
Nesting/Rearing	April 15 – July 15
Fall Migration	Aug 15 – Oct 31
Winter Concentrations	Oct 15 – April 30

Migrating Shorebirds (Sandpipers, Surfbirds, Dunlins, and Plovers)

Category	Low	Medium	High
Abundance	Abundance figures are not available		
Seasonal Sensitivity	Nov 1 - Jan 31 May 16 - Aug 14	Feb 1 - April 14	April 15 - May 15 Aug 15 - Oct 31
++Species Diversity	1	2-4	> 4

Shorebirds Critical Life Periods

Spring Migration	Apr 15 – May 15
Fall Migration	Aug 15 – Oct 31

Colonial Seabirds (Cormorants, Murres, Auklets, Puffins, Kittiwakes, Gulls, and Terns)

Category	Low	Medium	High
Abundance	< 10,000	10,000 – 100,000	> 100,000
Seasonal Sensitivity	Oct 1 - Jan 31	Feb 1 - March 31	April 1 - Sept 30
Species Diversity	1 – 3	4 – 6	> 6
Human Harvest ⁷	June 1 - April 19		April 20 - May 31

Some species such as the Common murre become more abundant in winter months. Seabird eggs utilized by Native communities.

Other Seabirds (Pigeon guillemots, Murrelets, and others)

Category	Low	Medium	High
Abundance	< 10	10-20	> 20
Seasonal Sensitivity	Nov 1 - Jan 31	Feb 1 - March 31	April 1 - Oct 31
Species Diversity	1	2-3	>3

Seabirds Critical Life Periods

On Colonies	May 1 – Sept 30
Feeding near Colonies	April 1 - Oct 31

Raptors (Generally Bald Eagles)

Category	Low	Medium	High
Abundance	< 1 nest/10 coastal miles	1 nest/5-10 coastal miles	> 1 nest/ 5 coastal mile

Raptors (Generally Eagles) Critical Life Periods

Nesting/Rearing	April 1 – Aug 31
Present near Coast	Year Round

Salmonids

Category	Low	Medium	High
Abundance	< 100 (Chinook) < 1,500 (Sockeye) < 500 (Coho) < 5,000 (Pinks) < 5,000 (Chum)	100-500 (Chinook) 1,500-5,000 (Sockeye) 500-2,500 (Coho) 5,000-25,000 (Pinks) 5,000-15,000 (Chum)	> 500 (Chinook) > 5,000 (Sockeye) > 2,500 (Coho) > 25,000 (Pinks) > 15,000 (Chum)
Seasonal Sensitivity	Dec 1 – Feb 28	Mar 1 - Apr 30 Oct 1 - Nov 30	May 1 - Sept 30
Human Harvest	Mar 1 – Apr 30	Oct 1 - Feb 28	May 1 - Sept 30

Salmon Critical Life Periods

Adults near Shore	May 15 – Sept 30
Spawning in Streams	July 1 – Dec 31
Spawning Inter tidally	June 15 – Sept 31
Eggs/Young Development	Year Round
Smolt Outmigration	April 15 – July 15
Adults Return	May 1 – Oct 31

Herring

Category	Low	Medium	High
Abundance	Abundance data not available		
Seasonal Sensitivity	Oct 1 – Feb 28	Mar 1 - Mar 31	April 1 - Sept 30
Human Harvest	Aug 1 – Feb 28	Mar 1 - Apr 30	May 1 - July 31

Herring Critical Life Periods

Spawning	April 1 – May 31
Present near Shore	April 1 – Oct 31

Clams and Other Marine Invertebrates (Chitons)

Category	Low	Medium	High
Seasonal Sensitivity		Jan 1 - May 19	May 20 - Dec 31
Human Harvest		May 1 - Aug 31	Sept 1 - Apr 30

Clams and Other Marine Invertebrates Critical Life Periods

Spawning	July 1- Sept 30
Planktonic Larvae	July 1 – Dec 31

Legislatively Designated Land Status

Category	Low	Medium	High
Federal Lands			National Parks Wildlife Refuges Public Lands Wilderness Areas Native Allotments and Town Sites ²
State Lands	Public Lands ¹		<ul style="list-style-type: none"> • Izembek State Game Refuge • Port Moller Critical Habitat Area • Port Heiden Critical Habitat Area

¹ Includes submerged lands out to 3 miles, and historic bays and inlets

² Allotments are privately owned, however access should be coordinated through the Department of the Interior, Bureau of Indian Affairs

Cultural Resources/Archeological Sites

Category	Low	Medium	High
Historic properties, cultural and archaeological sites	<ul style="list-style-type: none"> • Cultural resources that do not meet National Register criteria 	<ul style="list-style-type: none"> • National Register-eligible sites (excluding villages sites) • Sites adjacent to shorelines 	<ul style="list-style-type: none"> • National Historic Landmarks • National Natural Landmarks • Burial sites • National Register-eligible village sites • Intertidal sites

SENSITIVE AREAS: PART FOUR – BIOLOGICAL AND HUMAN USE RESOURCES

A. INTRODUCTION

The Aleutian Islands are a biologically diverse and productive ecosystem valuable for commercial and subsistence fishing as well as for supporting large seabird and marine mammal populations. The Aleutian Islands combined with the Bering Sea and Gulf of Alaska support the world's largest groundfish fisheries. Additional marine species such as salmon, halibut, scallop, king and tanner crab are important for commercial and subsistence fisheries. The Alaska Maritime National Wildlife Refuge, established by the Alaska National Interest Lands Conservation Act of 1980, includes most of the Aleutian Islands within its boundary. More than 10 million seabirds of 26 species breed in the Aleutian Archipelago (USFWS 2000). The Aleutian Islands provide residence or seasonal habitat for a variety of marine mammals including Steller sea lions, northern fur seals, harbor seals, sea otters, and various cetacean species (NPFMC 2007).

Human factors that have shaped the Aleutian Islands marine ecosystem include fishing, hunting of marine mammals and seabirds, shipping, and military activities. Changes in marine mammal populations include the extinction of the Steller's sea cow (*Hydrodamalis gigas*), near extirpation, recovery and recent declines of northern sea otters (*Enhydra lutris*) (Doroff et al. 2003), and substantial declines in the western distinct population segment of Steller sea lions (*Eumetopias jubatus*) (Braham et al. 1980, NMFS 2010). Changes in commercially fished species include the depletion of economically valuable species such as Pacific Ocean perch (*Sebastes alutus*) and red king crab (*Paralithodes camtschaticus*) (Schumacher and Kruse 2005, NPFMC 2007). Unangan (i.e., Aleut) people have inhabited the Aleutian Islands for over 9,000 years (Veltre and Smith 2010). Cultural influences on the Unangan people occurred in the mid-1700s with Russian occupation for fur trade purposes, and later with US military presence, beginning in World War II. Today, thirteen communities in the Aleutian Islands are inhabited, with a total population level of approximately 8,352 individuals. Communities are heavily dependent on commercial and subsistence fishing (Sepez et al. 2005).

There are many national and international protected areas within the Aleutian Islands subarea. These areas have been designated to protect the components of both the marine and terrestrial environment. 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.

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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 1997). Seasonal ESI maps in poster and atlas formats have been produced for the subarea, as shown on the following index map. These maps are available on the Internet at: www.asgdc.alaska.gov/maps/cplans/subareas.html. NOAA has an online ESI Data Viewer to access these maps at www.response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html.

1. Benthic Habitats

Oil vulnerability is lower in benthic (near bottom) 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 ranks, but are treated more like living resources, which vary with season and location. Benthic habitats include: submerged aquatic vegetation beds, large beds of kelp, worm reefs and coral reefs.

2. Shoreline Habitat

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 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 degrees, 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 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 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 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 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 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 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.

ESI Habitat Ranking

ESI	Estuarine (Marine)	Lacustrine (Lake)	Riverine (Large Rivers)
1 A	Exposed rocky shores	Exposed rocky shores	Exposed rocky banks
1 B	Exposed, solid man-made structures	Exposed, solid man-made structures	Exposed, solid man-made structures
1C	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base	Exposed rocky cliffs with boulder talus base
2A	Exposed wave-cut platforms in bedrock, mud, or clay	Shelving bedrock shores	Rock shoals; bedrock ledges
2B	Exposed scarps and steep slopes in clay		
3A	Fine to medium-grained sand beaches		
3B	Scarps and steep slopes in sand	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments

ESI	Estuarine (Marine)	Lacustrine (Lake)	Riverine (Large Rivers)
3C	Tundra cliffs		
4	Course-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
6A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	
8A	Sheltered scarps in bedrock, mud, or clay; Sheltered rocky shores (impermeable)*	Sheltered scarps in bedrock, mud, or clay	
8B	Sheltered, solid man-made structures; Sheltered rocky shores (permeable)*	Sheltered, solid man-made structures	Sheltered, solid man-made structures
8C	Sheltered riprap	Sheltered riprap	Sheltered riprap
8D	Sheltered rocky rubble shores		
8E	Peat shorelines		
8F			Vegetated, steeply-sloping bluffs
9A	Sheltered tidal flats	Sheltered sand/mud flats	
9B	Vegetated low banks	Vegetated low banks	Vegetated low banks
9	Hypersaline tidal flats		
10A	Salt- and brackish-water marshes		
10B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10C	Swamps	Swamps	Swamps
10D	Scrub-shrub wetlands; Mangroves	Scrub-shrub wetlands	Scrub-shrub wetlands
10E	Inundated low-lying tundra		

* A category or definition that applies on in Southeast Alaska.

Table from www.response.restoration.noaa.gov/maps-and-spatial-data/shoreline-sensitivity-rankings-list.html.

Alaska ShoreZone Coastal Habitat Mapping: An on-going coastal habitat mapping effort is producing an on-line database, digital maps, and color aerial imagery and videos of the coastline in the subarea. This geo-referenced data set collected at low tide includes coastal geomorphology and biological habitat for some intertidal and shallow sub-tidal areas.

Responders have access to several useful tools through the ShoreZone web portal. Low altitude video and high-resolution still photos are available with longitude and latitude and presented spatially on base maps (basic maps, topos, and satellite images). Also, habitat maps can be generated online for attributes such as Oil Residency Index, ESI, and sensitive biota (e.g. eelgrass).

The NOAA, NMFS, Alaska Regional Office hosts the Alaska ShoreZone web portal at: www.alaskafisheries.noaa.gov/shorezone/.

3. Upland Habitat

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills has been identified. A general wetlands classification has been developed by the USFWS, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been completed, some of which are

available in a GIS database (see the following figure). Updated map data is being placed on the National Wetlands Inventory Internet web site at: www.fws.gov/wetlands/.

C. BIOLOGICAL RESOURCES

1. *Threatened and Endangered Species*

Federally listed threatened and endangered species are protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). If response strategies are proposed in locations where migratory birds and/or marine mammals listed as threatened and/or endangered are (or may be) present, the Federal OSC will need to immediately consult with the USFWS and NMFS (as appropriate) regarding the proposed strategies, in accordance with the Endangered Species Act Memorandum of Understanding (see *Unified Plan, Annex K*). The northern right whale, humpback whale, blue whale and short-tailed albatross are also on the State of Alaska's endangered species list. The following species and critical habitat occur in this subarea:

Protected Species under Endangered Species Act of 1973 in the Aleutian Subarea

Listed Species	Latin Name	Status
Short-tailed albatross	<i>Diomedea albatrus</i>	Endangered
Steller's eider	<i>Polysticta stelleri</i>	Threatened
Spectacled eider	<i>Somateria fischeri</i>	Threatened
Blue whale	<i>Balaenoptera musculus</i>	Endangered
Humpback whale	<i>Megaptera novaeangliae</i>	Endangered
Fin whale	<i>Balaenoptera physalus</i>	Endangered
Sei whale	<i>Balaena borealis</i>	Endangered
Sperm whale	<i>Physeter macrocephalus</i>	Endangered
North Pacific right whale	<i>Eubalaena glacialis</i>	Endangered
Northern sea otter	<i>Enhydra lutris kenyoni</i>	Threatened
Steller sea lion (Western population)	<i>Eumetopius jubatus</i>	Endangered

Designated Critical Habitat

Species Group	General Reference Area
Whales	North Pacific right whale in Bering Sea waters north of False Pass (see map below)
Birds	Spectacled eider critical habitat has been designated at Nelson and Izembek Lagoons (see map below)
Sea otters	No critical habitat has been designate in the subarea
Sea Lions	20 miles seaward around each major haul-out (see map below)

NOTE: In its definition of species, the Endangered Species Act of 1973, as amended, includes the traditional biological species concept of the biological sciences and "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" (16 USC 1532). NMFS uses the term evolutionarily significant unit as synonymous with distinct population segment and lists Pacific salmon accordingly. For the purposes of Section 7 consultations, these are all "species."

The short-tailed albatross, northern sea otters, spectacled eider, Steller's eiders, Eskimo curlew and Aleutian Shield Fern are under the jurisdiction of USFWS. All salmon species are under the jurisdiction of NMFS, Northwest Regional Office in Seattle, Washington. Salmon species are not listed in table above because they are lower-48 populations that are ESA-listed and spend time in Alaska marine waters.

The Alaskan bald and golden eagles, though not on the endangered species list, are fully protected (including their nests and nest trees) under the Bald Eagle Protection Act of 1940 and the Migratory Bird Treaty Act. Spill response activities that could affect these species should be coordinated with the USFWS.

While NMFS has determined the gray whale is no longer a threatened or endangered species, monitoring of the species has continued since the 1994 delisting. All marine mammals, 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 USFWS and NMFS.

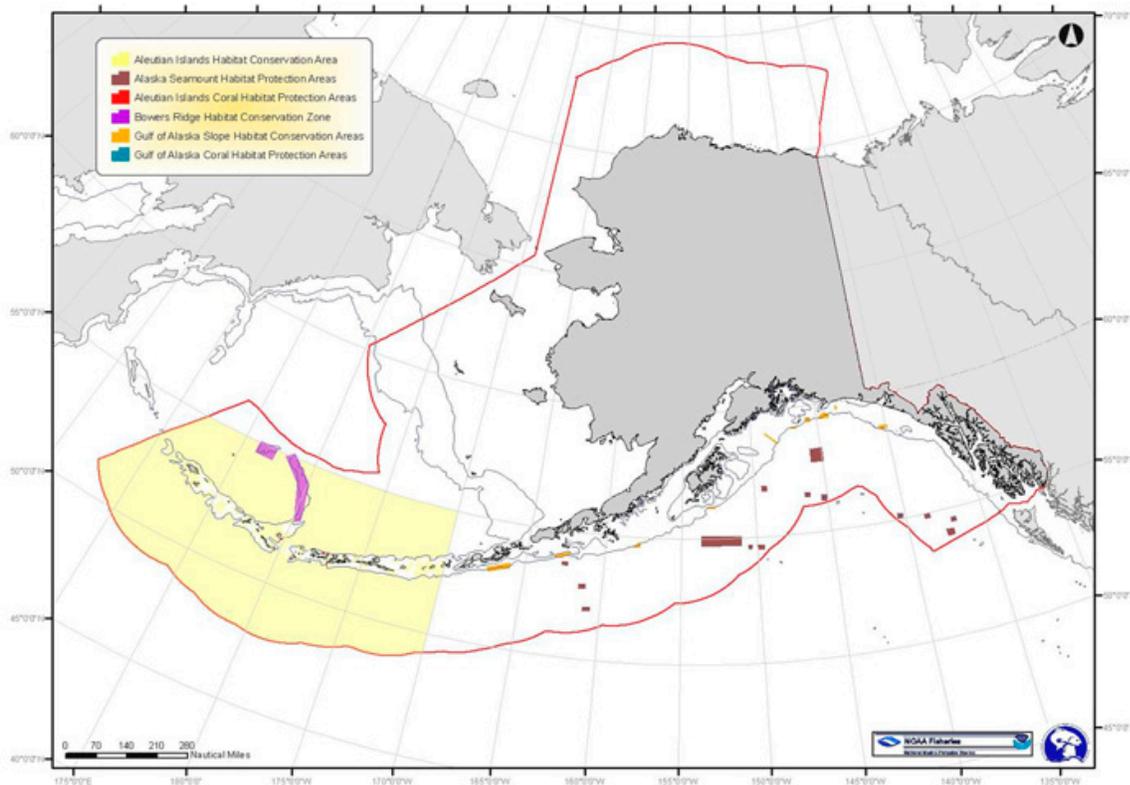
For updated information on the Internet:

USFWS National Threatened and Endangered Species web site: www.fws.gov/endangered/

USFWS Regional Threatened and Endangered Species web site:
www.fws.gov/alaska/fisheries/endangered/

ADF&G Threatened and Endangered Species web site:
www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akendangered

The following figure illustrates locations for essential fish habitat areas within the Aleutian Island subarea.



Three species of seabirds found within the Aleutian Islands are listed as either endangered or threatened under the Endangered Species Act (ESA).

These include:

- Short-tailed albatross (*Phoebastria albatrus*) (endangered);
- Spectacled eider (*Somateria fischeri*) (threatened); and
- Steller's eider (*Polysticta stelleri*) (threatened).

The population of short-tailed albatross is estimated to be 1,200 worldwide and they are only known to breed in Japan; however, they forage on the outer shelf across the Aleutian Islands outside of their breeding season (Alaska Fish and Wildlife Service). Numerous spectacled eiders and Steller's eiders moult and over-winter primarily in the eastern Aleutian Islands.

Steller's eider critical habitat Map

Source: <http://www.adfg.alaska.gov/index.cfm?adfg=stellerseider.rangemap>

Short-tailed Albatross Range in Alaska

Source: <http://www.adfg.alaska.gov/index.cfm?adfg=shorttailedalbatross.rangemap>

The Steller Sea Lion Protection Areas, Gulf of Alaska – Groundfish, Pollock, and Pacific Cod Closures are Federal Threatened/Endangered Species Protected Area. This area was designated in 1990. Steller sea lion critical habitat includes a 20-nautical-mile buffer around all major haul-outs and rookeries, as well as associated terrestrial, air, and aquatic zones, and three large offshore foraging areas. There are 33 recognized rookery sites for this species across the Aleutian Islands and most of the islands are designated critical habitat for this species (NMFS 2010a).

Steller Sea Lion Critical Habitat Map

Source: www.alaskafisheries.noaa.gov/protectedresources/stellers/maps/criticalhabitat_map.pdf

Interactive mapping of essential fish habitat is provided by the NMFS. To do interactive mapping, go to the following website: <http://alaskafisheries.noaa.gov/mapping/esa/>

2. Fish and Wildlife

(a) **FISH:** The Aleutians Subarea is rich in biological resources. In addition to supporting a commercial fishing industry, the area is also utilized by subsistence users. Fish species most vulnerable to an oil spill are those with life stages that use intertidal habitat and more than 100 species of fish were identified in recent nearshore habitat surveys. Those species include: anadromous fish, such as salmon, trout, Dolly Varden char, and eulachon; groundfish such as walleye pollock, Pacific cod, rock sole, yellowfin sole, starry flounder, English sole, butter sole, and copper, dusky, brown, black, dark, and quillback rockfish; and forage fish such as Pacific herring, Pacific sandlance, capelin, eulachon, shiner perch, Pacific sandfish, and surf smelt.

Salmon produced in the Aleutians support important commercial fisheries ranging from stock specific nearshore fisheries to mixed stock fisheries offshore. Adult salmon are in freshwater from mid-April through early December, depending on the species of salmon and the stream system. Salmon eggs incubate in stream gravels over the winter. Juvenile salmon emerge from the gravel in spring and may rear in fresh water for up to four years before migrating to sea.

Pink and chum salmon fry have only a brief period of freshwater residence and enter salt water soon after emergence from the spawning beds. The fry reside in nearshore areas for several weeks before migrating offshore. Pink salmon spend one year at sea and chum salmon spend three or four years at sea before returning to spawn. They feed primarily on zooplankton. Sockeye salmon are most often present in stream systems with lakes that they can access from salt water. Juveniles usually spend one to three years rearing in lakes before migrating to sea in the spring as smolts. Sockeye salmon spend one to four years at sea before returning to their natal stream to spawn. Sockeye salmon feed primarily on zooplankton throughout their life history.

The Chinook salmon is Alaska's state fish and is the largest of all Pacific Salmon, with weights of individual fish commonly exceeding 30 pounds. Adult Chinook salmon enter fresh water from July to September and juveniles spend one year in fresh water before going to sea. Only a few spawning populations of Chinook salmon occur in the Aleutians, but many rear for two to five years in inshore marine waters of the subarea. In fresh water they feed on plankton and insects while at sea they eat relatively large prey such as fish and squid. Unlike other salmon species, they are available to commercial and sport fishers all year which also makes them vulnerable to inshore marine pollutants year round.

Coho salmon occur in nearly all-accessible bodies of fresh water, from large watersheds to small tributaries throughout the Aleutians. Coho salmon enter spawning streams from July to November, usually during periods of high run off. Juvenile coho salmon rear from one to four years in freshwater and may spend summers in estuaries. Coho salmon go to sea between March and June and spend eighteen months at sea before returning to natal streams to spawn. Coho feed primarily on insects in freshwater and on fish in marine areas.

Rainbow trout, Steelhead and Dolly Varden char have both resident and anadromous life history forms. Resident fish complete their entire life cycle in fresh water and anadromous fish return to freshwater spawning and wintering areas from April through December. Resident rainbow trout generally spawn during May and June. The anadromous form (steelhead) spawn from mid-April to June and adults that survive spawning return to the ocean in mid-May to June. Fry emerge several weeks to months later. Dolly Varden char spawn from September to October, fry emerge in April and May. All but the smallest streams provide habitat for resident and rearing Dolly Varden, which feed primarily on insects. After several years in fresh water Dolly Varden may become anadromous. Anadromous fish reside in nearshore marine areas during the summer feeding on small fish and invertebrates, but spend winter in lakes after spawning.

Forage Fish: Fish considered forage species are typically small schooling fish found in open waters. However, juveniles of many forage fish species spend part of their lives in the shallow vegetated nearshore areas and there would be more vulnerable to effects of an oil spill. Forage fish are critically important in the subarea food web as many seabirds, fish, and marine mammals rely on them as prey. These fish feed primarily on plankton and provide the trophic link between primary production (plankton) and the apex predator species (e.g., salmon and groundfish) that commercial fisheries rely on. Some of these species also support important commercial fisheries. *Eulachon* are among the most common forage fish in the Gulf of Alaska and are also anadromous, migrating to streams throughout the subarea to spawn in April or May. Spawning eulachon provide a spring feast for bears, eagles, killer whales, seals, sea lions, gulls, and humans.

Pacific Herring occur widely across the subarea in water depths from 50 to 100 meters. In Alaska, spawning is first observed in the Aleutians during mid-March. Spawning is confined to shallow, vegetated areas in the intertidal and subtidal zones. Juvenile herring hatch in about two weeks and may rear in nearshore areas for several months before moving offshore. Herring are an important food source for many marine mammals in the Aleutians. Steller sea lions, humpback whales, gray whales, and killer whales are all known to forage on herring. Steller sea lions, and probably harbor seals, aggregate at herring spawning areas to feed. *Capelin* are not as numerous in the Aleutians as other areas of the State, but are important forage for higher trophic predators such as seabirds and marine mammals because of their high oil content. They spawn on sandy to small gravel beaches, but the timing and location of spawning varies considerably from year to year.

Pacific Sand Lance is another forage species in the Aleutians. Sand lance generally spawn from mid-November to mid-December along sandy shorelines.

Other Forage Fish: Other species in nearshore areas that contribute to the forage base include Pacific sandfish and smelt. Adult Pacific sandfish generally occur at depths of 100 to 200 meters over sand or mud bottoms but enter nearshore areas to spawn among algae and may school in bays throughout the subarea. Smelt, including surf smelt and longfin smelt are common but not abundant throughout the subarea and enter nearshore areas to spawn along sandy shorelines at widely varying times and locations. Krill are a very important source of food for marine mammals and birds in the Aleutians, including Endangered Species Act-listed species. Krill are also an important source of food for other forage fish upon which marine mammals and birds rely.

Groundfish are defined for the purpose of management by the State of Alaska as any marine finfish except halibut, osmerids, herring, and salmonids. Several species in this group support important commercial sport and subsistence fisheries in the subarea and juveniles rearing in the Aleutians also contribute to offshore fisheries. Juvenile pollock, greenling, and sculpin make up a significant portion of the diet of species such as salmon and marine mammals.

Pacific Halibut are not considered groundfish because they are managed exclusively by the International Pacific Halibut Commission. For the purpose of this discussion, however, we include Pacific halibut with groundfish. Groundfish species common in the Aleutians include: Pacific halibut, arrowtooth flounder, flathead sole, yellowfin sole, flounder, rock sole, Pacific cod, Pacific tomcod, walleye pollock, copper rockfish, dusky rockfish, quillback rockfish, yelloweye rockfish, sablefish, kelp greenling, rock greenling, whitespotted greenling, lingcod, and sculpin.

Flatfish such as flounder, sole, and halibut live on low gradient bottoms throughout the subarea. Large species such as Pacific halibut and arrowtooth flounder generally inhabit deeper more open water areas while smaller flatfish species are more likely to inhabit shallow bays. Pacific halibut are found throughout the Aleutians and support important commercial, sport, and subsistence fisheries. They spawn in deep water from 180 to 460 meters from November to January. Older halibut spend winters in deep water along the continental shelf. In summer, adult halibut move to shallow coastal waters (depths of 30 to 300 meters) to forage on fish and invertebrates.

Yellowfin sole and starry flounder spawn and rear in shallow subtidal areas of bays and estuaries. Yellowfin sole juveniles stay in the nearshore area for 3 to 5 years. Starry flounder are resident in shallow flats, estuaries, and lagoons throughout their life. These fish feed intertidally on clam siphons,

small fish, and invertebrates. Rock sole and flathead sole inhabit deeper areas of bays; often move into nearshore areas to forage.

Pacific cod and walleye pollock are common in the subarea, primarily inhabiting straits, channels, and deep bays in the region. Adults are pelagic and are most abundant in water depths from 100 to 300 meters, but commonly occupy a much larger depth range. Juveniles are also pelagic and generally occupy the upper 60 meters of the water column. They feed primarily on pelagic invertebrates (e.g., euphasids) and small fish. These fish spawn in late winter or early spring and due to their abundance, they are extremely important to the ocean's food web. Rockfish in the subarea are most abundant along the outer Pacific coast, but also inhabit nearshore reefs and high current areas in inside waters. There are about 30 different species of rockfish in the subarea. Rockfish are long-lived, ovoviparous fish, which become sexually mature between 5 and 15 years of age. Copper rockfish commonly inhabit shallow bays and often feed and rear in eelgrass. Quillback, black, dark and dusky rockfish inhabit nearshore areas characterized by kelp beds, but may also be found with yelloweye rockfish on deeper reefs. The juveniles of many rockfish that as adults live in deep offshore waters are found on nearshore reefs. These fish feed on small fish and invertebrates.

Adult sablefish are demersal species that generally inhabit depths greater than 200 meters. Adult sablefish inhabit some of the deeper straits in the subarea. Sablefish spawn at depth in late winter and the pelagic larvae and juveniles migrate in shore over the next few months. Juvenile sablefish rear for 2 to 3 years in nearshore waters, including the bay and channels in the Aleutians. Adults feed opportunistically on live prey or as scavengers, while juveniles feed on pelagic invertebrates and small fish.

Greenlings are generally abundant in the subarea and the common species are generally separated by habitat. As you might expect, Kelp greenling are abundant in kelp and algae beds and rock greenling are most common adjacent to nearshore reefs. Whitespotted greenlings are most common in bays and estuaries. Juvenile greenlings are pelagic and are important as forage in some areas.

Lingcod typically inhabit nearshore rocky reefs and high current areas from 10 to 100 meters in depth. They migrate inshore to spawn in the fall and return to areas farther offshore in winters. Along the Pacific coast juvenile lingcod are common in shallow bays, but they rarely use such areas in inside waters.

Literally dozens of sculpin species are abundant in the Aleutians. Most are benthic, inhabiting bottoms ranging from vertical rock faces to mud bottom bays. Some, such as the crested sculpin, are pelagic. Nearly all feed on invertebrates and small fish. Their abundance makes them important as forage for some commercially harvested species.

Sharks and Skates: Species in the subarea include the spiny dogfish shark, Pacific sleeper shark, salmon shark, Alaska skate, big skate, and longnose skate. Spiny dogfish are common throughout the subarea and are locally abundant in water less than 150 meters deep over soft bottoms near current junctions. Spiny dogfish are opportunistic feeders and will scavenge or eat many kinds of live prey. The Pacific sleeper shark may grow to 10 meters in length and is one of the largest sharks in the world. Generally considered a scavenger, the sleeper is often one of the first animals to show up at sunken whale carcasses. Salmon sharks are often found near the surface and feed mostly on fish. Skates are common in bays and shallow flats where there is not too much current. Skates feed primarily on clams and other infauna.

Interactive mapping of essential fish habitat is provided by the NMFS. To do interactive mapping, go to the following website: <http://alaskafisheries.noaa.gov/mapping/esa/>

For further information, contact the NMFS at: www.alaskafisheries.noaa.gov/.

(b) SHELLFISH

Dungeness Crabs are found from the intertidal region to a depth of 230 meters in the Aleutians. Dungeness crabs are most common on sand or muddy-sand bottoms in the subtidal region, and are often found in or near eelgrass beds. However, they can also be found on a number of other substrata including various mixtures of silt, sand, pebble, cobble, and shell. Juvenile Dungeness crabs are found in similar habitats to adults, but they generally occupy shallower depths than adults. Juvenile crabs can be very abundant in the intertidal zone, but also occur in shallow subtidal areas. Survival of young crabs is greatest in habitats such as intertidal zones and eelgrass beds, where they can gain refuge from predators.

Three species of *King Crab* are currently harvested in the Aleutians: red, blue, and golden. Red king crab larvae generally exhibit a diel movement being most abundant in the upper water column during the day and deeper at night. Young of the year crab occur at a depth of 50 meters or less. They are solitary and need high relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substances such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a change in habitat needs and a tendency for the crab to form pods consisting of thousands of crabs. Podding generally continues until four years of age (about 6.5 centimeters), when the crabs move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crabs occur to a depth of 365 meters; preferred habitat for reproduction is water less than 90 meters. Red and blue kings can occur from the intertidal zone to 180 meters or more. Golden king crabs live mostly between 180-730 meters, but can occur from 90-900 meters.

Tanner Crab larvae are strong swimmers and perform diel vertical migrations in the water column (down at night). They usually stay near the depth of the chlorophyll maximum during the days. The length of time larvae take to develop is unknown, although it has been estimated at only 12 to 14 days. After setting to the bottom, Tanner crabs are widely distributed at depths up to 473 meters. Females are known to form high density mating aggregations consisting of hundreds of crab per mound at depths less than 30 meters. The mounds likely form in the same general location each year, but the location of the mounds is largely undocumented. They form the basis of a thriving domestic fishery from Southeastern Alaska north through the Bering Sea. The peak hatching period for Tanner crabs is usually between April and June.

Pacific Weathervane Scallops are found on sand, gravel, and rock bottoms from 45-180 meters. Sexual maturity occurs at age 3 or 4 and scallops are of commercially harvestable size at 6 to 8 years. Scallops are found in beds (areas of abundant numbers). Scallops are dioecious and they spawn in June and July where the spermatozoa and ova are released into the water. Around one month later, hatching occurs and the larvae drift with the tides and currents. After two or three weeks the larvae will have gained shell weight, settled to the bottom, and attached to seaweed. Scallops may live to age 18 and they feed by filtering microscopic plankton from the water. They have been commercially harvested throughout Alaska on a sporadic basis due to overharvesting of scallop beds, more lucrative fisheries, and market conditions. Bay scallops occur shallower than weathervane scallops (15-60 meters). They are more easily

collected by divers and are frequently harvested in the summer. They are more vulnerable to oil exposure than weathervane scallops as adults.

Shrimp: Pandalid shrimp (northern pink shrimp, humpy/flexed shrimp, coonstripe shrimp, spot shrimp and sidestripe/grant red shrimp) are distributed throughout most major bays and certain nearshore and offshore areas in the Aleutians. Coonstripes and spot shrimp are generally associated with rock piles, coral, and debris-covered bottoms, whereas pink, sidestripes, and humpies typically occur over muddy bottom. Pink shrimp occur over the widest depth range (18 -1500 meters). Humpies and coonstripes usually inhabit shallower waters (5-370 meters). Spot shrimp seem to be caught in the greatest concentrations around 110 meters, but range from 3 to 460 meters. Sidestripes are typically found from 45 to 640 meters, but most concentrations occur in waters deeper than 73 meters. Most shrimp migrate seasonally from deep to shallow waters.

Razor Clams are filter feeders subsisting on plankton. They live in surf-swept and somewhat protected sand beaches of the open ocean. They are found from approximately 1 meter above the mean low water level down to depths of 55 meters.

Blue Mussels are found throughout the Aleutians and are found through the intertidal zone up to a depth of five meters densely packed around rock, wood, or other solid structures.

(c) BIRDS:

All migratory birds are protected under the Migratory Bird Treaty Act. Any spill response activities, which could affect migratory birds, should be coordinated with the USFWS. There are 39 Important Bird Areas (IBAs) designated across the Aleutian Islands. An IBA is an area designated as being globally important habitat for the conservation of bird populations developed by BirdLife International. To qualify as an IBA, a site must regularly support significant numbers of species of conservation concern; attract large numbers of breeding, wintering, or migrating birds; or support species characteristic of a unique habitat.

Important Bird Areas in Alaska

Source: www.ak.audubon.org/sites/default/files/documents/alaska_ibas_june2013.pdf

Extensive breeding colonies containing millions of seabirds occur on the Aleutian Islands, the Pribilof Islands, and along portions of the Alaskan Peninsula. A Berengian endemic species, the whiskered auklet, only occurs on the Aleutian Islands within Alaska. Least auklets, red-legged kittiwakes, Aleutian terns and red-faced cormorants live and breed only in the Bering Sea-North Pacific Ocean zone. The overwhelming majority of fork-tailed storm-petrels and horned and tufted puffins breed in Alaska in the northern Pacific islands. Millions of shearwaters do not breed here, but spend the summer feeding in the waters of the Aleutian Island passes. The Aleutian cackling goose, one of the few species to be removed successfully from the Endangered Species List, is endemic to the Aleutian Islands, breeding here in the summer.

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 Norton and Kotzebue Sound are summarized from the catalog. The maps display colony locations. USFWS, Division of Migratory Bird Management, Marine and Coastal Bird Project, in Anchorage, maintain the Alaska Seabird Colony Catalog www.axiom.seabirds.net/maps/north-pacific-seabirds/. Questions or comments regarding the

information contained in the Alaska Seabird Colony Catalog should be directed to USFWS in Anchorage at 786-3444.

In addition, the Aleutians serve as a major spring and fall staging area for migrating waterfowl as well as a permanent residence for some species. Wintering and migrating birds concentrate in protected embayments and rocky, intertidal locations. Major staging areas include Izembek Lagoon, Port Heiden and Nelson Lagoon. The entire population of black brant (150,000 birds on average), Taverner's Canada geese (55,000), and emperor geese (6,000) stage at Izembek Lagoon and neighboring lagoons. Approximately 23,000 threatened Steller's eiders also molt, rest, and feed at Izembek each autumn.

A significant number of bald eagles nest on the many islands found in the Aleutians. Although bald eagles are not on the endangered species list, 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 USFWS.

Seabird Population-Aleutian Islands

Source: <http://axiom.seabirds.net/maps/north-pacific-seabirds/>

East Aleutians: <http://www.asgdc.state.ak.us/maps/cplans/aleut/aie5seabird.pdf>

West Aleutians: <http://www.asgdc.state.ak.us/maps/cplans/aleut/a iw5seabird.pdf>

(d) MARINE MAMMALS

Steller Sea Lions are listed as endangered in the Aleutian Island region west of 140° and northern sea otters are listed as threatened, harbor seals, spotted seals, killer whales, and porpoises are present throughout the year. Several species of endangered baleen whales migrate through the area in the spring and summer. Northern fur seals seasonally inhabit the Bering Sea and the Gulf of Alaska. Major northern fur seal rookeries and haul-outs occur on the Pribilof Islands and on Bogoslof Island. Rookeries and haul-outs used by sea lions are also located on the Pribilof Islands and throughout the Aleutian Islands and Alaskan Peninsula. Pacific Walrus occur seasonally in the area of the Pribilof Islands and the northern Alaska Peninsula. Haul-outs on the Alaska Peninsula at Cape Seniavin and Port Moller, and on Amak and Walrus Islands, are used by mature bulls during spring and summer. Dense concentrations of marine organisms occur throughout the Aleutian Islands, including all five species of Pacific salmon, numerous groundfish, herring, crab, shrimp, clams, and a variety of intertidal organisms.

Northern Sea Otters are distributed at very low densities around most of the islands in the Aleutian chain and the islands of the lower Alaska Peninsula. Otters generally range from 5 to 16 kilometers offshore and feed in nearshore waters less than 35 meters deep. Breeding occurs year-round, with a peak in September and October. Pupping occurs year-round, with a peak in July.

Harbor Seals are found year round in the Aleutian Islands in nearshore waters all the way out to the shelf break on the outer coast. Harbor seals tend to concentrate in estuaries, protected waters, and tidewater rocks and reefs. Harbor seals enter lakes and rivers on a seasonal basis. Harbor seal haul-outs are used for pupping, molting and resting, and may be used year round. Peak haul-out use occurs during June through early October. Pupping occurs between late May and early July; most pups are born during the first three weeks of June, and the pups nurse for about three weeks. Births of harbor seals are not restricted to a few major sites (as is the case for many other species of pinnipeds), but occur at many haul-outs. Some areas or particular haul-out sites have disproportionately high numbers of pups, which

may be especially vulnerable to the fouling effects of oil spills. The total Alaska harbor seal population is estimated at 150,000.

Fur Seals: There are more than one million northern fur seals in the Pacific Ocean. They range from Japan to Southern California and north throughout the Bering Sea. Fur seals will spend months at a time at sea. During breeding season, 3/4 of the total world population will be found on the Pribilof Islands. The bulls will normally stay for four months, the females for six months. The bulls vigorously protect their territory and can lose 1/4 of their body weight in doing so. A large bull Northern fur seal can weigh 600 pounds and a large female 110 pounds. The Northern fur seal can live for 25 years, but most females live to be 18-20 years old and the males to their low teens. Northern fur seals feed mainly at night and may dive to depths of 600 feet (180 m) in search of small schooling fish and squid and prey are typically eaten underwater. Larger fish are brought to the surface and eaten there. Northern fur seals are famous for the dense fur that covers all but their flippers. That fur consists of approximately 46,500 hairs per square centimeter. Natural predators of the fur seals include sharks, foxes, killer whales and Steller sea lions.

Humpback Whales are the large whales most frequently observed swimming and feeding close to shore along the coast. 3,000 to 5,000 humpback whales can be found in the Aleutians, with higher numbers occurring between March to September. Although very few humpback whales skip annual winter migration, they are present in the Aleutians until early winter. The late season presence of humpback whales in the Aleutians is due to whales leaving late to migrate to the breeding grounds overlapping with whales returning early to Alaska from the breeding grounds. Winter aggregations of humpback whales in the Aleutians are related to the availability of krill and herring. Humpback whales feed primarily on krill. Fish such as herring, capelin, and sandlance are also important. To a lesser extent, other zooplankton, salmon fry, and juvenile Pollock are part of the diet.

Gray Whales feed predominately on infaunal invertebrates. They appear to feed by lying on their sides and suctioning sediment from the sea floor, which they then filter for invertebrates. The eastern North Pacific population of gray whale has been delisted, but the western North Pacific population is still listed as endangered under the Endangered Species Act.

(e) TERRESTRIAL MAMMALS

The majority of large terrestrial animals that occur in the Aleutian Islands are found on the Alaska Peninsula as well as on some of the larger islands. Brown bear are found throughout the Alaska Peninsula and on Unimak Island, and in the Pribilof Islands. Caribou occur on the Alaska Peninsula, Unimak Island, and Adak Island. Reindeer occur on Atka, Umnak Island, and in the Pribilof Islands. Moose generally occur on the Alaska Peninsula as far west as Cold Bay, although they have been sighted as far west as Unimak Island.

3. *Vegetation*

Threatened and endangered plants in the subarea are identified below, along with other rare plant species, as documented by the Alaska Natural Heritage Program. The map on the following page identifies the general locations of these rare plants.

Rare Plants Known in the Aleutians Subarea

Global Rank	State Rank	Scientific Name	Common Name	Federal Status
G1	S1	<i>Polysticum aleuticum</i>	Aleutian Shield Fern	Endangered
G1	S1	<i>Saxifraga aleutica</i>	Aleutian Saxifrage	
G1	S1	<i>Artemisia aleutica</i>	Aleutian Wormwood	
G4T1T2Q	S1S2	<i>Artemisia globularia var lutea</i>		
G2	S2	<i>Draba aleutica</i>	Aleutian Rockcress	
G2G3	S2S3	<i>Douglasia alaskana</i>	Alaska Rock Jasmine	
G3	S1	<i>Claytonia arctica</i>	Arctic Spring Beauty	
G5T3Q	S3	4. <i>Carex lenticularis var dolia</i>	Goose Grass Sedge	
G3G4	S2	5. <i>Eleocharis nitida</i>	Neat Spike Rush	

Global Rankings

- G1: Critically imperiled globally. (Typically 5 or fewer occurrences)
 G2: Imperiled globally. (6-20 occurrences)
 G3: Rare or uncommon globally. (21-100 occurrences)
 G4: Apparently secure globally, but cause for long-term concern. (Usually more than 100 occurrences)
 G5: Demonstrably secure globally.
 G#G#: Rank of species uncertain, best described as a range between the two ranks.
 G#Q: Taxonomically questionable.
 G#T#: Global rank of species and global rank of the described variety or subspecies of the species.

State Rankings

- S1: Critically imperiled in state. (Usually 5 or fewer occurrences)
 S2: Imperiled in state. (6-20 occurrences)
 S3: Rare or uncommon in state. (21-100 occurrences)
 S4: Apparently secure in state, but with cause for long-term concern (usually more than 100 occurrences)
 S5: Demonstrably secure in state.
 S#S#: State rank of species uncertain, best described as a range between the two ranks.

*The Aleutian shield-fern is a small, tufted fern, which grows to about 15 centimeters (6 inches) tall and may be confused with more common ferns occurring within its range. It is now known to exist only on Adak Island in the central Aleutian Islands. Three populations totaling approximately 130 "clumps" are located on a single mountain on east-facing slopes having steep cliffs, rock outcrops, and vegetated gullies and ledges. Historically, the Aleutian shield-fern also occurred on Atka Island, but has not been seen there since it was reported in 1932.

Rare Plants Locations in the Aleutian Subarea:

Source: <http://www.asgdc.state.ak.us/maps/cplans/aleut/airplants.pdf>

D. HUMAN RESOURCE USES

This sub-section includes an overview of the following socioeconomic resources within the subarea:

- Commercial and recreational fisheries;
- Subsistence;
- Historic preservation sites;
- Marine recreation and tourism; and
- Coastal development and coastal infrastructure.

The area includes western portions of the Aleutians East Borough (AEB) and extends through the Aleutian Chain, which is in the Aleutian West Coastal Resource Service Area (AWCRSA).

1. *Fish Hatcheries and Associated Ocean Net Pens*

There are no fish hatcheries or pens operating in the Aleutians Subarea.

2. *Aquaculture Sites*

At this time there are no aquaculture sites in the Aleutian Islands or the Pribilof Islands.

3. *Cultural Heritage and Historic Properties*

The people who settled along the Aleutian archipelago are often referred to as Aleuts. Russian fur traders gave this name to them, but they prefer to call themselves Unangan, or coastal people. It is believed that the Aleuts migrated across the Bering land bridge from Asia between 12,000 and 15,000 years ago.

The Unangan people lived underneath the earth in semi – subterranean houses called ulax and developed specialized skills to enable survival in the harsh climate. They hunted marine mammals from skin covered kayaks, or iqyax. The Unangan subsisted for centuries and thrived as a culture until the Russian fur traders discovered the Aleutian Islands around 1750. At this time, the Aleut population was estimated at 12,000 to 15,000.

The fur traders from Russia occupied the islands and their people in their quest to obtain sea otters and fur seals. The population of Unangan, or Aleut people was greatly reduced after Russian occupation due to disease, war and malnutrition.

The Aleut people also suffered tremendous loss during World War II (WW II) when the U.S. Government relocated most of the Aleutian Island residents to internment camps located in Southeast Alaska. Many Aleuts died in these camps further reducing their population. The U.S. Government eventually passed a Congressional Act in 1988 called the Aleut Restitution Act. The purpose of this act was to pay restitution to the victims of WWII internment.

Currently Aleut people still rely on the sea for their livelihood. Most live a subsistence lifestyle, which includes fishing and hunting. It is believed that today the population of Aleuts is approximately 2,000.

People had, and have, a maritime focused culture in the Aleutian Islands for 10,000 years. During this time every habitable stretch of the coastline was occupied. Sites here can be huge, covering hundreds of acres, or they may be isolated sea caves, dwellings, camps, or burials. The deposits may extend into the littoral zone. Sub-tidal cultural resources of the island chain have never been adequately inventoried but there are several hundred known shipwrecks along the archipelago. More recent historic properties, from the Russian period through World War II and Cold War are also numerous but barely inventoried. Although Historic Properties do not have to be formally listed on the National Register to merit consideration, the following list is limited to places on the National Register of Historic Places (NPS 2013). There are 15 places on the registry in the proposal area, most located in upland areas:

- Adak Army Base and Adak Naval Operating Station –Roughly bounded by Cape Adagdak, Scabbard Bay, and Shagak Bay, Adak Station;
- Anangula Archeological District – Underwater Restricted location at Nikolski;
- Ananiuliak Island Archeological District—Prehistoric site 8000-8499 BC, 7500-7999 BC
- Cape Field at Fort Glenn (Umnak Island)-Military air facility from 1925-1949
- Dutch Harbor Naval Operating Base and Fort Mears, US Army;
- Attu Battlefield and US Army and Navy Airfields on Attu;
- Japanese Occupation Site, Kiska Island; and
- S.S. NORTHWESTERN Shipwreck Site – Unalaska.
- Atka B-24D Liberator Site on Atka Island
- Chaluka Site, Nikolski—Prehistoric 1500-1999 BC
- Church of Holy Ascension, Unalaska—Architecture/Engineering, Religious Structure
- Holy Resurrection Church, Belofski—Architecture/Engineering, Religious Structure
- St. Alexander Nevsky Chapel, Akutan—Architecture/Engineering, Religious Structure
- St. Nicholas Church, Nikolski—Architecture/Engineering, Religious Structure

The Aleutians 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. OSCs 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. The ADNRS State Historic Preservation Office should be contacted at 269-8721 for information on archeological and historic sites.

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 Aleutians 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.

Before 1990, the State of Alaska made all decisions regarding the management of fish and wildlife resources and harvest opportunities. In 1990, however, Federal agencies became responsible for assuring a federal subsistence priority on Federal public lands, and in 1999 on Federal reserved waters. The Federal Subsistence Board adopts subsistence regulations that are administered by various Federal agencies on Federal public lands. State regulations still apply on all lands, and the State is still the manager of fish and wildlife on all lands and waters in Alaska. As a consequence, the number of agencies involved in regulating subsistence uses has increased. Therefore, in the event of a spill, more extensive coordination will be required in order to address subsistence resources. Regulations regarding subsistence harvest can also be expected to undergo regular modification. Current information on

harvest regulations can be obtained from ADF&G www.adfg.alaska.gov/index.cfm?adfg=subsistence.main or the USFWS Office of Subsistence Management (www.Alaska.fws.gov/asm/index.htm).

Subsistence uses in the area are extensive and vary by season, resource, and village. Some information about subsistence uses is community-sensitive. Contacts for potentially affected communities are identified in the *Response Section, Part One*.

Subsistence activities include harvesting, sharing, and consuming vegetative and terrestrial and aquatic animal resources. Nearly all the residents in each of the communities take part in subsistence activities (ADCED 2010; Sepez et al. 2005). The communities in the region depend heavily on subsistence resources such as (ADCED 2010):

- Salmon;
- Non-salmon fish species (e.g., cod, flounder, greenling, halibut, rockfish, sablefish, sculpin, sole, char, and trout);
- Shellfish;
- Marine mammals (e.g., seals);
- Land mammals (e.g., caribou, wild cattle, and reindeer);
- Birds and bird eggs (e.g., geese);
- Marine invertebrates; and
- Vegetation.

Federal subsistence fishery regulations require that a community be classified as rural “in order to harvest subsistence wildlife, fish, and shellfish on Federal lands” (Sepez et al. 2005, pg. 293). Designated subsistence use areas within the proposal area have been well documented (LaRoche and Associates 2005). In addition to the communities highlighted in Table 3-11, the following communities and areas are known subsistence harvest areas of importance in and adjacent to the study area: Port Moller, Nelson Lagoon, Sand Point, Squaw Harbor, Unga, Belkofski, King Cove, Cold Bay, Sanak Island, Pauloff Harbor, and Umiak Island. The extent of the subsistence use areas that have been documented include:

- Port Moller, Herendeen Bay, Bear River, Sandy River, Point Edward to Walrus Island and 3 miles offshore from Cape Kutuzof;
- Nelson Lagoon from Walrus Island to Spasuk River (and 3 miles offshore), including Kudobin Islands;
- Izembek Lagoon and Moffett Lagoon extending 3 miles offshore from the barrier islands;
- Pavlof Bay/Canoe Bay between Bluff Point and Cape Tolstoi;
- Bechevin Bay from the western boundary of Izembek Lagoon to the west of Swanson Lagoon including Cold Bay and offshore areas within a 3-mile limit including north of Bechevin Bay and Morzhovoi Bay;
- Unimak Pass from Seal Cape to Cape Sarichef and extending 3 miles offshore to the western boundary of the AEB and including the northern shore of Unimak Island and southern shore to False Pass and Deer Island;
- Sanak Islands and coastal waters;
- Krenitzin Islands including Hot Springs and Akutan Bays on Akutan Island, Lost Harbor, Surf Bay on Akun Island;
- Unalaska Island including Wide Bay, Broad Bay, Nateekin Bay, Captains Bay, Iliuliuk Bay, Summer Bay and Hog Island in Unalaska Bay to Cape Wislow and Reese Bay;
- Umnak Island coastal waters including the Pancake and Adugak Islands;

- Samalga, Amutka, and Seguam islands and coastal waters;
- Atka and Amlia islands and coastal waters; and
- Adak Island and coastal waters.

5. Commercial Fishing

The U.S. has exclusive fishery management authority over all marine fishery resources in the Exclusive Economic Zone (EEZ), the area extending between 3 and 200 miles offshore as established under the Magnuson-Stevens Act (US Code Title 16, Section 1801 *et seq.*). The fisheries within the Bering Sea–Aleutian Islands (BSAI) ecosystem are managed under a sophisticated multispecies framework that is based on extensive monitoring by both fishers and managers.

The groundfish fishery in Alaska is the largest commercial fishery in the world. In addition to groundfish, other key species harvested include but are not limited to crab, salmon, and halibut. About 80 stocks of groundfish are recognized and managed in the BSAI ecosystem (NPFMC 2006); chief among these are stocks of walleye pollock, Pacific cod, and Atka mackerel. The federal groundfish fisheries extend southward in the Aleutian Islands west of 170°W to the border of the EEZ. In addition, herring, crab, halibut and salmon are also fished. The ADF&G manages commercial fisheries near to shore, inside the 3-mile zone. Compared to the federal fisheries, the State-managed groundfish fisheries account for a small portion of the total and, in the subarea, consist primarily of Pacific cod and black rockfish.

Commercial fleets operate out of most of the communities within the subarea. Much of the seafood processing labor force comes from outside the region, although individual communities vary as to what portion of labor comes from local sources. The epicenter of commercial fishing in the region is Unalaska/Dutch Harbor, with its large commercial fleet and processors, as well as offshore floating processors (Sepez et al. 2005).

Some of the larger fishing ports in the subarea include Akutan, King Cove, Sand Point and Unalaska. Adak is also a major fish processing community, particularly for Pacific cod. For communities within the AEB, revenue from the groundfish fisheries is distributed throughout borough communities due to the tax structure.

Employment in the Aleutian Islands communities is closely related to the commercial fishery, particularly the groundfish fishery. Communities with sizeable seafood processing operations (Akutan, King Cove, Unalaska and Sand Point) typically have very low official unemployment rates. Seafood processing dominates employment in the manufacturing sector of this region.

Taxes from the fisheries are an important source of income for the region. Local raw fish taxes are collected in Akutan, King Cove, Sand Point, and Unalaska, and all but Unalaska are also subject to a borough raw fish landing tax. Processing is a major component of the economy in the Aleutian Islands. The Fisheries Resource Landing tax is considerably more important in the Aleutian Islands region. Pollock comprises the majority of fish processed in the region (often approximately >90 percent), followed by Pacific cod, and other species such as Atka mackerel, rockfish, sablefish and other groundfish.

The Aleutian Islands region does more inshore processing of groundfish (674,000 metric tons in 2001) than any other region (NMFS 2005). Washington state-based individuals or firms own most of the shore processing facilities in the region; none of the shore processing plants is owned by resident entities (NMFS 2004).

The Bering Sea/Aleutian Islands (BSAI) crab fishery includes king (*Paralithodes* and *lithodes spp.*) and Tanner crab (*Chionoecetes spp.*). These species are most commonly found along the continental shelf and slope to depths of approximately 1,000 m (NMFS 2004). There are four species of king crab that support the BSAI fisheries including red king crab, blue king crab, golden king crab, and scarlet king crab. This application focuses on the following crab species due to their significance as a commercial species within the project area:

- Aleutian Islands red king crab – Red king crabs are taken in areas of all sediment types at depths of 20 to 100 fathoms (120 to 600 feet).
- Aleutian Islands golden king crab – Golden king crabs are taken in areas consisting of rough, uneven bottom and in compacted sand cobble sediments at depths of 100 to 400 fathoms (600 to 2,400 feet). Fishery effort is concentrated at the entrances to passes between the islands, particularly in the eastern district. In the western district, the fishery occurs in steep rocky terrain, near passes between islands, and on moderately sloping mud/sand sediments in basins.
- Aleutian Islands Tanner crab – Tanner crabs are taken in areas of soft sediment types (silt and mud) at depths of 30 to 110 fathoms (180 to 660 feet) (NMFS 2004).

In 2005, the crab fishery was conducted under the newly implemented Crab Rationalization Program, which established a quota share system for allocating the harvest, including for Eastern Aleutian Islands golden king crab, Western Aleutian Islands golden king crab, and Western Aleutian Islands red king crab fisheries (NMFS 2007). The program also includes geographic landing requirements and transfer restrictions linking Processor Quota Shares (PQS) and Individual Processor Quota (IPQ) to specific fishery-dependent coastal communities with a history of participation in these fisheries. There are nine total Eligible Crab Communities, six of which are located within the proposed area or immediately adjacent to it including Adak, Akutan, Unalaska/Dutch Harbor, False Pass, King Cove, and Port Moller. Every community but Adak has a “Right of First Refusal” on proposed sales of PQS for use outside of the community.

Dutch Harbor/Unalaska has been one of the nation’s top fishing ports since 1992 (NMFS 2004). Compared to other ports in the Aleutian Islands, Unalaska provides substantial support services for the Bering Sea fisheries. Unalaska can support all range of services for any vessel class in the pollock, crab, and other groundfish fisheries and, for this reason, the support services are heavily dependent upon the success of the groundfish and crab fisheries.

According to EDAW, Inc. (2005), approximately 80 percent of the King Cove workforce is employed by the commercial fisheries. Several large processors are located in King Cove, with Peter Pan Seafoods being the only shore-based processor. Although King Cove once depended heavily on salmon, the community now processes groundfish, halibut, and crab from the Gulf of Alaska and BSAI. In addition, the community is home to several large crab vessels.

Akutan is a CDQ community, also heavily dependent on the commercial fisheries, that benefits from the allocation of BSAI groundfish and crab to the CDQ program. The largest shore-based processing plant in North America, operated by Trident Seafoods, is located in Akutan. The facility is self-sufficient (e.g., generates its own power) and can house as many as 825 Trident employees (Trident 2010). A floating processor is also based in Akutan. Fishing vessels delivering to Akutan focus primarily on pollock, crab, and Pacific cod.

Atka is considered the westernmost fishing community in the Aleutian Islands chain (Sepez et al. 2005). Atka Pride Seafoods, a small on-shore processing plant, services the local fleet. In 2008, Atka Pride

Seafoods owned and operated by APICDA, accomplished 100 percent hire of local residents for the processing plant (Global Food Collaborative 2010). Despite its limited support services, a number of offshore fish processors carry out crew changes through Atka (Sepez et al. 2005).

False Pass is heavily dependent on commercial fishing as part of the local economy. In 2008, APICDA opened Bering Pacific Seafoods and produced headed and gutted fillets. As part of the CDQ program, the plant aims to benefit the region (Global Food Collaborative 2010).

All fishing seasons are subject, however, to emergency openings and closures and most seasons are only open for a portion of the time specified in the regulations. Fishing regulations and seasons can change from year to year. Information on which species are currently being harvested may be obtained from the ADF&G, Division of Commercial Fisheries in Kodiak.

During the Selendang Ayu oil spill incident, the Alaska Department of Environmental Conservation (ADEC) commissioned a study to describe the major commercial fisheries that could be impacted by the spill. The complete report can be found at the following link:
www.dec.alaska.gov/spar/perp/response/sum_fy05/041207201/fish/041207201_fisheries_rpt.pdf

Maps of key commercial fishing areas are available in ADF&G publications: *Alaska Habitat Management Guide Reference Maps, Southwestern Region, Vols. 1 and 2* and *Alaska Habitat Management Guide, Southwestern Region Map Atlas*. As fishing periods are adjusted yearly by emergency openings and closures, contact ADF&G for current fishing periods. Updated information may be found at their Commercial Fisheries web site: www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

The following groups may be contacted for information on location and timing of fishing and local current conditions. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about conditions and are often willing to share information.

Organization	Address	Phone Number
Alaska Crab Coalition	3901 Leary Way NW #6, Seattle, WA 98107	(206) 547-7560
Bering Sea Fisherman's Association	725 Christiansen Drive, Anchorage, AK 99501	279-6519
Alaska Draggers Association	P.O. Box 991, Kodiak, AK 99615	
Deep Sea Fisherman's Union/Pacific	5215 Ballard Ave NW, Seattle, WA 98107	(206) 783-2922
Alaska Marketing Association	Building C-3 Room 232 Fisherman's Terminal, Seattle, WA 98119	
Fishing Vessel Owner's Association	West Wall Bldg Room 232 Fisherman's Terminal, Seattle, WA 98119	(206) 285-3383
American Factory Trawler Assn.	4039 21 st Ave West Suite 400, Seattle WA 98199	(206) 285-3739
Peninsula Marketing Association	P.O. Box 248, Sand Point, AK 99661	383-3600
American High Seas Fisheries Assn.	3040 W Commodore Way, Seattle, WA 98199	
United Fishermen of Alaska	211 Fourth Street Suite 112, Juneau, AK 99801	
United Fishermen's Marketing Assn.	P.O. Box 1035, Kodiak, AK 99615	

6. Sport Fishing and Hunting

Sport fishing is not as extensive in the Aleutians Subarea region as it is in the Alaska Peninsula and other parts of Alaska. Coho and sockeye are the two salmon species most frequently targeted in Dutch Harbor/Unalaska's freshwater and saltwater sport fisheries (ADF&G 2010f). In 2005, there were at least four charter boat companies operating out of Dutch Harbor/Unalaska and three registered freshwater

and six saltwater fishing guides. In 2000, there were 833 sport-fishing permits obtained for Unalaska (Sepez et al. 2005).

The small charter boat fleet in Dutch Harbor/Unalaska provides non-local anglers access to the area's best known sport fishery targeting halibut that travel in or through waters in the northwestern portion of the project area. In July and August, halibut is often taken in both the Bering Sea and Gulf of Alaska. Black and dusty rockfish are popular game species found in the Aleutians and are typically caught nearshore (ADF&G 2010f). In 2000, 42 sport-fishing permits were issued for Sand Point. As of 2000, there were five sport-fishing guides operating out of Sand Point, four of which focused on freshwater activities (Sepez et al. 2005).

Reference:

ADF&G (2010f). Alaska Peninsula Sport Fisheries. Available at: www.sf.adfg.state.ak.us/Management/Areas.cfm/FA/kodiakAKPenn.dutch .

Sepez, J.A, B.D. Tilt, C.L. Package, H.M. Lazus, and I. Vaccaro (2005). Community Profiles for North Pacific Fisheries - Alaska. U.S. Department of Commerce, National Oceanic Atmospheric Administration Technical Memorandum NMFS-AFSC-160, 552 pp.

Contact the ADF&G for current seasons within the area of the subarea. Updated information may be found at their Sport Fish web site: www.adfg.alaska.gov/index.cfm?adfg=fishingSport.main

This Subarea includes State Game Management Units 9D and 10.

7. Marine Recreational and Tourism

The Shumagin Islands and Dutch Harbor/Unalaska are the two main areas of importance to tourism in the Aleutians. Typically, these areas are rich in biodiversity, are relatively accessible and pristine. Caribou hunting, birding, beach combing, fishing, skiing and kayaking are popular tourist activities in the more established and accessible tourist areas. The tourism industry as a whole is largely dependent on the marine environment. Sport fishing, marine and terrestrial sightseeing, and boating are recreation and tourism activities that residents and visitors enjoy in the subarea. Recreation and tourism is extremely limited in the communities in the subarea, primarily because they do not have the facilities or resources to support such an industry.

Smaller communities like Adak have tourism activities on a much smaller scale such as visitors for sightseeing on cruise vessels or the Alaska Marine Highway System Ferry. The ferry and small tour boats also stop in Akutan, Sand Point, Cold Bay, and King Cove and to a limited extent, False Pass.

The subarea includes three national wildlife refuges:

- Alaska Maritime National Wildlife Refuge, which includes the Aleutian Islands from approximately Unimak Island to Attu;
- Alaska Peninsula National Wildlife Refuge, which extends from False Pass along the southern portion of the peninsula to just east of Ugashik; and
- Izembek National Wildlife Refuge, which includes Umiak Wilderness Area and encompasses the area around the Izembek Lagoon from Morzhovoi Bay to areas north of Cold Bay on the Alaska Peninsula.

Although these large expanses of public lands are surrounding communities like False Pass and others, they do not add much to the local economies and accessibility is limited. Access to public and tribal lands is by cruise, tour, ferry, or chartered vessels and air and boat taxis. (See also Part 4.A Land Management Designations)

Public Anchorages and Moorings include:

- Akutan Harbor, Akutan Island
- Dutch Harbor, Unalaska Island
- Nazan Bay, Atka Island
- Kuluk Bay, Adak Island
- Constantine Harbor, Amchitka Island-Dock area closed to general public
- Kiska Harbor, Kiska Island
- Massacre Bay, Attu Island

For recreational information, contact:

Izembek National Wildlife Refuge, Cold Bay, Alaska 532-2445

The following organizations can be contacted with requests for specific information on location and timing of recreation and tourism 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.

Alaska Office of Tourism Development.....465-2012
 Alaska State Chamber of Commerce.....586-2323
 Alaska Native Tourism Council.....274-5400
 Alaska Wilderness Recreation & Tourism Assoc.....463-3038

References:

Sepez, J.A, B.D. Tilt, C.L. Package, H.M. Lazus, and I. Vaccaro (2005). Community Profiles for North Pacific Fisheries - Alaska. U.S. Department of Commerce, National Oceanic Atmospheric Administration Technical Memorandum NMFS-AFSC-160, 552 pp.

*8. Marinas and Ports
 (See Resources Section)*

9. Fish Processing

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

Company	Location	Phone
Alyeska Seafoods, Inc.	Unalaska	581-1211
San Souci Seafoods	Dutch Harbor	581-1533
Garden Cove Seafoods, Inc.	Saint George	(206) 851-2700
Trident Seafoods Corp.	Sand Point	383-4848
Queen Fisheries Inc.	Dutch Harbor	581-1225
Trident Seafoods Corp.	Akutan	698-2211
Trident Seafoods Corp.	Saint Paul	546-2377
Westward Seafoods, Inc.	Dutch Harbor	581-1660
Unisea, Inc.	Dutch Harbor	581-1258

East Point Seafood Co.	Dutch Harbor	(206) 284-7571
Icicle Seafoods, Inc.	Dutch Harbor	(206) 282-0988
Peter Pan Seafoods, Inc.	King Cove	(206) 728-6000
Seatech Corp.	Akutan	(206) 782-6007
Snopac Products, Inc.	Saint George	(206) 764-9230
Unisea, Inc.	Saint Paul	546-2530
Icicle Seafoods, Inc.	Saint Paul	546-2405

10. Logging Facilities

There are no logging facilities in the Aleutians Subarea.

11. Water Intake/Use

The following list of public water intake/use permits was generated from a database maintained by ADEC.

Name of Facility	Location	State ID Number	Source
Adak Utilities	Adak	260595	Surface
Atka	Atka	260058	Surface
City of Akutan	Akutan	260252	Surface
City of Cold Bay	Cold Bay	260414	Ground
City of King Cove	King Cove	260244	Surface
False Pass Treatment Plant	False Pass	262199	Surface
Izembek Nat. Wildlife Refuge	Aleutian East	262076	Ground
Nelson Lagoon Water System	Nelson Lagoon	260804	Surface
Nikolski Village	Nikolski	260278	Ground
Offshore Systems	Unalaska	262505	Surface
Peter Pan Housing	False Pass	260317	Surface
Peter Pan Seafood	Port Moller	261216	Surface
Reeve Sand Point Terminal	Sand Point	263013	Ground
Saint George Water System	Saint George	260074	Ground
Saint George Island Hospital	Saint George	260707	Ground
Saint Paul Water System	Saint Paul	260286	Ground
Sand Point Water System	Sand Point	260294	Ground
Trident Seafood Corp.	Akutan	261193	Surface
Trident Seafood Inc.	Sand Point	262351	Surface
USAF Eareckson AFS	Shemya Island	260511	Ground
Unalaska Water System	Unalaska	260309	Surface
USAF Cold Bay	Cold Bay	260498	Ground
USCG Loran Station Attu	Attu Island	260943	Ground
USCG Saint Paul Loran	Saint Paul	261436	Ground
USN Lake Andy Rec Area	Adak	262050	Surface
USN Mitchell Creek	Adak	260943	Surface
USN NAD Moffet Hill	Adak	262092	
USN Zeto Point	Aleutian West	260951	
Zapadine Bay Water System	Aleutian West	261428	

SENSITIVE AREAS: PART FIVE – LAND MANAGEMENT

A. LAND MANAGEMENT DESIGNATIONS

1. Access to Lands: Land ownership must be determined and landowners contacted to evaluate incident-specific protection priorities, obtain land-use permitting requirements, and obtain permission to access lands. Native corporation lands, as well as local, State, and Federal government lands often require special use permits. If an incident affects private lands or Native Allotments, permission to enter lands should be sought from the landowner. The local Borough government is often the best source of private land ownership records.

2. State:

Port Moller State Critical Habitat Area was established in 1972 to protect habitat crucial to perpetuation of fish and wildlife, especially waterfowl. The area includes uplands, tidelands and submerged lands.

Izembek State Game Refuge was established in 1960 to protect natural habitat and game populations, especially waterfowl. The area includes tide and submerged lands.

Port Heiden Critical Habitat Area was established in 1972 to protect natural habitat crucial to the perpetuation of fish and wildlife, especially waterfowl.

3. Federal:

Izembek National Wildlife Refuge Covering 320,893 acres, the Refuge faces the Bering Sea on the tip of the Alaska Peninsula. Most of the refuge (300,000 acres) was designated as Wilderness in 1980 under the Alaska National Interest Lands Conservation Act. The landscape features volcanoes, glaciers, valleys, tundra and lagoons. Izembek Lagoon features one of the largest eelgrass beds in the world. The Lagoon provides a feeding area for migratory birds, particularly during fall migration, including the world's population of Pacific black brant (150,000 birds on average), Taverner's Canada geese (55,000), and emperor geese (6,000). Approximately 23,000 threatened Steller's eiders also molt, rest, and feed at Izembek each autumn. Most waterfowl arrive in August/September. A second wave of mostly sea ducks arrives in November to overwinter. Thousands of shorebirds, as well as brown bear, caribou, ptarmigan, and furbearers inhabit the Refuge. Waterfowl and other sport hunting are primary visitor activities.

Alaska Maritime National Wildlife Refuge The majority of this vast Refuge occurs within the Aleutians Subarea. The entire Refuge covers over 4.5 million acres 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. Of this, the Island groups within the Subarea include the Aleutian (Attu to Unimak), Pribilof, and Shumagin islands. About 75 percent of Alaska's marine birds (15 to 30 million individuals from 55 species) use the Refuge. In addition, it is also home to thousands of sea lions, seals, walrus, and sea otters. Wildlife viewing, photography and backpacking are primary uses of the Refuge.

Alaska Peninsula National Wildlife Refuge: The Refuge, established in 1980, lies on the Pacific side of the Alaska Peninsula and covers about 3,500,000 acres. The Pavlof Unit, which abuts the Izembek NWR, and the North Creek Unit, in the Port Moller area, of the Alaska Peninsula Refuge are within the Aleutian Islands Subarea. 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. The cliffs, bays and poorly-drained lowlands provide abundant habitat for millions of birds, particularly seabirds, waterfowl,

and shorebirds that use the refuge primarily as a staging area during migration to and from nesting grounds in the Arctic. Seabirds also use the Refuge for breeding. All five species of Pacific salmon (Chinook, coho, sockeye, pink and chum) spawn in the streams and lakes on the Refuge. Brown bears forage heavily in coastal marshes and along shorelines and are particularly susceptible in the spring. Big game hunting and sport fishing are popular uses.

B. LAND MANAGEMENT MAPS

The ADNR maintains the following website for researching land records in Alaska: www.landrecords.info

The ADNR, under agreement with the ADEC, produced digital base and land management maps for each of the subareas using their ARC-INFO based GIS. The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. These maps are available on the internet at: www.asgdc.alaska.gov/maps/cplans/subareas.html

For more current detailed information on land status, go to the Bureau of Land Management's Spatial Data Management System web site at: www.sdms.ak.blm.gov/isdms/imf.jsp?site=sdms and click on the Generalized Land Status layer.

ATTACHMENT 1:WILDLIFE PROTECTION GUIDELINES – PRIBILOF ISLANDS

For the Pribilof Islands Wildlife Protection Guidelines, please visit the following website:
www.dec.alaska.gov/spar/perp/plans/scp_al.htm