

SENSITIVE AREAS: PART FOUR - BACKGROUND INFORMATION

INTRODUCTION

The background information contained in this section is a mixture of references to readily available documents, knowledgeable contacts, and data not readily available elsewhere. Industry-generated references that have had agency input and review are incorporated by reference.

LAND MANAGEMENT MAPS

The Alaska Department of Natural Resources, under agreement with the Alaska Department of Environmental Conservation, produced digital base and land management maps for each of the subareas using their ARC-INFO based Geographic Information System. The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. These maps are available on the internet at: <http://www.asgdc.state.ak.us/maps/cplans/subareas.html>

(This page intentionally blank.)

Insert land management designation maps--1 of 6 pages

<http://www.asgdc.state.ak.us/maps/cplans/cook/ci11n3.pdf>

Insert land management designation maps--2 of 6 pages

<http://www.asgdc.state.ak.us/maps/cplans/cook/ci21n3.pdf>

Insert land management designation maps--3 of 6 pages

<http://www.asgdc.state.ak.us/maps/cplans/cook/ci31n3.pdf>

Insert land management designation maps--4 of 6 pages

<http://www.asgdc.state.ak.us/maps/cplans/cook/ci41n3.pdf>

Insert land management designation maps--5 of 6 pages

<http://www.asgdc.state.ak.us/maps/cplans/cook/ci51n3.pdf>

Insert land management designation maps--6 of 6 pages

<http://www.asgdc.state.ak.us/maps/cplans/cook/ci61n3.pdf>

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. Applicable local borough governments are often the best source of private land ownership records.

2. State

The State of Alaska owns the majority of tide and submerged lands within the state. Tide and submerged lands are those areas located between the mean high tide line and three miles distance offshore. Submerged lands are those located beneath the line of ordinary high water along navigable water bodies.

The Alaska State Legislature has classified certain areas as being essential to fish and wildlife populations and public uses of these resources. These areas are designated as either a game refuge, critical habitat area or game sanctuary. Management of these essential areas is the joint responsibility of the Departments of Fish and Game and Natural Resources. Legislation pertaining to these lands may be found in Alaska Statutes Title 16, Chapter 20. Legal descriptions of area boundaries can be found in the Alaska Department of Fish and Game publication, State of Alaska Game Refuges, Critical Habitat Areas and Game Sanctuaries.

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

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

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

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

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

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

Clam Gulch Critical Habitat Area was established in 1976 to protect dense beds of razor clams.

The area provides opportunities for clam digging and commercial and sport fishing.

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

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

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

Trading Bay State Game Refuge was established in 1976 to protect habitat used by large numbers of waterfowl migrating through in the spring and fall and nesting in the summer. The area is used for moose calving in the spring, as a spring and fall feeding area for bears, and as a salmon spawning and rearing area. The area is also used for hunting and commercial and sport fishing. This area is of critical importance for subsistence waterfowl and moose hunting by Tyonek residents.

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

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

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

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

3. Federal

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

Katmai National Park and Preserve About 120 miles of the lower Cook Inlet coast lies within the legislated boundaries of this park between Kamishak River and Sukoi Bay on Cape Douglas. The threatened Steller sea lion hauls out just north of Cape Douglas, and Shaw Island serves as a significant seabird colony and harbor seal rookery. Most of the park's coast is designated

wilderness. The park is known for its brown bears, sport fishing, volcanoes, and scenery. The coastal area has become increasingly popular for wilderness bear viewing and photography.

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

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

Alaska Maritime National Wildlife Refuge The Gulf of Alaska Unit of the Refuge includes some of the islands, rocks and forelands along the coast of the Gulf of Alaska. Alaska Maritime consists of over 2,400 islands, headlands, rocks, islets, spires, and reefs along the Alaskan coast, stretching from Southeast Alaska to Cape Lisburne on the Chukchi Sea. About 75 percent of Alaska's marine birds (15 to 30 million of 55 species) use the Refuge. The Refuge also is home to thousands of sea lions, seals, walrus, and sea otters. Wildlife viewing, photography and backpacking are primary uses of the Refuge. The Refuge was established in 1980.

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

Gull Island is managed by the Alaska Maritime National Wildlife Refuge. The island is located in Kachemak Bay approximately 5 miles southeast of the end of Homer Spit. The nesting seabird colony here includes over 11,000 black-legged kittiwakes and 5,000 murre. Remote video cameras placed on the island provide real-time video feed of nesting birds and their behavior to seabird biologists and visitors at the Pratt Museum in Homer, Alaska.

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

B. HABITAT TYPES

Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the National Oceanic and Atmospheric Administration (NOAA) in *Environmental Sensitivity Index Guidelines* (October 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: <http://www.asgdc.state.ak.us/maps/cplans/subareas.html>. Updated ESI information can also be found on the internet at: <http://response.restoration.noaa.gov/order/esiindex.html>

1. Benthic Habitats

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

2. Shoreline Habitats

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

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

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

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

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

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

epifauna except at lowest intertidal levels.

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

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

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

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

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

ShoreZone Mapping. A coastal habitat mapping effort has produced 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 intertidal and shallow subtidal areas. ESI types are cross-referenced. The information may be accessed at:

<http://www.CoastAlaska.net>

3. Upland Habitats

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 U.S. Fish and Wildlife Service, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been completed, some of which are available in a Geographic Information System database (see the following figure). Updated map data is being placed on the National Wetlands Inventory Internet web site at: <http://wetlands.fws.gov/>

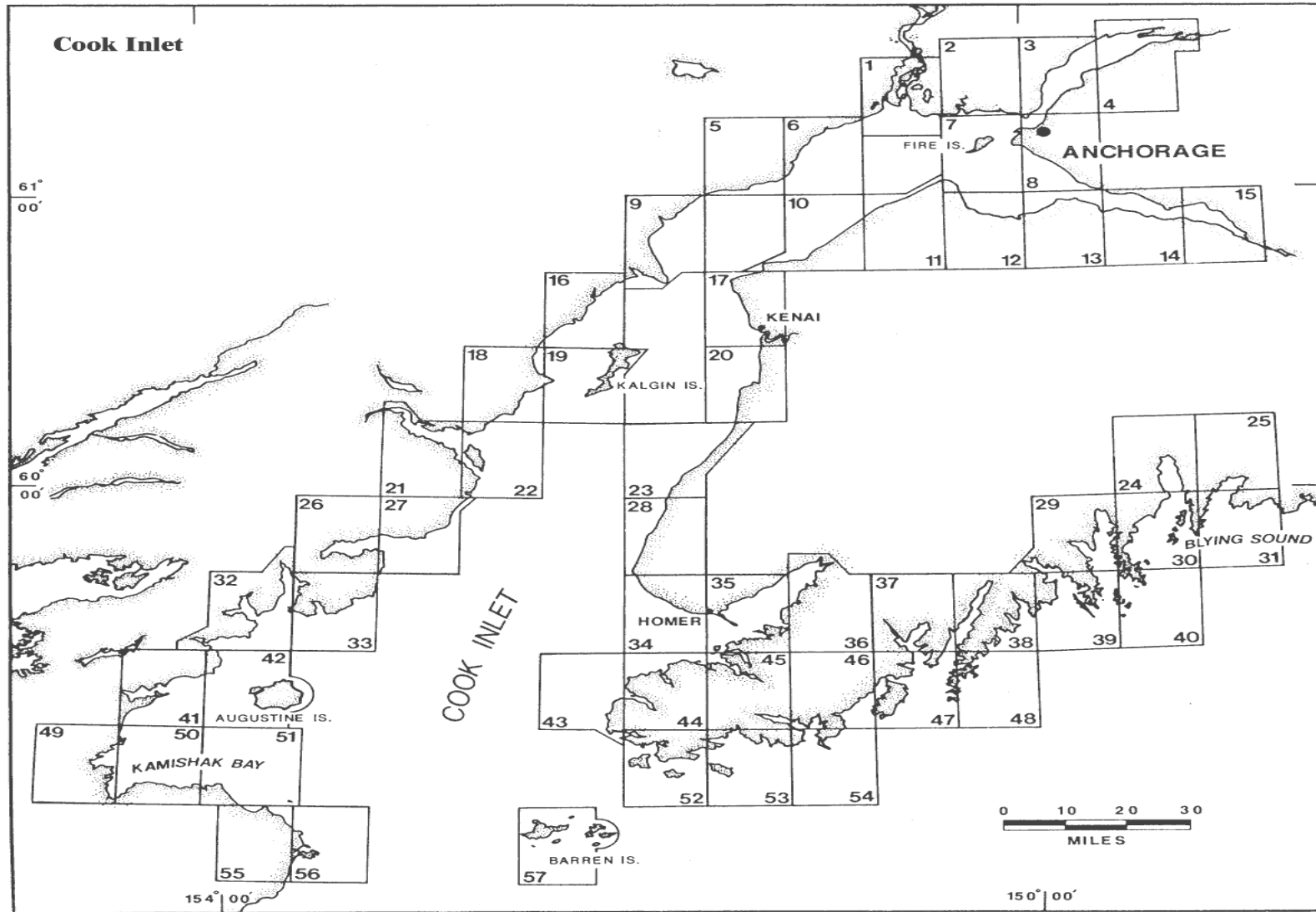
National Wetlands Inventory
ESIC/USGS
Anchorage
786-7011

ESI HABITAT RANKING

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

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

Map Index 1 for ESI Maps in Cook Inlet



NATIONAL WETLANDS INVENTORY STATUS - ALASKA

