NORTHWEST ARCTIC
SUBAREA CONTINGENCY PLAN

SENSITIVE AREAS
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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. People from the local community are often knowledgeable sources for information related to fishing, hunting, non-consumptive outdoor sports, and subsistence use. They may also have a good idea of which spill response techniques (especially exclusion and diversion booming) are practicable under prevailing weather and current conditions.

The Alaska Regional Response Team (ARRT) has adopted several documents (see the *Alaska Federal/State Preparedness 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 location) include:

- *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)
- *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 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 clean-up options by shoreline type.

Section G of the Subarea Contingency Plan contains site-specific Geographic Response Strategies (GRSs) for use by responders in protecting key sensitive areas. In addition, Environmental Sensitivity Index (ESI) maps have been produced that illustrate selected sensitive resources and shoreline types.

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 subarea contingency plans.

The definition of sensitive resources and their geographic locations requires use of field observations and data available from published and non-published materials or through additional field work. 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.

In January 2010, Audubon Alaska, in cooperation with Oceana, published the *Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. This information is incorporated with the permission of Audubon Alaska.

A substantial effort to develop and refine a sensitive areas database was undertaken by Alaska Clean Seas (ACS) and was produced in their *Alaskan Bering Sea Coastal Resources Manual, Norton Sound Region*. The ACS material was developed with input from Federal, State, and local agencies. This information is incorporated, by reference, into this section (with the permission of ACS).

Many of the maps presented in this section are available on-line through the Internet at:

http://www.asgdc.state.ak.us/maps/cplans/subareas.html

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

Doug Mutter
U.S. Department of the Interior
Office of Environmental Policy
and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
271-5011
FAX: 271-4102
email: douglas_mutter@ios.doi.gov

Jack Winters
Alaska Department of Fish and Game
Division of Habitat
1300 College Road
Fairbanks, Alaska 99701
459-7285
FAX: 459-7303
email: jack.winters@alaska.gov

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 Fairbanks 907-459-7285
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 907-271-5011
U.S. Department of Commerce, National Marine Fisheries Service	sea lions, seals, whales, endangered marine species, anadromous fish in marine waters, essential fish habitat	Protected Resources Division Anchorage 907-271-5006
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 907-789-6000
University of Alaska	rare and endangered plants	Alaska Natural Heritage Program Anchorage 907-257-2785
CULTURAL AND ARCHAEOLOGICAL SITES		
Alaska Department of Natural Resources	historic sites, archaeological sites, national register sites	Alaska Office of History and Archaeology Anchorage 907-269-8721
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 907-271-5011
SHORELINE TYPES		
U.S. Department of Commerce, National Oceanic & Atmospheric Administration	shoreline types, environmental sensitivity index maps	Scientific Support Coordinator Anchorage 907-271-3593

Agency	Resources	Point of Contact
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 907-269-8565
Alaska Department of Fish and Game	state game refuges, state critical habitats	Division of Habitat Fairbanks 907-459-7285
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 907-271-5011
U.S. Department of Defense	military installations and reservations	Alaska Command Anchorage 907-552-3944
Local Governments: – Northwest Arctic Borough – NANA Regional Corporation – Maniilaq Association – Bering Straits Coastal Resource Service Area – City of Nome	municipal and private lands, and rights-of-way coastal program special areas, plans, policies	For the current local government contact information, go to B. Resources Section, Part One Community Profiles For the current tribal contact information, go to B. Resources Section, Part Three Information Directory, Native Organizations and Federally Recognized Tribes
COMMERCIAL HARVEST		
Alaska Department of Fish and Game	fishing permits, seasons	Commercial Fisheries Division Fairbanks 907- 459-7387
Alaska Department of Natural Resources	tideland leases	Division of Mining, Land, and Water Anchorage 907-269-8565

Agency	Resources	Point of Contact
Alaska Department of Environmental Conservation	seafood processing	Division of Environmental Health Juneau 907-269-7644
U.S. Department of Commerce National Marine Fisheries Service	fishing permits, seasons	Protected Resources Division Anchorage 907-271-5006
SUBSISTENCE, PERSONAL, AND SPORT USES		
Alaska Department of Fish and Game	subsistence and personal uses statewide and navigable waters, sport hunting and fishing	Sport Fish Division Fairbanks 907-459-7388
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 907-271-5011
U.S. Department of Commerce	subsistence use of: whales, porpoises, seals, sea lions	Protected Resources Division Anchorage 907-271-5006
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 907-451-2695
Alaska Department of Fish and Game	sport hunting and fishing	Division of Habitat Fairbanks 907-459-7285
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 907-465-5478

Agency	Resources	Point of Contact
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 907-271-5011
WATER INTAKE AND USE FACILITIES		
Alaska Department of Environmental Conservation	public drinking water wells, treatment, and storage, fish processing facilities	Division of Water Anchorage 907-269-7601
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Division of Habitat Fairbanks 907-459-7285
Alaska Department of Natural Resources	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Division of Mining, Land, and Water Juneau 907-465-3400
U.S. Coast Guard	marinas and docks, mooring buoys	Sector Anchorage Anchorage 907-271-6700

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 clean-up activities. This prioritization scheme must be used in conjunction with spill-specific information (e.g., size and location of spill, type of product, trajectory) to determine the actual protection priorities for that discharge. Specific guidance to On-Scene Coordinators for protecting cultural resources is contained in Annex M of the *Unified Plan*.

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

CRITERIA FOR RELATIVE PRIORITY RATING

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

B. AREAS OF MAJOR CONCERN

Shoreline Geomorphology - Coastal Habitat Types:
- River deltas
- Sheltered lagoons
- Open lagoons
- Salt marshes
- Mud flats
- Barrier islands
- Spit beaches
- Protected bays

Lake and River Habitat Types:
- Connected lakes
- Freshwater springs

Upland Habitat Types:
- Riparian Willow

Ice Habitat Types:
- Leads and Polynyas
- Pack and Shore-fast Ice Edge

Threatened or Endangered Species Habitat:
- Spectacled Eider Critical Habitat
- Polar Bear Critical Habitat
- Steller Sea Lion Critical Habitat

Spotted Seal Haulout Areas (> 10 seals)
Walrus Haulout Areas
Polar Bear Denning and Feeding Areas
Beluga Whale Concentration Areas
Bowhead Whale Nearshore Migration Routes
Caribou Calving and Insect Relief Areas
Large Seabird Colonies (> 100 birds)
Waterfowl and Shorebird Spring and Fall Concentration Areas
Anadromous Fish Spawning and Rearing Streams (i.e., salmon, Dolly Varden, whitefish)
Herring spawning areas
Land Management Designations:
- Federal: Wilderness
  - Wild and Scenic Rivers
  - National Natural Landmarks
- State: Refuges
  - Sanctuaries
  - Critical Habitat Areas

Cultural Resources/Archaeological Sites:
- National Historic Landmarks
- Burial Sites
- National Register Eligible Village Sites
- Intertidal Sites

Subsistence Harvest Areas
High Commercial Use Areas
High Recreational Use Areas

C. AREAS OF MODERATE CONCERN

Spotted Seal Haulout Areas (< 10 seals)
Ringed Seal Shorefast Ice Concentration Areas
Bearded Seal General Distribution
Seabird Colonies (10 - 100 birds)
Waterfowl and Shorebird Nesting or Molting Concentration Areas
Anadromous Fish Streams (rearing only)
Grizzly Bear Concentration Areas (marine mammal/carcasses; salmon)
Polar Bear General Distribution
Caribou Migration Routes
Muskox Riparian Habitat
Commercial Harvest Areas
Recreational Use Areas
Land Management Designations:
- Federal: National Parks
  - National Monuments
  - National Wildlife Refuges
- State: State Parks

Cultural Resources/Archaeological Sites:
- National Register Eligible Sites (Other Than Village Sites)
- Sites Adjacent To Shorelines

D. AREAS OF LESSER CONCERN

Upland Habitat Types:
- Mesic/dry tussock tundra
- Alpine tundra

Bowhead Whale General Distribution
Gray Whale Nearshore Migration and Feeding Areas
Walrus General Distribution
Seabird Colonies (< 10 birds)
Waterfowl and Shorebird General Distribution
General Freshwater Fish Habitat
Land Management Designations:
- Federal: Public Lands
  - National Forests
  - National Preserves
- State: General Public Lands

E. AREAS OF LOCAL CONCERN

Some areas within the Subarea warrant special attention due to the presence of highly productive wildlife habitat, the ability to sustain a large part of a villages' subsistence needs, the occurrence of unusual historical sites or large mineral deposits, recreation, energy development, hazardous areas, or the presence of important fisheries. These have been identified as Areas Meriting Special Attention, Important Use Areas, Special Use Areas, Sensitive Areas, or Subsistence Use Areas through the Bering Straits Coastal Resource Service Area, Northwest Arctic Borough, and City of Nome Coastal District Management Plans. Additional information was provided by the Alaska Maritime National Wildlife Refuge. See also the accompanying maps.

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
1. St. Lawrence Island, Adjacent Islands, and Rocks	The area is habitat for 2.7 million seabirds and 100,000 walrus. Subsistence uses are: birds, bird eggs, walrus, polar bear, reindeer, Arctic fox, bowhead and other whales, seals, crab, fish, and plants. Sites identify early Siberian Yuit life. Steller sea lion haulouts are present.	Gambell and Savoonga
2. Little Diomede Island	Least and crested auklets are most of the 1.2 million birds here. Also habitat black-legged kittiwakes, thick-billed murres, walrus. Birds, bird eggs, native plants, walrus, seals, whales, fish, king crab are subsistence resources.	Native Corp. of Little Diomede (surface), and Bering Straits Native corp. (subsurface)
3. Stebbins Wetlands	134,000 shorebirds and waterfowl on non-aquatic areas, undetermined amount in ponds. Subsistence uses are for waterfowl and eggs. Remains of five circa 1900 marine vessels are in St. Michael Channel.	Native Corp. for the villages of St. Michael and Stebbins
4. Kwiniuk, Tubutulik, and Kwik River Drainages	Fish (salmon, Arctic char, whitefish, grayling), mammals (moose, bear, and beaver), and berries occur here. This is one of the important pink and silver salmon spawning rivers.	Native Corp. for the village of Elim (surface and subsurface estate) and Federal
5. St. Michael Bay	The area is habitat for herring, and eelgrass beds provide food for birds, a nursery area for fish and crab, and a spawning area for herring. Subsistence uses: herring fishery, seals, salmon, and waterfowl. Commercial fishing occurs for herring and salmon. In 1833 St. Michael became the first European settlement in the region (historic cemeteries and buildings).	Native Corp. for the village of St. Michael (surface), The Bering Straits Native Corp. (subsurface)
6. Unalakleet River Drainage	The area provides subsistence uses for: fish (salmon, grayling, whitefish, Arctic char, smelt, and tomcod), mammals (moose, bear, caribou, and beaver), waterfowl, berries, plants, and timber. Commercial fishing occurs for the region's largest pink salmon run, king, silver and chum salmon. Historic Sites include: house pits at Old Unalakleet Village, a prehistoric village site, and sites in the River drainage. Recreation occurs at Unalakleet River Lodge. Besboro Island near Unalakleet is an important gull egg harvesting area and walrus haulout.	Native Corp. for the City of Unalakleet (surface), and Bering Straits Native Corp. (subsurface)
7. Koyuk River Drainage	The Koyuk River provides habitat for one of the region's largest moose population. Caribou winter here, and one of the region's few sheefish populations are located on the lower river. Wetlands south of the river are important for shorebird nesting, and support one of the greatest densities of waterfowl. The river from Kuzitrin Lake to Norton Bay is essential for harvest of fish (salmon, whitefish, smelt, grayling, Arctic char, and tomcod), mammals (moose, caribou, bear, and beaver) and waterfowl.	Native Corp. for the village of Kuyuk (surface), and Bering Straits Native Corp. (subsurface)
8. Lost River	Potential mining area for tin, tungsten, fluorite, and beryllium	Mining claims or Native Corp.

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
9. Island Point to Beeson Slough, including Cape Denbigh	Cape Denbigh has the largest seabird colony in eastern Norton Sound (common murres, pelagic cormorants, horned puffins). Subsistence uses include: fish (salmon and herring), shellfish (crab and clam), waterfowl, eggs, and berries. Cape Denbigh is an important archaeological site, and the oldest known settlement in the region, lyatayet is located here. Commercial fishing for herring is from May 15 to June 15, and salmon from June 8 to August 31. Murre eggs are harvested at Cape Denbigh.	Native Corp. for the village of Shaktoolik (surface), and the Berings Straits Native Corp. (subsurface)
10. Golovin Bay/ Lagoon and the Niukluk River Drainages	The Golovin Bay/Lagoon are important for herring, boreal and pond smelt; sand lance; humpback, broad, and round whitefish; Bering and least cisco; Arctic char; saffron cod; starry and Arctic flounder; and tubenose, Bering, and sturgeon poachers. The entire north shore of the Lagoon consists of oil-sensitive delta marsh with stands of sea grass. The Niukluk River drainages support moose, and birds. Villagers harvest fish (salmon and herring), shellfish (crab and clams), marine mammals (seals and beluga), kelp, and waterfowl. Several offshore mining permits were issued and are being examined to see if documented deposits exist. The Fish and Niukluk rivers are moderately important salmon streams for commercial fishing. The Niukluk River has road access from Council and is one of the most important sport fishing areas for grayling, Arctic char, as well as pink, chum, and silver salmon. Also important moose hunting area for hunters from outside the state. Gull eggs are harvested in several areas of Golovin Bay, including Carolyn Island near its eastern entrance.	Native Corp. for the villages of Golovin, White Mountain, and Council (surface), the Bering Straits Native Corp. (subsurface), and the State
11. Rocky Point to Topkok Head	Marine waters are among the most productive in the world. There are large concentrations of sand lance, vital for fish-eating seabirds. The area contains the largest mainland seabird colonies in the region. Peregrine falcons, gyrfalcons, and rough-legged hawks nest on the cliffs. Herring spawn along rocky shores, and salmon, capelin, king crab, and several species of bottom fish are located along the coast. Historic Sites include: remaining house mounds and artifacts of several villages.	Native Corp. for the villages of Golovin and White Mountain (surface), Bering Straits Native Corp. (subsurface), and Federal
12. Safety Sound	The shore is composed of extensive marshes; tideflats; and seagrasss beds, and supports large flocks of nesting and feeding waterfowl and shorebirds. A channel from Safety Sound to Bonanza River hosts geese, cranes, and ducks (especially in August and September). Subsistence uses are: Seals, moose, waterfowl, bird eggs, and fish. Mining occurs in the upper Eldorado River drainage and along the Salmon River drainage. There are numerous unexcavated archaeological sites in the area.	Native Corp. for the village of Solomon and the City of Nome (surface), Bering Straits Native Corp. (subsurface), and the State
13. Nome River Drainage	Biologists have documented 17 species of fish in the river. The lower 30 miles of the river provide spawning for four salmon species, and the best spawning beds are located below "13 Mile Bridge", Waterfowl, moose, rabbit, ptarmigan, and three seal species (bearded, ringed, and spotted) also frequent here. From Fort Davis Bridge to the mouth of the river is important for sport fishing. Moose and bear along the river are also hunted.	Native Corp. for the City of Nome (surface), Bering Straits Native Corp. (subsurface), private, and holders of mining claims
14. McCarthy's Marsh	The area is waterfowl and shorebird habitat. Subsistence uses include: waterfowl, moose, bear, and caribou.	Federal (Bureau of Land Management)
15. Cape Woolley	Waterfowl and shorebirds use Woolley Lagoon. Subsistence uses include: fishing at the mouth of the Feather River, hunting waterfowl along lagoon and in surrounding wetlands, and hunting of walrus and seals along the coast.	Native Corp. for the community of King Island (surface), and Bering Straits Native Corp. (subsurface)

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
16. Kuzitrin River Drainage and Associated Wetlands	Wetlands in southwest corner of Bering Land Bridge National Preserve are important for waterfowl and shorebirds, and the drainage is considered one of the region's most important moose habitats.	Native Corp. for the community of Mary's Igloo (surface), Bering Straits Native Corp. (subsurface), and Federal
17. Brevig Lagoon	Subsistence harvest includes waterfowl, herring, salmon, and gull eggs. Extensive sheltered marshes and tide flats are important molting areas for oldsquaws.	Native Corp. for the village of Brevig Mission (surface), and Bering Straits Native Corp. (subsurface)
18. Agiapuk River Drainage	Moose, waterfowl, salmon, and grayling are harvested for subsistence uses.	Native Corp. for the villages of Brevig Mission and Teller (surface), Bering Straits Native Corp. (subsurface), and Federal and State
19. Grantley Harbor, Imuruk Basin, and Tuksuk Channel	One of the region's most productive marine fish habitats. Imuruk Basin supports large numbers of nesting waterfowl. Extensive sea grass lines Grantley Harbor providing feeding and rearing for fish and diving ducks. Herring, salmon, Arctic char, smelt, whitefish, tomcod, marine mammals, and waterfowl eggs are harvested for subsistence use.	Native Corp. for the villages of Brevig Mission, Teller, and Mary's Igloo (surface), Bering Straits Native Corp. (subsurface), Federal and State
20. Pilgrim River and Salmon Lake	The region's only known sockeye (red) salmon and the northernmost run in the state occurs here. This is an important moose hunting area due to easy access along the Kougarok-Nome road and high populations. 800 acres of land are proposed for disposal for seasonal and recreational home sites. Geothermal Development and Recreation: Pilgrim Hot Springs has geothermal and recreational development potential.	Native Corp. for the village of Mary's Igloo (surface), Bering Straits Native Corp. (surface and subsurface), and State and Federal
21. Lopp Lagoon/ Cape Prince of Wales	Cape Prince of Wales coast consists of rocky, mostly barren, steep terrain. Lopp Lagoon is one of the primary waterfowl and shorebird nesting areas in the region. Wales residents harvest crab, salmon, beluga whale, bowhead whale, walrus, seal, and polar bear in offshore areas. They harvest shellfish from the beach; and salmon, waterfowl, moose, muskox, and berries in the lagoon area.	Native Corp. for the village of Wales (surface), Bering Straits Native Corp. (subsurface), and State and Federal
22. Ikpek Lagoon and Nukluk, Pinguk, Kaguerak, and Kugrupaga Drainages	The drainages are important for migratory shorebird and waterfowl resting and feeding. Subsistence uses include hunting for waterfowl and moose, and fishing for salmon.	State and Federal
23. Arctic River Drainage	Important waterfowl and salmon harvest area. Wetlands in the lower part of the drainage are important waterfowl and shorebird habitat. Ten placer mining sites and one lode mine are located in the upper reaches of the watershed. Ear mountain may contain major mineral deposits.	Native Corp. for the village of Shishmaref (surface), Bering Straits Native Corp. (subsurface), and State and Federal
24. Serpentine River Drainage	One of the most important moose habitats in the region. The river supports salmon, Arctic char, and grayling, and wetlands provide habitat for waterfowl and shorebirds. Serpentine Hot Springs is a traditional	Native Corp. for the village of Shishmaref (surface), Bering Straits

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
	historic site and a contemporary spiritual site.	Native Corp. (subsurface), and Federal
25. Moonlight Springs Watershed	Principal water supply for the city of Nome.	Sitnasuak Native Corp.
26. Sisoalik Spit	Important feeding and staging for waterfowl in spring and shorebirds in summer. The lagoon is a rearing place for sheefish. Whitefish and herring also rear near the spit. Whales and seals are found near here. The area is a fall caribou migration route. Traditional subsistence camps are here during summer.	Maniilaq Association NANA Regional Corporation
27. Cape Krusenstern	The area is used by waterfowl during fall migration. Gulls and terns nest here and shorebirds use the coastal lagoons during the summer. Whitefish and herring are found in the lagoon. Seals use the barrier island beach and whales migrate in nearshore waters. The area hosts subsistence use of seals and belukha whales.	National Park Service
28. Kobuk/Selawik Lakes	Gulls and waterfowl are found in the area. It is important fish rearing habitat for salmon, sheefish, whitefish, char and pike. Herring also spawn here. Subsistence use is year-round.	NANA Regional Corporation Northwest Arctic Borough U.S. Fish and Wildlife Service
29. Cape Espenberg and Goodhope River	Seal haulouts and nesting gulls and waterfowl are present in this area. Seals, birds, and bird eggs are also harvested in this area for subsistence use.	NANA Regional Corporation
30. Kobuk River Delta	The sloughs and ponds of the Delta are important habitat for waterfowl. This is a major staging area. Sheefish, salmon and char also inhabit the Delta. Burbot and grayling are also abundant. Subsistence use area.	NANA Regional Corporation
31. Selawik River Delta	This is a major waterfowl use area, and is used heavily for fall migration staging. Sheefish, whitefish, char, grayling and burbot inhabit the waters of the Delta. Caribou migrate through here in the fall. Subsistence use area.	NANA Regional Corporation U.S. Fish and Wildlife Service
32. Salmon River	The lower reaches of the river are used by waterfowl for nesting. Chum salmon and Arctic char spawn in the river. Caribou migrate through the area in the fall and spring. Lower reaches provide winter habitat for moose.	
33. Upper Selawik, Hunt, Redstone Rivers	Nesting waterfowl are found in the area. Arctic char and grayling are present. Chum salmon spawn in the lower Hunt and Ambler Rivers. The Hunt and Redstone River valleys are a major caribou spring and fall migration corridor. The upper Selawik is also a caribou migration area.	NANA Regional Corporation U.S. Fish and Wildlife Service
34. Maniilaq River and Ambler Lowlands	A subsistence use area for caribou, moose, waterfowl, and furbearers. A caribou migration area and black and grizzly bear habitat.	NANA Regional Corporation Northwest Arctic Borough
35. Inmachuk River	Subsistence uses include: fishing moose, and trapping. The wetlands support waterfowl. There are historic sites here. The area also has musk ox and bear.	NANA Regional Corporation Northwest Arctic Borough State of Alaska

DESIGNATED AREA	REASONS FOR DESIGNATION	LAND OWNERSHIP/ VILLAGES TO CONTACT
36. Lower Buckland River	The area supports waterfowl and seal hunting, and berry picking. Moose and waterfowl are hunted here. Salmon and other fish are in the river. Historic sites are present. Subsistence use area.	NANA Regional Corporation
37. North Fork Squirrel River/Omar River	Waterfowl hunting, winter trapping and fishing occur here. Caribou migrate through, moose overwinter, and salmon spawn here. Historic sites are present. Subsistence use area.	Northwest Arctic Borough State of Alaska Bureau of Land Management
38. North Kivalina Coast	Subsistence uses are: hunting for seals, walrus, belukha and bowhead whales; berry picking; fishing; and moose hunting. Waterfowl stage here, arctic terns nest, and fish spawn and overwinter here. Historic sites are present.	NANA Regional Corporation Northwest Arctic Borough
39. Onion Portage	An important waterfowl use and fish spawning area. Moose overwinter here. Grizzly bears and migrating caribou use the area. Because it is a focal pint form migrating caribou, this is a high use subsistence area.	NANA Regional Corporation National Park Service
40. Eschscholtz Bay	Migrating waterfowl use the area in the spring. The Bay provides calving and feeding habitat for belukha whales. The area contains herring, cod and salmon. Seals haulout at Chamisso Island, and are common in the summer and fall. Subsistence use area.	NANA Regional Corporation
41. Elephant Point, Choris Peninsula	There is an Arctic Tern colony here. Thousands of seabirds use the area for nesting. Spotted seals haul-out here. Belukha whales are subsistence hunted in the area during the spring and early summer. Subsistence use area.	NANA Regional Corporation
42. Kobuk River	The river supports a large number of sheefish, who spawn between the Ambler and Selby rivers in the fall. Arctic char and whitefish also spawn in the river, as do a large number of chum salmon. Subsistence use area.	NANA Regional Corporation Northwest Arctic Borough
43. Selawik River	The 10 miles below Ingraksuksuk Creek is a major area for spawning sheefish. Whitefish also spawn here.	NANA Regional Corporation U.S. Fish and Wildlife Service
44. Wulik River	Arctic char spawn and overwinter here. Small populations of salmon are also present. Subsistence use area.	NANA Regional Corporation Northwest Arctic Borough State of Alaska
45. Noatak River	This river supports the NANA region's largest salmon run. Chum salmon spawn in the lower 200 miles of the river, especially concentrated between the Eli and Kelly rivers. In addition, pink salmon, Arctic char, and sheefish are present. A large number of gulls nest in this area and their eggs are harvested for subsistence use by the people of Noatak and Kotzebue.	NANA Regional Corporation Northwest Arctic Borough Maniilaq Association
46. Upper Kivalina River	A spawning area for chum and pink salmon and Dolly Varden. Overwintering for fish. Winter habitat for moose and caribou. Subsistence uses: fish, caribou and moose. Subsistence use area.	NANA Regional Corporation

An August 2000 Federal/State joint survey of Native Tribes in the subarea yielded additional information about sensitive areas near villages, as viewed from the local perspective. The Tribes responding to the survey and the top five sites of concern (and the reason for their importance) are presented below.

Native Village of Brevig Mission

Grantley Harbor	Natural resources
Imurak Basin	Natural resources
Shelman Creek	Drinking water source
Port Clarence	Salmon migration
Bering Sea	Marine mammal migration

Native Village of Diomede

The beach	Boat dock and meat storage
Tank farm	Fuel source
Village site	People live there
Surrounding waters	Where they hunt and fish

Native Village of Koyuk

Koyuk River	Fish and mammals
Norton Bay	
Homes	Where people live

Native Village of Noatak

Noatak River	Subsistence
Noatak school	Education
Noatak clinic	Health
Noatak store	Groceries
Noatak airport	Transportation

Noorvik Native Community

Elementary and High Schools and other public/residential areas where children are

Native Village of Shungnak

The river and tributaries	Drinking water source

Stebbins Community Association

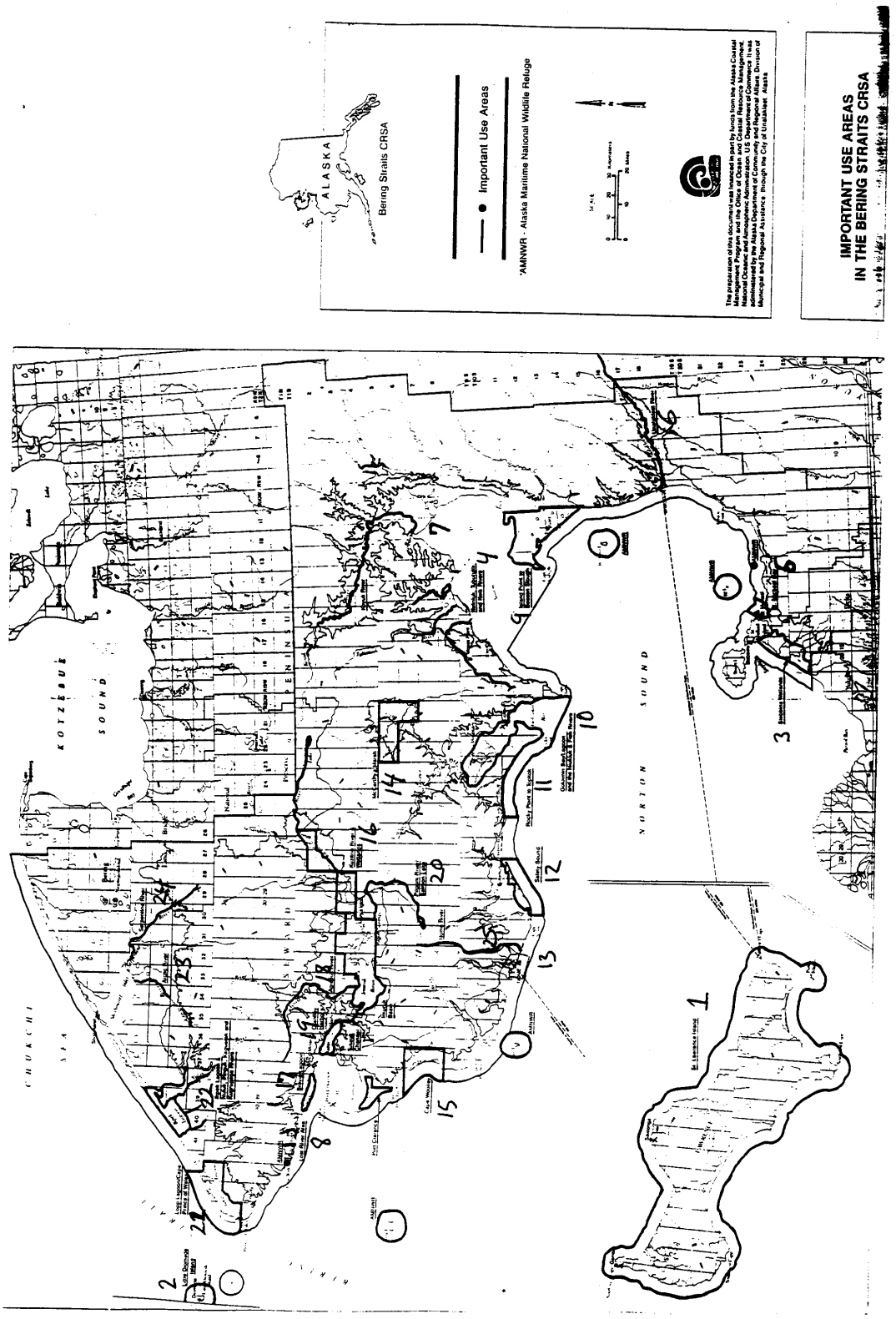
Stuart Island	Traditional fishing and wildlife gathering
Romanof to Cape Stevens coast	Traditional fishing and wildlife gathering
Romanof to Cape Stevens tundra	Traditional fishing and wildlife gathering
St. Michael Island system	Traditional fishing and wildlife gathering
Village of Stebbins	Where people live

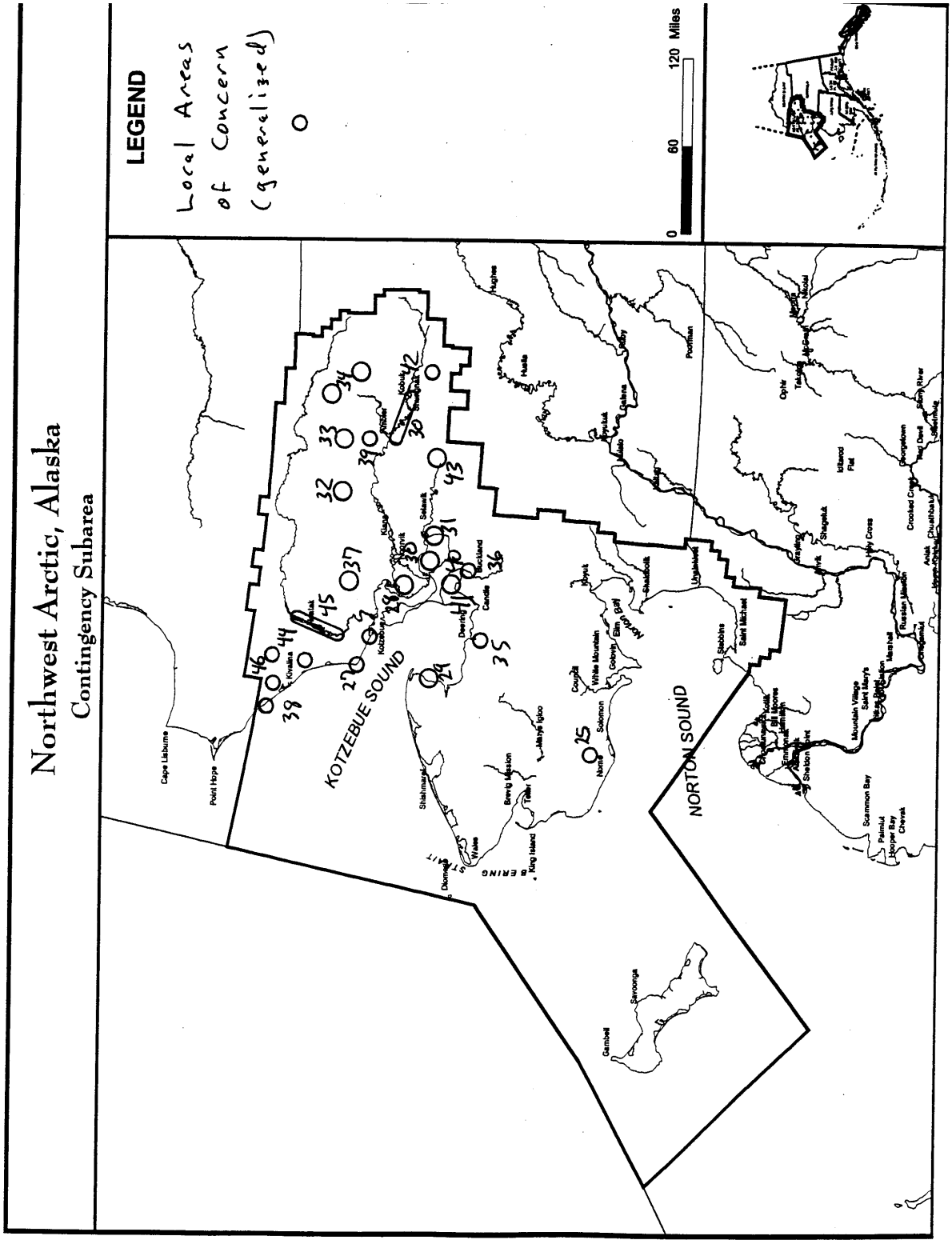
Native Village of Wales

Village Creek	Traditional water source
Bering Strait	subsistence hunting and fishing
School grounds	Students, children, employees
New clinic grounds	Health aides, patients
Village store grounds	Groceries, fuels

Native Village of White Mountain

White Mountain river	Subsistence food and transportation
School	Children/education
Clinic	Health
Store	Food, etc.
City office	Provides electricity and running water


ALASKA
Bering Straits CRSA
Important Use Areas
*AMNWR - Alaska Maritime National Wildlife Refuge
IMPORTANT USE AREAS
IN THE BERING STRAITS CRSA
KOTZEBUE SOUND
NORTON SOUND
CHUKCHI SEA
SEWARD PENINSULA
St. Lawrence Island
Little Diomede
Nome
Shishmaref
Savoonga
Gambell
Brevig Mission
Teller
Elim
Golovin
Koyuk
Shaktoolik
Unalakleet
Stebbins
Hooper Bay
Scammon Bay
Chevak
Emmonak
Alakanuk
Kotlik
Mekoryuk
Nunivak Island
Gambell Village
Savoonga Village
Stebbins Village
Hooper Bay Village
Scammon Bay Village
Chevak Village
Emmonak Village
Alakanuk Village
Kotlik Village
Mekoryuk Village
Nunivak Island Village
Brevig Mission Village
Teller Village
Elim Village
Golovin Village
Koyuk Village
Shaktoolik Village
Unalakleet


Northwest Arctic, Alaska
Contingency Subarea
LEGEND
Local Areas of Concern (generalized)
0
80
120 Miles
KOTZEBUE SOUND
NORTON SOUND
Cape Lisburne
Point Hope
Kivalina
Kotzebue
Noatak
Shishmaref
Brevig Mission
Teller
King Island
Nome
Solomon
Golovin
Elim
Koyuk
Shaktoolik
Unalakleet
Stebbins
Saint Michael
Gambell
Savoonga
Scammon Bay
Hooper Bay
Chevak
Mountain Village
Saint Mary's
Marshall
Russian Mission
Holy Cross
Shageluk
Anvik
Grayling
Kaltag
Nulato
Koyukuk
Galena
Ruby
Poorman
Huslia
Hughes
Allakaket
Alatna
Bettles
Evansville
Coldfoot
Wiseman
Chandalar Shelf
Arctic Village
Fort Yukon
Venetie
Chalkyitsik
Beaver
Stevens Village
Tanana
Ruby
Galena
Nenana
Minto
Manley Hot Springs
Tanana
Rampart
Cantwell
Healy
Ophir
Takotna
McGrath
Nikolai
Telida
Lake Minchumina
Cantwell
Talkeetna
Trapper Creek
Willow
Wasilla
Palmer
Chickaloon
Glennallen
Gulkana
Cordova
Tatitlek
Valdez
Whittier
Seward
Homer
Kenai
Soldotna
Ninilchik
Anchorage
Eagle River
Chugiak
Eagle
Circle
Fairbanks
Delta Junction
Tok
Northway
Chistochina
Gakona
Paxson
Cantwell
Glennallen
Copper Center
Tonsina
Chitina
Kennicott
McCarthy
Nabesna
Slana
Chistochina
Gulkana

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: National Marine Fisheries Service, U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Alaska Department of Fish and Game, 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. Within the tables, Kotzebue Sound or Chukchi Sea refers to those areas and communities north of Little Diomede Island and Wales. Little Diomede Island, Wales, and all points south (excluding St. Lawrence Island) are included in the Norton Sound category.

SHORELINE GEOMORPHOLOGY

CATEGORY	LOW	MEDIUM	HIGH
COASTAL HABITAT TYPES	Fine-grained sand Beaches Exposed wave-cut Platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches Riprap structures	Marshes Eelgrass beds Sheltered tidal flats Sheltered rocky flats
LAKE AND RIVER HABITAT TYPES	Exposed rocky cliffs & Banks Bedrock shores & Ledges, rocky shoals Eroding scarps/bank in unconsolidated sediment Exposed man-made Structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
UPLAND HABITAT TYPES	Alpine tundra Mesic/dry tussock Tundra	Low shrub vegetation Dwarf shrub mat and cushion tundra	Riparian willow

RINGED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE		pack ice	shorefast ice
SUSCEPTIBILITY		year-round	
HUMAN HARVEST	Jun 15 - Oct 1 (St. Lawrence Is.)	Nov 1 - Dec 10 Jul 1 - Sept 1 (Chukchi Sea) Jun 1 - Sept 1 (Norton Sound)	Oct 1 - Jun 15 (St. Lawrence Is.) Sept 1 - Nov 1 Dec 10 - June 30 (Chukchi Sea) Sept 1 - Jun 1 (Norton Sound)

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Nearshore concentrations in shorefast ice	==========	==========	==========							=========	=========	=========
Pupping and Weaning			========	========	========							
Molting			==========	==========	==========	==========	==========					
Present in area	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========

BEARDED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			ice-edge
SUSCEPTIBILITY		year-round	
HUMAN HARVEST	July 1 - Sept 1 (Chukchi Sea) (Norton Sound)	Dec 1 - Dec 31 (Norton Sound)	Sept 1 - July 1 (Chukchi Sea) Sept 1 - Dec 1 Jan 1 - July 1 (Norton Sound) year-round (St. Lawrence Is.)

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Pupping			=========	=========								
Present in Bering Sea	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========	==========
Present in Chukchi Sea	==========	==========	==========	==========	==========	==========	==========	==========				

SPOTTED SEALS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE (ON HAULOUTS)[1]	< 10	10 - 100	> 100
SUSCEPTIBILITY		year-round	
HUMAN HARVEST			May 1 - Nov 30 (Chukchi Sea) Apr 1 - Dec 1 (Norton Sound) Jun 1 - Dec 30 (St. Lawrence Is.)

[1] Large known concentrations of spotted seals haulout along the south side of St. Lawrence Island from April to December, and at Cape Woolley. Port Clarence, and Cape Espenberg from June to November.

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Coastal haulouts/ Concentration areas												
Chukchi Sea								==========				
Bering Sea							==========					
St. Lawrence Island				==========								

BOWHEAD WHALES

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Dec 1 - Mar 20 (Chukchi Sea) Dec 1 - Mar 1	Sept 1 - Nov 30 (Chukchi Sea) Sept 1 - Nov 30 (Bering Sea)	Mar 20 - June 30 (Chukchi Sea) Mar 1 - May 30 (Bering Sea)
HUMAN HARVEST	June 20 - March 15 (Chukchi Sea) June 15 - March 15 (Bering Sea)	March 15 - April 15; June 10 - 20 (Chukchi Sea)	Apr 15 - Jun 10 (Chukchi Sea) Mar 15 - Jun 15 (Bering Sea) Apr 1 - May 30 (St. Lawrence Is.)

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Nearshore migration												
Chukchi Sea				==========					==========			
Bering Sea			==========									
Calving			==========									

BELUGA WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[2]	< 10	10 - 50	> 50
SUSCEPTIBILITY	Nov 15 – Mar 31		Apr 1 - Nov 15
HUMAN HARVEST		Apr 1 - May 30; Aug 1 - Aug 30 (Chukchi Sea)	Jun 1 - Jul 30 (Chukchi Sea) Apr 15 - Nov 15 (Norton Sound) Apr 1 - May 30 (St. Lawrence Is.)

[2] Concentrations of beluga whales occur in Kotzebue Sound (Sisualik Spit and Eschscholtz Bay) from mid June to mid August. Golovin Bay (June to November) and Norton Bay (May and June) are areas where beluga whales are particularly abundant.

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Nearshore migration												
St. Lawrence Island			=======									
Norton Sound				==========								
Chukchi Sea				==========								
Calving					======							

GRAY WHALES

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Jun 1 - Jul 31; Oct 1 - Oct 31 (Chukchi Sea) Dec 1 - Apr 30 (Bering Sea)	Aug 1 - Sept 30 (Chukchi Sea) May 1 - Nov 30 (Bering Sea)	
SUSCEPTIBILITY		When Present	
HUMAN HARVEST			Apr 15 - Nov 10 (St. Lawrence Is.)

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Nearshore migration & feeding												
Chukchi Sea							==========					
Bering Sea						==========						

WALRUS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	open water (no ice present)	Near-shore waters	Pack ice edge, leads and polynyas; haulouts
SUSCEPTIBILITY	year-round	year-round	year-round
HUMAN HARVEST	Dec – April (Chukchi Sea) November (Norton Sound) July - Oct (St. Lawrence Is.)	May, Oct - Nov (Chukchi Sea) August (Norton Sound) Nov - March (St. Lawrence Is.)	June - Sept (Chukchi Sea) May - June, Sept - Oct (Norton Sound) April - June (St. Lawrence Is.)

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Present on haulouts or in nearshore waters												
St. Lawrence Island	==========	==========	==========	==========	==========						=====	
Norton Sound					======				======			

BROWN BEARS/BLACK BEARS

CATEGORY	LOW	MEDIUM	HIGH
SUSCEPTIBILITY	Nov 1 - Oct 1	Oct 30 - Jun 30	July 1 – Sep 30
HUMAN HARVEST		Aug 1 – Oct 31 Apr 15 – May 31	

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Denning	==========	==========	==========							========	========	========
Concentration associated w/ mammalian food sources					==========	==========	==========	==========				
salmon streams							=========	=========	=========			

POLAR BEARS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Open water (with no ice present), inland areas	Shoreline and shore-fast ice	Pack ice edge, shear zone, leads and polynyas, barrier islands
SUSCEPTIBILITY	Year-round	fall, winter, spring	year-round
HUMAN HARVEST	July - Oct (Chukchi Sea) Aug - Sept (Norton Sound) Aug - Oct (St. Lawrence Is.)	June (Chukchi Sea) July, October (Norton Sound) June - July, Nov (St. Lawrence Is.)	Nov - May (Chukchi Sea) Nov - Jun (Norton Sound) Dec - May (St. Lawrence Is.)

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Denning of pregnant females	==========										=======	
Along or on the coastline	==========										=====	

CARIBOU

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE[3]			
SUSCEPTIBILITY	Nov 1 - May 15		May 15 - Oct 31
HUMAN HARVEST		Year round	Aug 15 - Sep 30

[3] The Western Arctic Caribou Herd varies too widely in distribution and abundance to prioritize specific areas and timing of presence.

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Calving period					==							
Insect relief habitat							========					

MUSKOXEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	One population is found northwest of the Kobuk River drainage and the second larger population has expanded over much of the Seward Peninsula.		
SUSCEPTIBILITY		Year-round	
HUMAN HARVEST	Aug 1 – Mar 15		

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Calving					======							

WATERFOWL AND SHOREBIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			
SUSCEPTIBILITY [4]	Nov 1 - Apr 1	Apr 1 - May 1	May 15 - Nov 1 (Chukchi Sea) (Norton Sound) Jan 1 - Dec 31 (St. Lawrence Is.)
HUMAN HARVEST [5]		Jun 15 - Aug 15 (Chukchi Sea) Jun 10 - Aug 15 Nov 15 - Dec 15 (Norton Sound)	May 1 - Jun 15; Aug 15 - Nov 10 (Chukchi Sea) Apr 1 - Jun 10 Aug 15 - Nov 15 (Norton Sound) Jan 1 - Dec 31 (St. Lawrence Is.) Apr 20 – Nov 15 (Kotzebue Sound)

[4] Wintering concentrations of waterfowl occur along the south shores of St. Lawrence Island and some sea ducks may winter in leads in the ice.
[5] Waterfowl eggs are harvested from early May through late July.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Arrival/Nesting/broodrearing					==========							
Molting/feeding concentrations							==========					
Fall migration								==========				

SEABIRDS

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	< 10	10 - 100	> 100
SUSCEPTIBILITY [6]	Nov 1 - Jan 31	Feb 1 – March 31	Apr 1 - Nov 1
SPECIES DIVERSITY	1 – 3	4 - 6	> 6
HUMAN HARVEST7[8]			Apr 20 - Nov 15 (Norton Sound) Jan 1 - Dec 31 (St. Lawrence Is.)

[6] Some seabirds may winter in leads in the ice.

[7] Seabird eggs are harvested from May through July.

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
At breeding colonies					==========	==========						
Feeding near colonies					==========	==========	==========					

SALMON (pink, chum, coho, sockeye, and chinook)

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	All anadromous fish streams are important, thus of high priority.		
SUSCEPTIBILITY	June 15 – Jul 15		Jul 15 - June 15
HUMAN HARVEST			Jun 15 - Oct 30 (Kotzebue Sound) June 1 - Sept 30 (Norton Sound)

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Spawning								==========				
Eggs/fry in gravels		==========					==========	==========	==========			
Year-round rearing in freshwater		==========	==========	==========	==========	==========	==========	==========	==========			

DOLLY VARDEN

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	All anadromous fish streams are important, thus of high priority.		
SUSCEPTIBILITY		Jun 1 - Sept 15	Sept 15 - Jun 1
HUMAN HARVEST	Nov 15 - Jun 1		Jun 1 - Nov 15

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning									========			
Overwintering	==========	==========	==========							=======	=======	
Eggs/fry in stream gravels	==========	==========	==========						==========	==========		
Rearing in freshwater	==========	==========	==========	==========	==========	==========	==========	==========	==========			

ANADROMOUS WHITEFISH

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Limited data is currently available on fish populations within northwest area streams.		
SUSCEPTIBILITY		June 1 - Sept 15	Sept 15 - June 1
HUMAN HARVEST			Aug 1 - Nov 15

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning									======			
Overwintering	==========	==========	==========							========	========	
Spring migration					=======							
Fall migration								==========				

HERRING

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE			
SUSCEPTIBILITY		Oct 15 - May 20[8]	May 20 - Aug 30 (Chukchi Sea) May 1 - Aug 30 (Norton Sound)
HUMAN HARVEST		July 1 - Sept 30	May 1 - June 30

[8] Overwintering by some herring occurs in brackish lagoons, estuaries and bays of the Northwest area.

Critical Life Periods	J	F	M	A	M	J	J	A	S	O	N	D
Spawning						=======						
Overwintering	==========	==========	==========								=======	=======

FRESHWATER FISH

CATEGORY	LOW	MEDIUM	HIGH
ABUNDANCE	Limited data is currently available on fish populations in northwest area streams.		
SUSCEPTIBILITY		Jun 1 - Oct 1	Oct 1 - Jun 1
HUMAN HARVEST	Dec 1 - May 30	June 1 - Dec 1	

Critical Life Periods	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**
Spawning												
Spring					======							
Fall									======			
Overwintering		==========								========		

LAND MANAGEMENT DESIGNATIONS

CATEGORY	LOW	MEDIUM	HIGH
FEDERAL LANDS	Public Land	National Parks National Monuments Wildlife Refuges	Wild & Scenic Rivers Wilderness Areas National Natural Landmarks
STATE LANDS	Public Land[9]	State Parks	Critical Habitats & Refuges

[9] Includes submerged lands out to 3 miles and historic bays and inlets.

CULTURAL RESOURCES/ARCHAEOLOGICAL SITES

CATEGORY	LOW	MEDIUM	HIGH
CULTURAL AND ARCHAEOLOGICAL SITES	Cultural resources that do not meet National Register criteria	National Register eligible sites (excluding village sites) Sites adjacent to shorelines	National Historical Landmarks National Natural Landmarks Burial sites National Register eligible village sites Intertidal sites

HUMAN USE AREAS

CATEGORY	LOW	MEDIUM	HIGH
NON-CONSUMPTIVE USES	Chicago Creek, Sinuk River,	Lost River Area, Salmon Lake	Pilgrim Hot Springs, Serpentine Hot Springs, Golovnin Bay/Lagoon, Nome River, Sinuk River
UNIQUE FISHING SITES	Lakes and Rivers not directly connected to shoreline	Agiagpuk River, Imuruk Basin, Nuluk River, Pignuk River	St.Michael Bay, Unalakleet River Drainage, Island Point to Beeson Slough, Kwiniuk, Golovnin Bay, Stebbins Pass
SEABIRD EGG HARVESTING SITES			Stuart Island, Besboro Island, Cape Denbigh, Carolyn Island, Bluff, Sledge Island, Sinuk River delta, King Island, and the Cape Riley – Port Clarence and Brevig Mission vicinity, Cape Espenberg and Buckland wetlands, and Cape Deceit, Puffin Island, and the Noatak River delta in Kotzebue Sound

SUBSISTENCE HARVEST AREAS

Refer to Part 4: Section D.4 for information regarding current subsistence harvest areas.

SENSITIVE AREAS: PART FOUR – BIOLOGICAL AND HUMAN USE RESOURCES

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

In January 2010, Audubon Alaska, in cooperation with Oceana, published the *Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. The atlas has a discussion of the synthesis of various data sources in to summary GIS maps, and discusses data gaps. Below is a list of maps in the atlas. The atlas may be found at: http://ak.audubon.org/birds-science-education/arctic-marine-synthesis-atlas-chukchi-and-beaufort-seas

PHYSICAL OCEANOGRAPHY
1. Project Area
2. Bathymetry
3. Ecoregions
4. Ocean Circulation
5. Sea Ice Dynamics
6. Sea Floor Substrate
7. Sea Surface Temperature
8. Observed Climate Change

WATER COLUMN AND BENTHIC LIFE
9. Chlorophyll-a
10. Net Primary Productivity
11. Zooplankton
12. Benthic Biomass
13. Opilio Crab

FISH

Oceanodromous
14. Capelin
15. Pacific Herring
16. Saffron Cod

Anadromous
17. Pink Salmon
18. Chum Salmon

BIRDS

Audubon Alaska WatchList
19. Yellow-billed Loon
20. Red-throated Loon
21. Spectacled Eider
22. Steller's Eider
23. King Eider
24. Common Eider
25. Long-tailed Duck
26. Ivory Gull
27. Kittlitz's Murrelet

Other Species
28. Northern Fulmar
29. Short-tailed Shearwater

Concentration Areas
30. Seabird Colonies
31. Important Bird Areas

MAMMALS

Terrestrial/Marine
32. Polar Bear
33. Arctic Fox

Pinnepeds
34. Pacific Walrus
35. Ribbon Seal
36. Spotted Seal
37. Ringed Seal
38. Bearded Seal

Cetaceans
39. Bowhead Whale
40. Beluga Whale
41. Gray Whale

PEOPLE
42. Energy Development and Protected Areas
43. Human Impact
44. Predicted Climate Change

In September 2011, Audubon Alaska published the *Place-based Summary of the Arctic Marine Synthesis Atlas of the Chukchi and Beaufort Seas*. This document provides two-page fact sheets summarizing synthesis information for the following places within the subarea, and may be located at: http://ak.audubon.org/files/Audubon%20Alaska/documents/Place-based_Summary_of_the_Arctic_Marine_Synthesis_FINAL.pdf

St. Lawrence Island--Bering Sea US, Russia
Chirikov Basin--Bering Sea US, Russia
Norton Sound--Bering Sea US
*Southeastern Chukotka Peninsula--Bering Sea Russia
Bering Strait--Bering Sea, Chukchi Sea US, Russia
Diomede Islands--Bering Sea, Chukchi Sea US, Russia
Seward Peninsula--Bering Sea, Chukchi Sea US
Kotzebue Sound--Chukchi Sea US
Hope Basin--Chukchi Sea US, Russia
*Northern Chukotka Peninsula--Chukchi Sea Russia
*Wrangel & Herald Islands--Chukchi Sea Russia
*Herald Shoal--Chukchi Sea Russia, US
Cape Thompson & Cape Lisburne Chukchi Sea US

* pending

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/nwa/pdfs/ESI_DATA/INDEX.PDF

Updated ESI information can also be found on the internet at:

http://response.restoration.noaa.gov/type_subtopic_entry.php?RECORD_KEY%28entry_subtopic_type%29=entry_id,subtopic_id,type_id&entry_id(entry_subtopic_type)=74&subtopic_id(entry_subtopic_type)=8&type_id(entry_subtopic_type)=3

1. Benthic Habitats

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

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 5 - 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.

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/

ESI HABITAT RANKING

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

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

Insert Environmental Sensitivity Index Map Atlas Index here - to view the map from the ARRT website, please go to the DNR Prevention and Emergency Response Subarea Plan Maps website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/pdfs/ESI_DATA/INDEX.PDF

Insert Wetlands Status map here - to view the map from the ARRT website, please go to the DNR Prevention and Emergency Response Subarea Plan Maps website located at:

http://www.fws.gov/wetlands/Data/mapper.html

C. BIOLOGICAL RESOURCES

1. Threatened and Endangered Species

Federally listed threatened and endangered species are protected under the Endangered Species Act of 1973 (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 On-Scene Coordinator will need to immediately consult with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service (as appropriate) regarding the proposed strategies, in accordance with the Endangered Species Act Memorandum of Understanding (see the *Unified Plan*, Annex K). The following species[1] and critical habitat occur in this subarea:

Endangered Species Act of 1973 Protected Species and Critical Habitat			
Listed species	**Stock**	**Latin Name**	**Status**
Bowhead whale*	Western Arctic	*Balaena mysticetus*	Endangered
Fin whale*		*Balaenoptera physalus*	Endangered
Blue whale*		*Balaenoptera musculus*	Endangered
Humpback whale*		*Megaptera novaeangliae*	Endangered
North Pacific right whale*		*Eubalaena glacialis*	Endangered
Steller sea lion*	Western	*Eumetopias jubatus*	Endangered
Polar bear**		*Ursus maritimus*	Threatened
Spectacled eider**		*Somateria fischeri*	Threatened
Steller's eider**	Alaska breeding	*Polysticta stelleri*	Threatened
Short-tailed albatross**		*Diomedea albatrus*	Endangered
Eskimo curlew**		*Numenius borealis*	Endangered
Yellow-billed loon**		*Gavia adamsii*	Candidate
Pacific walrus**		*Odobenus rosmarus divergens*	Candidate

Designated Critical Habitat	
Species Group	**General Reference Area**
Spectacled eider	Part of Norton Sound and south of St. Lawrence island are designated as critical habitat (see map below)
Polar bear	Selected coastal areas are designated as critical habitat (see maps below)
Steller sea lion	Two haulouts are present on St. Lawrence Island and are designated as critical habitat (see map below)

*Managed by the National Marine Fisheries Service
**Managed by the U.S. Fish and Wildlife Service
Candidates are species for which there is enough information on their biological status and threats to

[1] 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 U.S.C. 1532). The National Marine Fisheries Service 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."

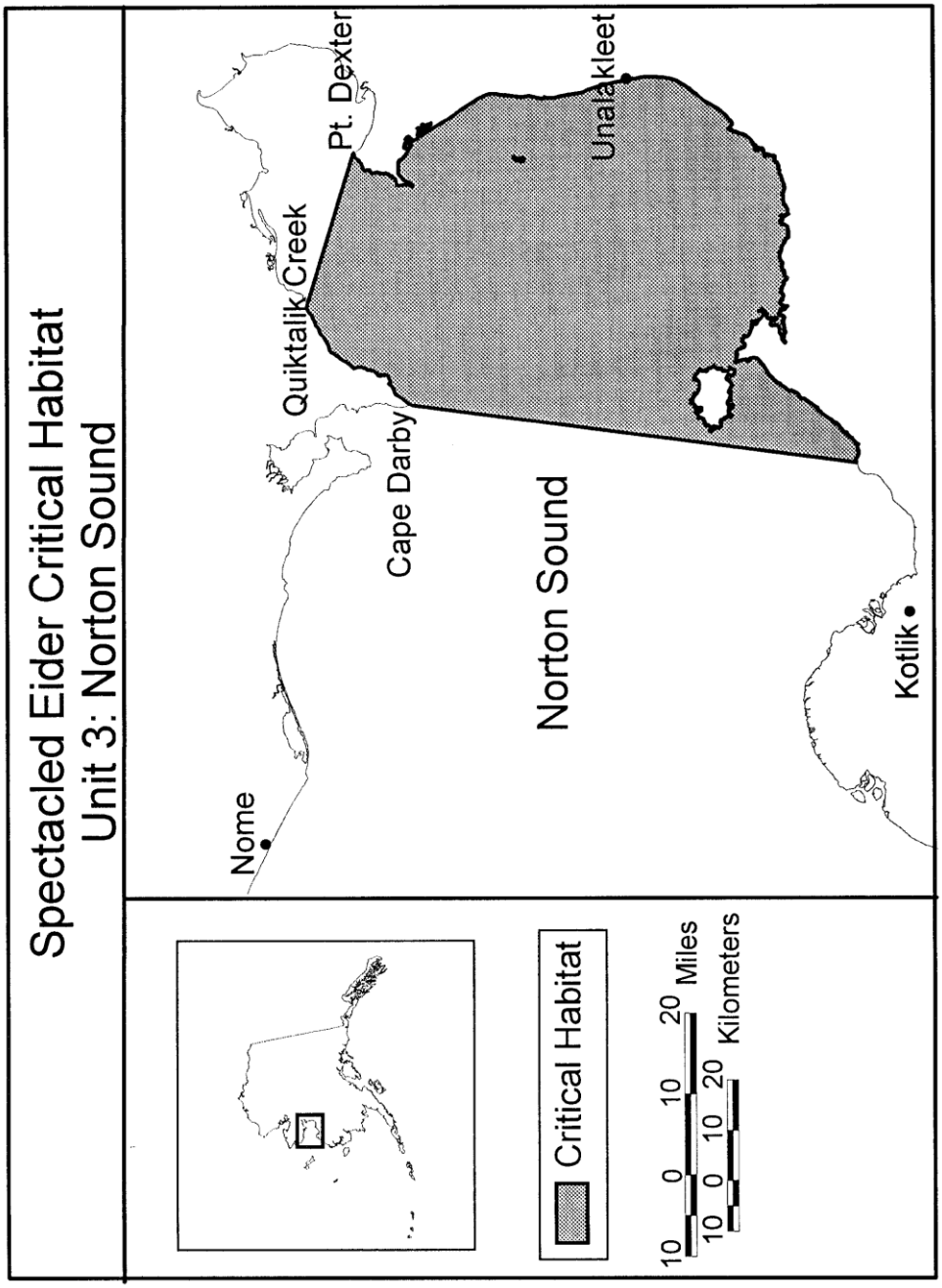
propose them as endangered or threatened, but for which development of a proposed listing regulation is precluded by other higher priority listing activities.

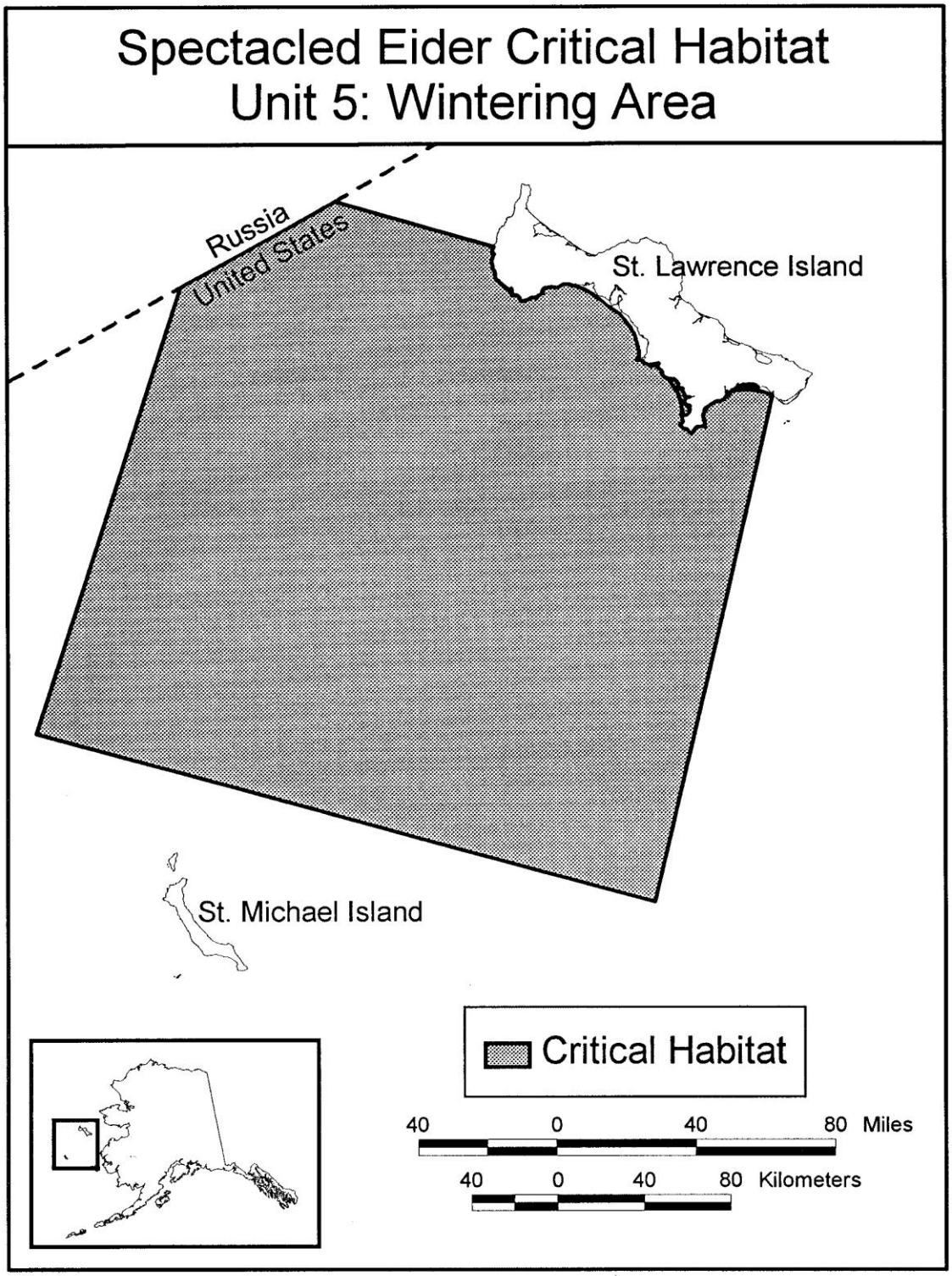
For updated information on the internet:

U.S. Fish and Wildlife Service Regional Threatened and Endangered Species web site:
http://alaska.fws.gov/fisheries/endangered/index.htm

The National Marine Fisheries Service Regional Threatened and Endangered Species web site:
http://www.fakr.noaa.gov/protectedresources/esa/ak_specieslst.pdf

Alaska Department of Fish and Game Threatened and Endangered Species web site:
http://www.wildlife.alaska.gov/index.cfm?adfg=endangered.main


Spectacled Eider Critical Habitat
Unit 3: Norton Sound
Nome
Cape Darby
Quiktalik Creek
Pt. Dexter
Norton Sound
Unalakleet
Kotlik
Critical Habitat
10 0 10 20 Miles
10 0 10 20 Kilometers


Spectacled Eider Critical Habitat
Unit 5: Wintering Area
Russia
United States
St. Lawrence Island
St. Michael Island
Critical Habitat
40 0 40 80 Miles
40 0 40 80 Kilometers

Insert polar bear critical habitat map #1 of 2:

http://alaska.fws.gov/fisheries/mmm/polarbear/maps_final/index_2of3.pdf

Insert polar bear critical habitat map #2 of 2:

http://alaska.fws.gov/fisheries/mmm/polarbear/maps_final/index_3of3.pdf

Insert Steller sea lion critical habitat map for Western and Southcentral Alaska

http://alaskafisheries.noaa.gov/protectedresources/stellers/maps/criticalhabitat_map.pdf

2. Fish and Wildlife

(a) Fish

The Northwest Arctic subarea is drained by a number of major rivers, including the Kobuk, Selawik, Noatak, Wulik, Inmachuk, Kugruk, and Buckland rivers in Kotzebue Sound, and the Unalakleet, Ungalik, Shaktoolik, Koyuk, Fish, Solomon, Nome, Snake, Sinuk, Feather, and Kuzitrin rivers in Norton Sound. Most of the flowing waters and many of the lakes support populations of anadromous or resident species of fish. Lagoons and estuarine areas are important rearing and overwintering areas for anadromous fish. River deltas are particularly important areas for fish throughout the year. Shallow lakes, oxbows, and seasonally-flooded wetlands connected to streams or rivers may support fish during the summer but may freeze to the bottom in winter.

If the depth of the water exceeds three or four meters (as ice depth may approach two meters by late winter), fish may be found in a particular waterbody year-round. Deep lakes and rivers, and spring-fed stream systems serve as overwintering areas for fish in the Northwest region.

Fish may use shallow lakes (< 2-3 m deep) in summer if the lakes are connected to a stream system (i.e., tapped lakes) and sufficient water exists in late summer for fish to leave the lake and move to overwintering areas. Shallow tundra beaded streams (< 2-3 m deep) freeze solid in winter and thus can be used by fish only for summer rearing. River deltas are particularly important areas for fish throughout the year. Although many rivers have not been examined for overwintering fish, those portions of rivers with depths greater than 2-3 m should be considered potential fish overwintering habitat and protected accordingly.

ESSENTIAL FISH HABITAT (EFH)

In 1996 Congress added new habitat provisions to the Magnuson-Stevens Fishery Conservation and Management Act, the federal law that governs U.S. marine fisheries management. Under the Magnuson-Stevens Act, each fishery management plan must describe and identify EFH for the fishery, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies must consult with the National Marine Fisheries Service on any action they authorize, fund, or undertake that may adversely affect EFH, and the National Marine Fisheries Service must provide conservation recommendations to federal and state agencies regarding any action that would adversely affect EFH. Reference information for EFH in the subarea as identified by the National Marine Fisheries Service, can be found on their internet site at:

http://alaskafisheries.noaa.gov/habitat/efh.htm .

An additional EFH resource is their interactive mapping internet site:

http://mapping.fakr.noaa.gov/Website/EFH/viewer.htm?simple

RESIDENT FISH

The most common resident fish found in rivers and lakes in the Northwest Arctic Subarea include arctic grayling, northern pike, burbot, and whitefishes. Whitefish species include humpback, round, and broad whitefish; and least and Bering cisco. Other species that occur in the region include lake trout, slimy sculpin, Dolly Varden, longnose sucker, Alaska blackfish, and arctic lamprey.

Arctic grayling Arctic grayling are distributed widely in most clearwater streams and some of the deeper lakes. Arctic grayling spawn in May and June over substrates ranging from silt to gravel in small streams or in lakes. Arctic grayling often feed in shallow streams throughout the summer that may freeze solid in winter. Arctic grayling winter in deep, large rivers or lakes, or in smaller streams if adequate water quality and flow exists throughout the winter.

Whitefish Broad and humpback whitefish, and least cisco are found commonly in summer in slow-moving waters of sloughs, and interconnected lakes (e.g., Selawik Flats), and the lower reaches of large rivers, and in nearshore marine waters such as Port Clarence and Golovin Bay. Round whitefish are found more commonly in streams or lakes. Bering cisco are found in Port Clarence and Grantley Harbor. These five species of whitefish spawn in late September and early October over sand and gravel bottoms of streams and lakes. These whitefish generally overwinter in deep, large rivers or lakes, although some may overwinter in estuarine areas such as Hotham Inlet and Grantley Harbor.

Northern pike Northern pike are found commonly in summer in slow-moving waters of sloughs and interconnected lakes (e.g., Selawik Flats), in larger rivers and some of the large lakes. Northern pike spawn in the spring shortly after breakup in shallow water with emergent vegetation and little current. Northern pike overwinter in deep, large rivers or lakes, or in smaller tributary streams if adequate water quality and flow exists.

Dolly Varden Stream-resident Dolly Varden occur at isolated locations in small mountain streams within Kotzebue and Norton Sound drainages. Stream-resident Dolly Varden spawn in late September or October.

Burbot Burbot are found in portions of the Northwest Arctic Subarea, in both rivers and in deep lakes. They also are found in summer in interconnected lakes and sloughs in lowland areas such as the Selawik Flats. Burbot overwinter in deep, large rivers or lakes, or in smaller tributary streams if adequate water quality and flow exists.

Arctic Char Arctic char are found in deep lakes of the Brooks Range and of the Seward Peninsula. Arctic char spawn in September and October.

Lake trout Lake trout are found in the large deep lakes of the Brooks Range. Lake trout spawn in September.

ANADROMOUS FISH

The Alaska Department of Fish and Game Anadromous Waters Catalog Maps may be found at the following web site:

http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=maps.selectMap&Region=ARC

Additional information on anadromous fish may be found at:

http://gis.sf.adfg.state.ak.us/FlexMaps/FishResourceMonitor.html

Sheefish The Kobuk and Selawik rivers support populations of anadromous sheefish that spawn in the upper reaches of these rivers. These anadromous sheefish overwinter in the lower rivers, Selawik Lake, Hotham Inlet and Kotzebue Sound. Immature fish use Kotzebue Sound, Hotham Inlet, Selawik Lake and the lower rivers during summer. Fish that will spawn in the current year begin an upstream migration from estuarine areas at breakup. Sheefish enter spawning areas August and early September and spawn in

late September and early October. A small population of sheefish occurs in Koyuk River and winters in Norton Bay.

Whitefishes Anadromous whitefish (broad and humpback whitefish, least and Bering cisco) migrate from overwintering areas to estuarine and nearshore brackish marine waters at breakup - mid May to early July. The whitefish remain in the nearshore marine and estuarine environment for several weeks to several months. Whitefish return to overwinter and spawn in major rivers in September and October. Some may overwinter in estuarine areas.

Dolly Varden Juvenile Dolly Varden spend up to their first five years in freshwater streams before migrating to marine summer feeding areas. Immature and mature Dolly Varden migrate from overwintering areas to marine feeding areas following breakup - mid May to early July. Fish begin returning to freshwater spawning and overwintering areas from July through October. Spawning occurs from September through December. Fry emerge from the streambed gravels between April and early June. Spawning and overwintering areas are restricted to streams with perennial springs and groundwater sources. Dolly Varden inhabit nearly all of the region's drainages, including those on St. Lawrence Island. Significant numbers of Dolly Varden are found in the Noatak, Kivalina, and Wulik river drainages.

Salmon Chinook, coho, sockeye, pink, and chum salmon occur within the Northwest Arctic Subarea. Pink and chum salmon are the most widely distributed and most abundant salmon in the region. Sockeye salmon are least abundant. Salmon are present in estuaries and bays three to four weeks before spawning (see below). Small populations of the least abundant sockeye salmon occur in the Sinuk and Pilgrim rivers on the Seward Peninsula, and in the Chukchi Sea drainages of the Noatak and Kivalina rivers.

Salmon eggs incubate in the stream gravels over the winter, fry hatch in mid or late winter, and migrate to sea following breakup in early May to late June (for chum and pink salmon fry; chinook, sockeye, and coho fry will remain in fresh water from one to four years before migrating to sea). Salmon are present in bays and estuaries from June through August, and move into spawning grounds from July through September.

MARINE FISH

Herring Major herring spawning areas occur along the coast of St. Michael Island, along the mainland coast from St. Michael to Tolstoi Point, along much of the coastline from Unalakleet to Norton Bay, along portions of Norton Bay, along most of the coastline from Elim to Topkok Head, in Golovin Bay, in Port Clarence and the Imuruk Basin, around Shishmaref, in the Deering-Kiwalik area in Kotzebue Sound, at Elephant Point, in northern Hotham Inlet, along the Baldwin Peninsula, near Sisualik Spit, and in Krusenstern and Kivalina lagoons. Herring spawn in shallow bays, inlets, lagoons, rocky shorelines, and on rocky headlands throughout most of Norton Sound from late May through June, in the Port Clarence area from late June through early July, and from mid to late July along the northern Seward Peninsula. Herring spawning in Kotzebue Sound may occur from late May until August, depending on ice conditions. Herring overwintering occurs in Shishmaref Inlet, Imuruk Basin, Safety Sound, Golovin Bay, and some may overwinter in brackish lagoons and estuaries of the Kotzebue Sound area. Large schools of spawned-out herring move northward along the Chukchi coast into the Cape Thompson area during mid-June – mid-July just as the sea-ice is breaking up. The fish typically hug the shoreline and usually show up at Cape Thompson during the last few days of June or first few days of July (the origin of these fish is unknown).

Capelin spawn along gravel beaches along the shoreline of northern Norton Sound from Rocky Point to Cape Rodney over a four-week period beginning in late May. Capelin also spawn from Cape Rodney to Port Clarence, and in Shishmaref Inlet.

Rainbow smelt Adult rainbow smelt are distributed in epibenthic waters along the nearshore throughout Arctic waters in areas mainly consisting of sandy gravel and cobbles. Adults spawn in coastal freshwater streams. Egg and larval distribution is unknown.

Arctic cod Insufficient information is available to determine EFH for eggs, larvae, and early juveniles. The general distribution areas for Arctic cod late juveniles and adults are located in pelagic and epipelagic waters from the nearshore to offshore areas along the entire shelf (0 to 200 m) and upper slope (200 to 500 m) throughout arctic waters and often associated with ice floes which may occur in deeper waters.

Saffron cod Insufficient information is available to determine EFH for eggs, larvae, and early juveniles. The general distribution areas for saffron cod late juveniles and adults are located in pelagic and epipelagic waters along the coastline, within nearshore bays, and under ice along the inner (0 to 50 m) shelf throughout the Arctic waters and wherever there are substrates consisting of sand and gravel.

Pacific cod is a transoceanic species, occurring at depths from shoreline to 500 m. The southern limit of the species‘ distribution is about 34°N latitude, with a northern limit of about 63°N latitude. Adults are demersal and form aggregations during the peak spawning season, which extends approximately from January through May. Pacific cod eggs are demersal and adhesive. Eggs hatch in about 15-20 days. Little is known about the distribution of Pacific cod larvae.

Walleye Pollock Eggs and spawning are pelagic on outer continental shelf generally over 100-200 m depth in Bering Sea. Larvae are in pelagic outer to mid-shelf region in Bering Sea.
Juveniles age 0 appears to be pelagic, as is age 2 and 3. Age 1 are pelagic and demersal with a widespread distribution and no known benthic habitat preference. Adults occur both pelagically and demersally on the outer and mid-continental shelf of the Gulf of Alaska, eastern Bering Sea and Aleutian Islands. In the eastern Bering Sea few adult pollock occur in waters shallower than 70 m. Adult pollock range throughout the Bering Sea in both the U.S. and Russian waters.

Alaska Plaice Adult Alaska plaice are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays and along the entire shelf (0 to 200 m). Adults are found in areas consisting of sand, mud, and gravel. Adults are known to migrate in association with seasonal ice movements and from the shelf to shallower areas (<100 m) for spring spawning. Larvae are planktonic and inhabit shallow areas. Both larvae and eggs have been found in the late spring and early summer throughout the entire shelf (0 to 200m). Egg and larval distribution extents are unknown.

Yellowfin Sole Adult and late juvenile yellowfin sole are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays and along the entire shelf (0 to 200 m). Adults are found in areas consisting of sand, mud, and gravel. Adults are known to migrate between outer shelf (100 to 200 m) and inner shelf (0 to 50 m) to feed and spawn. Juvenile yellowfin sole (<15 cm) separate from adults and associate with softer substrates (sand) to feed on meiofaunal prey and bury for protection. Larvae are planktonic and inhabit shallow areas. Yellowfin sole eggs have not been found north of Nunivak Island. Egg and larval distribution extents are unknown.

Rock sole Insufficient information is available to determine EFH for eggs and early juveniles. EFH for larval rock sole is the general distribution area for this life stage, located in pelagic waters along the entire shelf (0 to 200 m) and upper slope (200 to 1,000 m) throughout the Bering Sea Aleutian Islands (BSAI). EFH for late juvenile and adult rock sole is the general distribution area for this life stage, located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to100 m), and outer (100 to

200 m) shelf throughout the BSAI wherever there are softer substrates consisting of sand, gravel, and cobble.

Flatehead sole/ Bering flounder Adult Flathead sole/Bering flounder are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays and along the inner (0 to 50 m) and middle shelf (50 to 100 m). Adults are found in areas consisting of sand and mud. Adults are known to migrate between outer shelf (100 to 200 m) spawning areas and inner shelf (0 to 50 m) feeding areas. Juveniles (<2 yrs) inhabit shallow areas separate from adults. Egg and larval distribution extents are unknown. Generally, flathead sole are located south of Bering Strait, while Bering flounder range throughout the northern Bering Sea and Chukchi Sea to Point Barrow.

Starry flounder Adult Starry flounder are distributed in waters of the Chukchi Sea to 70° N latitude, mainly in areas south of Point Barrow, and are located in the lower portion of the water column (demersal) within nearshore bays, estuaries, river mouths, and along the entire shelf (0 to 200 m). Adults are found in areas consisting of sand, mud, and gravel. Adults are known to seasonally migrate between outer shelf (100 to 200 m) summer areas and inner shelf (0 to 50 m)

SHELLFISH

Opilio crab Insufficient information is available to determine EFH for larvae and early juveniles. The general distribution areas for late juveniles and adults are located in bottom habitats along the inner (0 to 50 m) and middle (50 to 100 m) shelf in Arctic waters south of Cape Lisburne, wherever there are substrates consisting mainly of mud.

Blue King Crab Adult, egg-laden adults, and late juvenile blue king crab have a discontinuous distribution throughout a large range (Hokkaido, Japan to Southeast Alaska) and are located on bottom habitats along the nearshore (possible spawning aggregations) and the inner (0 to 50 m) and middle (50 to100 m) shelf in Arctic waters. Local distributions exist near St. Lawrence Island and their distribution extends northward into Bering Strait. Blue king crab are commonly found associated with rockier substrates, sponges, barnacles, and shell hash. Adult male blue king crabs occur at an average depth of 70 m and an average temperature of 0.6ºC. Larvae are pelagic and occur in depths between 40 and 60 m.

Red King Crab 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 depth of 50 m or less. They are solitary and need high relief habitat or coarse substrate such as boulders, cobble, shell hash, and living substrates such as bryozoans and stalked ascidians. Between the ages of two and four years, there is a decreasing reliance on habitat 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 cm), when the crab move to deeper water and join adults in the spring migration to shallow water for spawning. Adult red king crab occur to a depth of 365 m; preferred habitat for reproduction is water less than 90 m. Red king crab are widely distributed south of the Alaska Peninsula. They move into waters of less than 10 fathoms from about mid-February to June 1 to mate and molt. Red king crab also occur north of the peninsula; however, no notable concentrations have been reported.

The species listed above for habitat descriptions are either: species commercially harvested in the Bering Sea; and that also occur in the Arctic Management Area; or are species that may play an important role in the Arctic marine ecosystem as forage species.

(b) Birds

The Northwest Arctic Subarea provides important wetland areas for nesting waterfowl (ducks, geese, and swans) and other birds, and serves as an important spring and fall staging area and migratory route for those birds headed to and returning from more northerly or westerly feeding and nesting areas. Waterfowl are concentrated on areas of open water along the major rivers in spring before wetland areas thaw. Important nesting, molting, and spring and fall staging areas include: coastal lagoons from Kivalina to Cape Krusenstern, Sisualik Spit, Noatak River Delta, lower Noatak River valley, Kobuk River Delta, Hotham Inlet, Selawik Flats and Delta, portions of the coastlines of Eschscholtz and Spafarief Bays, the coastline from Spafarief Bay to Cape Espenberg, the barrier islands, coastal lagoons, and wetlands from Cape Espenberg to Wales, Brevig Lagoon, Port Clarence, Grantley Harbor, the Imuruk Basin, the Kuzitrin River flats, the coast from Cape Douglas to Cape Rodney, Safety Sound, Fish River Delta/upper Golovin Bay, Moses Point, Koyuk River flats/upper Norton Bay, the Shaktoolik area, wetlands southwest of Stebbins, and the southern coast of St. Lawrence Island.

Ducks Ducks begin arriving in late April and continue to arrive through the end of May, although most ducks have arrived by mid May. Nesting begins in mid May, with most eggs hatching from mid June through mid July. Broods are reared on lakes, ponds, flooded wetlands, coastal lagoons, and rivers. Some ducks begin molting in mid June, most during July, and a few are still in molt condition in late August. Large numbers of scoters and eiders molt in lagoons and sheltered bays. Eastern Norton Sound serves as a primary molting area for female spectacled eiders nesting on the Yukon-Kuskokwim Delta. Important feeding and fall staging areas for ducks include river deltas, lagoons, salt marshes, mudflats, and coastal tundra areas. Some ducks begin their fall migration in mid July, although most leave the mainland areas from mid August through late September. Some ducks remain until late October before leaving at freeze-up. Large numbers of long-tails and eiders spend the winter in open water areas around St. Lawrence Island.

Geese Canada, emperor, and white-fronted geese and brant nest, molt and stage along lakes, coastal lagoons, wetlands, and rivers. Snow geese stage within the region during spring and fall migrations, but do not breed in the subarea. Birds arrive from early May through June, nest from late May through July, molt and rear young during July and August, and undertake fall migration during late August through September.

Swans Tundra swans (and a few trumpeter swans) occur within the subarea. Concentration areas used by swans include the Kobuk and Selawik river deltas. Swans begin nesting around mid May, and eggs hatch from mid-to-late June. Molting occurs in July and August. Young swans are unable to fly until mid or late September. Important fall coastal staging areas include the Kobuk, Noatak, and Selawik river deltas, and the eastern side of the Baldwin Peninsula. Swans leave the subarea from late September to mid October.

For more information on waterfowl in Alaska, see the U.S. Fish and Wildlife Service web site at: http://alaska.fws.gov/mbsp/mbm/waterfowl/waterfowl.htm

Seabirds Seabirds (primarily murres, puffins, auklets, and kittiwakes) are most abundant at St. Lawrence, King, and Little Diomede islands and at Cape Thompson (auklets are not present at the latter location). St. Lawrence Island has 19 colonies containing 1.8 million seabirds, Little Diomede contains 1.25 million birds, the 5 Cape Thompson colonies support over 400,000 birds, and King Island supports about 246,000 seabirds. Smaller colonies are found scattered along and near the region's coastline, including Chamisso-Puffin Islands in Kotzebue Sound and Sledge Island, Bluff, and Cape Denbigh in Norton Sound. These seabirds begin arriving in mid-April and occupy the colonies through September. Some birds may remain in the area until the formation of sea ice forces them to more southerly areas. Gulls and terns also nest on barrier islands and spits, and on islets and gravel bars in river deltas throughout the region. (See the following map)

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 the subarea are summarized from the catalog. The maps display colony locations. The Catalog is maintained by the U.S. Fish and Wildlife Service. Access the web site at: http://alaska.fws.gov/mbsp/mbm/northpacificseabirds/colonies/default.htm

Shorebirds Shorebirds (sandpipers, plovers, phalaropes) arrive in the region beginning in mid May, using most of areas identified as concentration areas for waterfowl. They begin nesting on tundra wetland habitat by mid June. Most eggs hatch from late June to mid July. Shorebirds congregate along the barrier islands, coastal lagoons, bays, salt marshes, river deltas, and mudflats from mid July through September to feed before beginning their fall migration in August or September (some may begin their fall migration in July). For more information on shorebirds, see the U.S. Fish and Wildlife Service web site at: http://alaska.fws.gov/mbsp/mbm/shorebirds/shorebirds.htm

Birds of Prey Birds of prey occurring in the subarea include golden and occasionally bald eagles; osprey; gyrfalcon, peregrine, and other falcons; goshawks and other hawks; and owls. Golden eagles, peregrine falcons, gyrfalcons, and rough-legged hawks nest on coastal or inland cliffs, bluffs, or other steep terrain. Snowy and short-eared owls nest on the tundra. Hawks and owls commonly use woodlands, forests, and forested wetland areas for nesting. Prime feeding areas include wetlands containing waterfowl, seabirds, shorebirds, and other small birds. Except for snowy owls and gyrfalcons, which are year-round residents, all other birds of prey winter in areas outside the subarea. These birds arrive in the area in early May and depart in late August or September.

Upland Birds In addition, many upland species, such as ptarmigan, ravens and other nesting birds use the area. For more information on landbirds and raptors, see the U.S. Fish and Wildlife Service web site at: http://alaska.fws.gov/mbsp/mbm/landbirds/landbirds.htm

Insert seabird summary map here (page 1 of 1)

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa5seabird.pdf

(c) Marine Mammals

Polar Bears are associated with sea ice of the Bering, Chukchi, and Beaufort Seas. During summer, polar bears concentrate along the southern edge of pack ice, although polar bears may be found on land when pack ice edge is near shore. Polar bears commonly travel along barrier islands and mainland beaches to search for den sites and to feed on beached marine mammal carrion. In winter, polar bears are found most commonly along areas of open water, such as the pack and shorefast ice edge, flaw zone, and leads and polynyas. In late October or November, pregnant females seek out denning areas in snowdrifts on land (generally within 50 km of the coast), on shorefast ice, or drifting sea ice. Females and cubs emerge from the maternity dens in late March or early April. Most polar bears move north with receding pack ice during summer months. For more information on polar bears, see the U.S. fish and Wildlife Service web site at: http://alaska.fws.gov/fisheries/mmm/polarbear/pbmain.htm

Seals Three species of seal commonly occur in the nearshore waters of the Northwest Arctic subarea: ringed seal, bearded seal, and spotted seal. The ringed seal is the most common species of seal found in the Chukchi Sea and in Norton Sound. For more information on seals, see the National Marine Fisheries Service web site at : http://www.fakr.noaa.gov/protectedresources/seals/default.htm

Ringed Seals Most ringed seal pups are born in March or April in birthing lairs constructed on shorefast ice or pack ice with adequate snow cover. The seal pups remain in the lairs for four to six weeks until they are weaned. Ringed seals molt on shorefast ice and on large flat ice flows in the pack from late March until July, with peak molting occurring in June. During summer, most ringed seals are found along the edge of the permanent ice pack, although a few may remain in ice-free areas. They return to nearshore areas in late fall and early winter as the shorefast ice reforms in October and November. Shorefast ice in Norton Sound, Kotzebue Sound (and Hotham Inlet), and St. Lawrence Island is breeding and pupping habitat.

Spotted Seals Major population segments of spotted seals migrate through outer Norton Sound from April to June and from late November to early January. During summer, spotted seals occur throughout Norton Sound, the Chukchi Sea coastline and Kotzebue Sound, and St. Lawrence Island, particularly in nearshore areas. Spotted seals haul out on sandy spits and shoals from mid July until freeze-up in late October or early November. Important haulouts are located on St. Lawrence Island, St. Michael Island, Stuart Island, Besboro Island, Cape Denbigh, Cape Darby, Safety Sound, and Port Clarence. Additional haulout and concentration areas along the Chukchi Sea coastline include Cape Espenberg, Chamisso Island, Elephant Point, Sisualik Spit, and near the mouths of rivers and other areas with an abundance of anadromous fish, herring, smelt, capelin, or cod. Spotted seal occur in the Kotzebue area (including Hotham Inlet and occasionally Selawik Lake) from June to November. The south side of St. Lawrence Island is used heavily by spotted seal from April to December. Pupping occurs from February to May. Molting occurs from April until July.

Bearded Seals are associated primarily with the pack ice-edge, and in association with leads, flaws, and polynyas. Consequently, they are not found frequently in nearshore waters. Many bearded seals that winter in the Bering Sea migrate through the Bering Strait from late April through June and spend the summer along the ice edge in the Chukchi Sea. Bearded seal occur in Kotzebue Sound from August to July and in Norton Sound from late November to late June. The northern estuary is important rearing habitat for young-of-the-year bearded seals. From December through March, bearded seals are abundant immediately north of St. Lawrence Island. Pupping occurs from mid March to early May. Molting occurs between April and August, with a peak in May and June. More information and maps on bearded and ringed seals may be found at the Kotzebue IRA web site at: http://www.kotzebueira.org/

Ribbon seals are generally found along the Bering Sea ice front from late March through mid July. From July through October, ribbon seals do not usually occur in nearshore waters, but frequent ice-free waters

of the Bering Sea. A few ribbon seals migrate into the Chukchi Sea for the summer.

Beluga Whales bound for the Beaufort Sea migrate past St. Lawrence Island mainly in March and April, reach the Bering Strait from late March through mid May, and continue northward in leads along the northwestern Alaska coast. Belugas bound for Norton and Kotzebue Sounds begin moving to their wintering area to coastal areas from March through May. Belugas enter Norton Sound coastal waters in May and June, and remain until October or November. Belugas occupy the coast of the northern Seward Peninsula from June through October and Kotzebue Sound from mid June to August. Summer use areas in Norton Sound include Norton Bay (May and June) and Golovin Bay (June to November). Concentrations in Kotzebue Sound include Eschscholtz Bay and Sisualik Spit. Eastern Kotzebue Sound is a high summer use area. Belugas generally return to wintering areas in the Bering Sea in October and November. Some may winter northwest of St. Lawrence Island, a few may winter in the southeastern Chukchi Sea, and a few may winter in Norton Sound when prevailing winds keep polynyas and leads open.

Bowhead Whales move northward past St. Lawrence Island in March and April, through the Bering Strait from late March through May, and northward along the Chukchi Sea coast as leads open in the sea ice. Bowhead whales rarely enter Norton Sound. Fall migration in the Chukchi Sea occurs offshore. Bowhead whales move south through the Bering Strait from September to December. Bowhead whales winter in the Bering Sea near the pack ice edge.

Other Whales Gray whales feed in waters near the southern capes of St. Lawrence Island, from St. Lawrence Island north to the Bering Strait, and in portions of Norton Sound from mid May through November. Gray whales enter the Chukchi Sea during the ice free season (June to October). Killer and fin whales are seen occasionally along the Alaskan Chukchi Sea coast and are frequently seen in the vicinity of St. Lawrence Island from spring through fall. Minke whales are regularly seen in the St. Lawrence Island area during the summer. Occasional use of the St. Lawrence Island area by North Pacific Right whales during the open water period may occur. For more information on whales, see the National Marine Fisheries Service web site at:
http://www.fakr.noaa.gov/protectedresources/whales/default.htm

Walrus, primarily females and juveniles, begin migrating north past St. Lawrence Island in March and April. Most reach the Bering Strait by late May or early June, and continue migrating northward into the Chukchi Sea. Some males remain in the Bering Sea year-round. Walruses in the Chukchi Sea begin to move south in September and early October as pack ice forms. Between October and December, large numbers occasionally haul out at St. Lawrence, Punuk, Diomede, and King Islands, and in Norton Sound. With continuing development of ice, most walruses move to wintering areas south of St. Lawrence Island. Walruses return to the Bering Sea in September and early October as pack ice reforms. Large numbers arrive between October and December at haulouts at St. Lawrence, Punuk, Diomede, and King Islands. See the following map for the walrus range and haulouts.

Steller Sea Lion During the ice-free months, a few sea lions haul out on portions of St. Lawrence Island, the southern Punuk Islands, on Fairway Rock, and occasionally on the Diomede Islands. The highest number of Steller sea lions counted on St. Lawrence Island during repeated surveys was 262 (during a survey at the Sivuonok haulaout in Novmeber, 2010). Fifty to 100 sea lions were seen in the water off the north end of Sivuqaq Mountain.

Insert walrus range map here, page 1 of 1
http://alaska.fws.gov/fisheries/mmm/walrus/pdf/walrus_range_map.pdf

(d) Terrestrial Mammals

Caribou The Western Arctic Caribou Herd has declined from a peak of 490,000 in 2003 to 377,000 in 2007. As the herd approached its peak their seasonal dispersion has expanded westward into the Seward Peninsula. Currently, portions of the herd may be found in much of the subarea primarily in late summer through winter. Much of the herd migrates along the eastern half of the subarea, funneling through the Selawik N.W.R to calving grounds on the eastern North Slope. Although caribou may be found in different habitats import summer habitat for willow browsing and insect relief includes riparian and coastal areas, especially with open gravel bars and remaining snowpack.

Reindeer Reindeer, some mixed with caribou, may be found throughout the Seward Peninsula and St. Lawrence Island. They may be more tolerant to human activity and usually calve in April, one month earlier than caribou. They are private property and it would be beneficial to have the herder help haze both reindeer and caribou if needed.

Black Bear are most common in forested river floodplains and lowlands in the Kobuk, Selawik and Noatak river drainages, although black bears occasionally may occur in alpine areas. Black bears also occur along the Norton Sound coast between Shaktoolik and Klikitarik. Important summer habitats include sedge meadows, and areas of shrubs and forest containing berries. Black bears also may feed at salmon spawning areas. Black bears begin entering dens for the winter in early October and emerge from dens in the spring from mid April through mid May.

Brown Bear (grizzly bears) primarily occur in upland and mountainous areas of the Northwest region, but may occur in lowland and coastal areas. Concentrations of bears may be found along rivers when spawning salmon are present; at beached marine mammal carcasses along the Chukchi Sea coastline between Cape Seppings and Cape Thompson, in reindeer calving areas, and in caribou calving grounds and migration corridors. Brown bears enter dens from mid October through November and emerge from their dens from early April through late May. Concentrations of bears are attracted to spawning salmon on the lower Noatak, Squirrel, Salmon, Nimiuktuk, lower Kougarok, Agiapuk, lower Pilgrim, lower Sinuk, lower Cripple, lower Penny, lower Flambeau and Eldorado, lower Kwiniuk, lower Tubutulik, lower Inglutalik, lower Ungalik, lower Shaktoolik, lower Egavik, lower North, and lower Unalakleet rivers. Spring concentration areas include Cape Espenberg to Goodhope Bay coastline, Cape Rodney to Tiksuk River, coastline near Bluff, and coastline from Unalakleet to St. Michael.

Moose occur in habitats throughout the subarea, ranging from aquatic and riparian floodplain areas to sub-alpine willow-dominated areas. Sedge meadows, ponds and lakes with extensive aquatic vegetation, riparian and subalpine willow stands, and forested areas provide important summer habitat for moose. Important winter habitat includes shrub-dominated alpine and riparian areas, and forested areas. Riparian areas along the major rivers and tributary streams are particularly important during winter. Calving occurs in late May and early June.

Dall Sheep are found throughout the central Brooks Range and to the Wulik Peaks area of the extreme western end of the western Brooks Range. Sheep often are concentrated during winter on windblown slopes and ridges along major river valleys. During summer, sheep disperse to smaller valleys, mountain peaks, and other areas. Mineral licks are important habitat that sheep use primarily from late May through mid July, although sheep may be seen at these sites from April through October. Lambing occurs from mid May through mid June.

Muskoxen Most muskox are found over much of the Seward Peninsula and about 400 are concentrated around Cape Thompson within 20 miles of the coast, but are expanding north and southeast, and are found in riparian habitat in summer and windswept uplands in winter through calving (late April- mid June).

Insert caribou range map here, page 1 of 1
http://www.adfg.alaska.gov/static/species/speciesinfo/caribou/images/caribou_herds.jpg

Wolves and Foxes are found throughout the subarea. Arctic foxes occupy St. Lawrence Island and coastal areas, whereas red foxes generally occupy inland areas. Some red foxes do occur and den near the coast. Wolves and foxes select den sites where unfrozen, well-drained soils occur (e.g., dunes, river banks, moraines, pingos). Wolves may initiate den construction in mid-April. Pups are born from mid May through early June, and generally leave the den by mid July, although dens may be occupied until August. Arctic and red foxes have a reproductive pattern similar to that of wolves.

Aquatic Furbearers Beaver, mink, muskrat, and river otter are common inhabitants of aquatic and riparian floodplain and wetland areas, including marshes, ponds, lakes, streams, and rivers.

For more information on terrestrial mammals, see the Alaska Department of Fish and Game web site at: http://www.adfg.alaska.gov/index.cfm?adfg=animals.listmammals

3. Vegetation

Rare plant species are identified below, as documented by the Alaska Natural Heritage Program and updated from "Vascular Plant Inventory of Alaska's Arctic National Parklands" (2006) by Carolyn Parker, National Park Service. The map on the following page identifies the general locations of these rare plants. For further information, contact the Alaska Natural Heritage Program botanist at 257-2785.

RARE PLANTS KNOWN FROM THE NORTHWEST ARCTIC SUBAREA:

Global Rank	State Rank	Scientific Name	Common name
G1?	S1	*Saussurea triangulata*	
G2	S2S3	*Erigeron muirii*	
G2	S2	*Oxytropis kobukensis*	Kobuk Locoweed
G2	S2	*Rumex krausei*	Cape Krause sorrel
G2G3	S2S3	*Aster yukonensis*	Yukon Aster
G2G3	S2S3	*Douglasia alaskana*	Alaska Rockjasmine
G2G3Q	S2S3	*Oxytropis tananensis*	
G3	S1	*Claytonia arctica*	Arctic Springbeauty
G3	*S2*	*Lupinus kuschei*	
G3	S2	*Oxytropis kokrinensis*	
G3	S3	*Aphragmus eschscholtzianus*	
G3	S3	*Symphyotrichum yukonense*	
G3	S3	*Potamogeton subsibiricus*	
G3	S2S3	*Artemisia senjavinensis*	Arctic Sage
G3	S3	*Stellaria alaskana*	
G3	S3	*Stellaria dicranoides*	
G3	S3	*Thlaspi arcticum*	
G3	S3	*Arenaria longipedunculata*	
G3	S3	*Draba exalata*	
G3	S3	*Douglasia beringensis*	
G3	S3	*Oxytropis kokrinensis*	Kokrines Oxytrope
G3	S3	*Papaver walpolei*	Walpole Poppy
G3	S2S3	*Primula tschuktschorum*	Chukch Primrose
G3G4Q	S2S3	*Saxifraga nudicaulis*	
G3?	S2S3	*Puccinellia wrightii*	Wright's Arctic Grass
G3G4	S1	*Festuca edlundiae*	
G3G4	S3S4	*Primula anvilensis*	Anvil Mountain Primrose
G3G4T?	S1	*Gentianopsis detonsa ssp.detonsa*	Sheared Gentian
G4	S1	*Potentilla fragiformis*	
G4	S1	*Puccinellia vaginata*	
G4	S2	*Carex heleonastes*	
G4?	S2	*Carex holostoma*	
G4	S2S3	*Cardamine microphylla ssp. blaisdellii*	
G4	S2S3	*Puccinellia vahliana*	
G4	S2S3	*Potentilla rubricaulis*	
G4	S3	*Campanula aurita*	
G4	S3	*Erigeron porsildii*	
G4	S3	*Asplenium viride*	
G4	S3	*Asplenium trichomanes-ramosum*	Green Spleenwort
G4	*S3*	*Minuartia yukonensis*	
G4	S3	*Colpodium vahlianum*	Niokornak Arctic Grass
G4G5	S3	*Festuca lenensis*	

Global Rank	State Rank	Scientific Name	Common name
G4G5	S1	*Pleuropogon sabinei*	Sabine-grass
G4	S2S3	*Eleocharis kamtschatica*	
G4G5	S2S3	*Oxygraphis glacialis*	
G4G5	S2	*Carex holostoma*	
G4T1T2Q	S1S2	*Artemisia globularia* var *lutea*	
G4T2	S2	*Oxytropis arctica* var *barnebyana*	
G4T2T3Q	S2	*Phlox richardsonii* ssp *richardsonii*	Richardson's Phlox
G4T3T4	S2	*Ranunculus glacialis* var *camissonis*	
G5	S1S2	*Ranunculus monophyllus*	
G5	S2S3	*Cryptogramma stelleri*	
G5	S2	*Schizachne purpurascens*	
G5	S2	*Glyceria striata* ssp. *stricta*	
G5	S1	*Potentilla stipularis*	Circumpolar Cinquefoil
G5	S3	*Zannichellia palustris*	Horned Pondweed
G5?	S1	*Pedicularis hirsuta*	Hairy Lousewort
G5	*S3*	*Viola selkirkii*	
G5	S2	*Eriophorum viridicarinatum*	
G5	S2S3	*Glyceria pulchella*	
G5	S2S3	*Smelowskia porsildii*	
G5T2?Q	S2?	*Corispermum ochotense* var *alaskanum*	
G5T4	S1	*Chenopodium glaucum* ssp *salinum*	
G5	S1S2	*Carex deflexa*	
G5T5	S2S3	*Cypripedium parviflorum*	Small Yellow Lady's Slipper
G5	S2S3	*Stellaria umbellate*	
G5	S3S4	*Minuartia biflora*	
		X_Dupoa labradorica	

Species Ranks used by The Alaska Natural Heritage Program:

Species 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.

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.

Insert Rare Plants Map here

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwarplants.pdf

D. HUMAN USE RESOURCES

1. Fish Hatcheries and Associated Ocean Net Pens

There are no fish hatcheries operating in the subarea.

2. Aquaculture Sites

There are no aquaculture sites in the subarea.

3. Historic Properties

The 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. Federal On-Scene Coordinators 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 Federal On-Scene Coordinator responsibilities for protecting cultural resources and provides an expedited process for compliance with Section 106 of the National Historic Preservation Act during the emergency phase of a response.

4. Subsistence and Personal Use Harvest

Subsistence-related uses of natural resources play an important role in the economy and culture of many communities in the 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 and the Alaska Boards of Fisheries and Game made all decisions regarding the management of subsistence resources and harvest opportunities. In 1990, however, the Federal government became responsible for managing subsistence resources on Federal public lands, and in 1999 in Federal reserved waters. The Federal Subsistence Board makes the regulations which are administered by various federal agencies on Federal public lands. State regulations continue to apply to State and private lands. As a consequence, the number of agencies involved in managing subsistence resources and uses has increased. Therefore, in the event of a spill, extensive coordination will be required in order to address subsistence resources. Regulations regarding subsistence harvest can also be expected to undergo further regular modification. Current information on harvest regulations can be obtained from the Alaska Department of Fish and Game or the U.S. Fish and Wildlife Service Office of Subsistence Management (see their web site at):
http://alaska.fws.gov/asm/index.cfml.

Traditional subsistence harvest areas include the Bering Strait area, the Western Seward Peninsula, and Norton Sound Coast. The villages identified within the Bering Strait area include

Diomede, Gambell, Savoonga, and Wales; the Western Seward Peninsula area includes Teller, Shishmaref, Brevig Mission, Mary's Igloo, and King Islanders living in Nome; and the communities associated with the Norton Sound Coast area include Solomon, Golovin, White Mountain, Council, Elim, Koyuk, Shaktoolik, Unalakleet, St. Michael, and Stebbins. The subsistence harvest areas and species associated with these areas are identified in The Bering Straits Coastal Resource Service Area Board, Volume One-Resource Inventory, Maps 2(A), 2(B), and 2(C).

Traditional subsistence harvest areas for the Northwest Arctic Borough or NANA Region include lands surrounding the villages of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, and Shungnak. More specific information, including technical reports and detailed maps, can be obtained from the Alaska Department of Fish and Game, the Northwest Arctic Borough, the Bering Straits Regional Corporation, Maniilaq Association, and NANA Regional Corporation. Local communities can provide the most detailed and accurate information regarding current subsistence and personal use harvest. Contacts for potentially affected communities are identified in the Response Section, Part One.

5. Commercial Fishing

Commercial fishing occurs in Kotzebue Sound for salmon, and to a much lesser extent, crab and sheefish; and in Norton Sound for salmon, herring, and crab. Commercial fishing for salmon in Kotzebue Sound generally occurs from July 10 to August 30 along the Kobuk and Noatak River deltas. Salmon fishing in Norton Sound generally occurs from June 8 to September 7, depending on the location and species harvested. A limited sheefish commercial harvest occurs in late October - early November and in March. A limited crab commercial harvest occurs in summers to early fall. Herring fishing in Norton Sound generally occurs from May 20 to June 10, with harvests occurring along coastline east and south of Cape Darby. The fishing season for crab runs from July 1 to September 3 in offshore waters between Sledge Island and Cape Darby, and latitudes 64° 05’ N to 64° 20’ N. The dates given above indicate periods when fisheries are commonly, but not always open. As fishing periods are adjusted yearly by emergency openings and closures, contact Alaska Department of Fish & Game for current fishing periods. Updated information may be found at their Commercial Fisheries Arctic Management Area web site:

http://www.cf.adfg.state.ak.us/region3/nomehome.php

6. Sport Fishing and Hunting

Sport fishing and hunting occurs at a wide variety of locations in the subarea throughout the year, but generally are at their highest levels from August to October in the Noatak, Kelly, and Squirrel River areas. Seasons and harvest regulations vary depending on the species and the area, and may be changed from year to year. Contact the Alaska Department of Fish & Game for current seasons within the area of the spill. Updated information may be found at their Sport Fish Northwest Management Area web site:

http://www.sf.adfg.state.ak.us/Management/areas.cfm/FA/northwestoverview.overview

7. Commercial Tourism

The communities of the subarea are just a quick flight away from Fairbanks and Anchorage, and many convenient tour packages are available. Commercial tourism in the Northwest Arctic Subarea tends to be relatively large compared to the rest of rural Alaska, receiving about 10,000 visitors annually. Nome, St. Lawrence Island (the villages of Gambell and Savoonga), and Kotzebue receive the majority of the areas tourism. Region-wide activities include: ABEC’s

Alaska Adventure (457-8909), Brooks Range Adventures (479-8203), and Kobuk River Jets (475-2149). Local Activities include: Gambell Village Tour (274-5400), Arctic Circle Adventures (Winter: 276-0976, Summer: 442-3509), National Park Service Kotzebue Visitor Center (442-3760), Tour Arctic (442-3301), Nome Custom Adventures (443-5134), Nome Tour and Marketing (443-2323), and Visit Russia Far East From Nome (443-5464). The travel to the Northwest Arctic subarea is dictated by seasonal changes and should be noted that the majority of the tourism occurs in the summer months. For additional information contact:

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
Nome Convention and Visitors Bureau	562-7380

8. Recreational Sites and Facilities

Unalakleet River Lodge is located on the Unalakleet River about 10 miles upstream from the mouth. This lodge caters to an international sport fisherman clientele. The Unalakleet River has been designated as a wild and scenic river, and attracts an increasing number of visitors each year. The Niuluk River has road access from Council and is one of the most important sport fishing areas in the Seward Peninsula for grayling and Arctic char, as well as pink, chum and silver salmon. Access to Fish River from the Niuluk River also makes it an easily accessible for sport fishing. A sport lodge located on the Fish River at White Mountain caters to an international sport fishing clientele. Golovin Bay, Golovin Lagoon, and the Fish and Niukluk Rivers also provide moose hunting for Nome residents and hunters from outside the state. A number of licensed guides have established use areas as regulated by the State of Alaska, Big Game Commercial Services Board, and the Department of Natural Resources Division of Land, Mining, and Water.

9. Marinas and Ports (See B. Resources Section)

Teck Alaska Inc. operates the DeLong Mountain Terminal for the Alaska Industrial Development and Export Authority along the Chukchi Sea 17 miles southeast of Kivalina for marine shipment of lead and zinc concentrate and for receiving and storing fuel. Kotzebue and Nome serve as storage and trans-shipment sites for fuel and other cargo. St. Michael also serves as a fuel storage and trans-shipment site.

10. Fish Processing

Fish processing facilities are located in Nome and Unalakleet. Contact numbers and facility names are listed below.

Nome facilities include: Nome Fish Company 443-4168, and Norton Sound Seafood Products (Anchorage number: 274-7575, Nome number: 443-2304).

The single processing facility in Unalakleet is Unalakleet Fish Plant/Norton Sound Seafood Products (Anchorage number: 274-7575, Unalakleet number: 624-3807).

11. Logging Facilities

There are no commercial logging operations in the subarea.

12. Water Intake/Use

The following information was generated by the Alaska Department of Environmental Conservation, Drinking Water/Northern Program. Included are permitted water use facilities.

Name of Facility	Location	State ID No.	Source
Ambler Water System	Ambler	340214	Well
Buckland Water Project	Buckland	340125	Buckland River
Brevig Mission Water System	Brevig Mission	340418	Well
BSSD-Teller School/Washeteria	Teller	340248	Coyote Creek
Teck AIC Construction Camp	Red Dog Mine	340654	Bons Creek/ Reservoir
Teck Port Facility	DMTS Port	340646	Chukchi Sea
Teck Red Dog Mine	Red Dog Mine	340670	Bons Creek/ Reservoir
Deering Utility System	Deering	340222	Inmachuk River
Gambell Fresh Water Wells	Gambell	340751	Wells
Golovin Community Water System	Golovin	340214	Cheenik Creek
Kivalina Water Project	Kivalina	340117	Wulik River
Kiana Water System	Kiana	340230	Well
Kotzebue Municipal Water System	Kotzebue	340060	Vortac Lake/ Devils Lake
Kobuk Village Water Supply	Kobuk	340565	Well
Koyuk City Washeteria/School	Koyuk	340167	Wells
Little Diomede Water Supply	Little Diomede	340141	Springs
Noatak Community Water System	Noatak	340159	Wells
Nome Joint Utility System	Nome	340010	Moonlight Spring
Noorvik Water Project	Noorvik	340109	Kobuk River
NW Arctic SD-Noorvik School	Noorvik	340094	Kobuk River
St. Michael Water Project	St. Michael	340337	Lower Clear Lake
Savoonga Water Supply System	Savoonga	340183	Well
Selawik Safewater Facility	Selawik	340379	Selawik River
Shaktoolik Water System	Shaktoolik	340442	Tagoonmenik Creek
Shishmaref Water System	Shishmaref	340484	Water Reservoir
Shungnak Water System	Shungnak	340361	Kobuk River
Stebbins City Water Supply	Stebbins	340492	Clear Lake
Unalakleet City Water Supply	Unalakleet	340387	Powers Creek
Wales Water System	Wales	340191	Village Creek
White Mountain Water System	White Mountain	340507	Wells

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

The State of Alaska owns the majority of tidal lands from mean high tide out to three miles along the coast, and submerged lands below ordinary high water along navigable water bodies. There are other areas of state owned land in the region, but there are no legislatively designated special areas requiring extra fish and wildlife habitat protection.

3. Federal

Gates of the Arctic National Park and Preserve About 250 miles northwest of Fairbanks, the Gates of the Arctic was established in 1980 and encompasses approximately 7,952,000 acres. The area is managed to protect its wild and undeveloped character, for mountaineering and wilderness recreation, to protect habitat and wildlife, and to protect current and continued subsistence uses. Caribou, moose, Dall sheep, grizzly bear, wolves and raptors are in abundance. The Tinayguk/North Fork, John, upper Alatna, upper Kobuk, and Noatak rivers are nationally designated Wild and Scenic Rivers.

Noatak National Preserve The 6.5 million acre preserve encompasses more than 250 miles of the Noatak River, a wild and scenic river. Noatak National Preserve protects the largest undeveloped mountain-rimmed river basin in the United States. It represents a yardstick of environmental health against which future conditions can be compared. In recognition of the value of this arctic wilderness, UNESCO has designated the Noatak River Basin an International Biosphere Reserve. The river basin provides an outstanding resource for scientific research, environmental education, and subsistence and recreational opportunities.

Kobuk Valley National Park Kobuk Valley National Park, a 1.75 million acre area about 75 miles east of Kotzebue, was created to maintain the environmental integrity of the natural features of the Kobuk Valley, including the Kobuk, Salmon, and other rivers, the boreal forest, and The Great Kobuk Sand Dunes, the largest active dune field in arctic latitudes. The valley remains an important area for traditional subsistence harvest of caribou, moose, bear, fish, waterfowl, and many edible and medicinal plants. The slow-moving Kobuk River is popular for fishing, canoeing, and kayaking. Backpacking and photography are educational recreational uses.

Cape Krusenstern National Monument Cape Krusenstern National Monument is found along the Chukchi Sea coast northwest of Kotzebue. The nearly 650,000 acre Monument is characterized by a coastal plain dotted with sizable lagoons and backed by gently rolling limestone hills. This

area has been designated an Archeological District in the National Register of Historic Places, and a National Historic Landmark (which includes the Monument and extends beyond). Bluffs and a series of 114 beach ridges record the changing shorelines of the Chukchi Sea and contain a chronological record of an estimated 6,000 years of prehistoric and historic use. Portions of the monument are important use areas for subsistence activities.

Selawik National Wildlife Refuge The Selawik National Wildlife Refuge includes about 3.2 million acres east of Kotzebue Sound in northwestern Alaska. The area is managed to conserve fish and wildlife populations and habitat, and to provide for current and continued subsistence uses by local residents. The refuge includes large river deltas, alpine tundra, extensive wetland and lake complexes, meadows, mountains, glacial valleys, sand dunes, and sand, gravel, and mud beaches. The refuge is used by large numbers of anadromous and resident fish, waterfowl and other birds, terrestrial mammals, and furbearers. Seals and beluga whales occur in marine waters along the western boundary of the refuge. The upper reaches of the Selawik River are designated as “wild and scenic.”

Bering Land Bridge National Preserve The Bering Land Bridge National Preserve encompasses approximately 2.8 million acres of the Seward Peninsula. The primary purpose of the preserve is to protect and preserve for research and interpretation a portion of the 1,000 mile wide land link that intermittently connected Asia and North America 14,000 to 25,000 years ago. Significant natural resources of the preserve include areas of past volcanic activity in the Arctic, dynamic coastal barrier beaches with interior lagoons, and a full representation of tundra vegetation from sea level to 3,500 feet. Some 112 migratory bird species may be seen here, along with occasional walrus, seals, and whales. Significant cultural resources include archaeological sites over 10,000 years old, former Eskimo village sites, and more recent early mining and exploration activities. Today, Eskimos from neighboring villages pursue subsistence lifestyles and manage their reindeer herds in and around the preserve.

Alaska Maritime National Wildlife Refuge Public lands on islands, barrier islands, islets, rocks, reefs, and spires in the Chukchi Sea make up the Chukchi Sea Unit of the refuge. Similar areas along the southern Seward Peninsula and in Norton Sound are included in the Bering Sea Unit of the refuge. The Alaska Maritime Refuge consists of over 2,400 islands, headlands, rocks, islets, spires, and reefs along the Alaskan coast, stretching from Southeast Alaska to Cape Lisburne on the Chukchi Sea. The refuge is synonymous with seabirds. About 75 percent of Alaska's marine birds (15 to 30 million of 55 species) use the refuge. Thousands of sea lions, seals, and walrus live in the Bering and Chukchi units of the refuge. Wildlife viewing, photography, backpacking, and harvesting of subsistence resources (e.g., seabirds and their eggs, marine mammals) are primary activities.

National Wild and Scenic Rivers Congress established the National Wild and Scenic Rivers System to preserve in a free-flowing condition rivers of remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value. All or part of 25 such rivers in Alaska are designated wild and scenic. Those located in the Northwest Arctic Subarea include: the Noatak, Kobuk, and Salmon rivers administered by the National Park Service; the Unalakleet River administered by the Bureau of Land Management; and the Selawik River administered by the United States Fish and Wildlife Service. By classifying these rivers as such, Congress mandated that these rivers will be "managed to be free of impoundments and generally inaccessible by trail, with watersheds or shorelines primitive, and waters unpolluted...representing vestiges of primitive America."

B. 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

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

Insert Land Management Map Legend page here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/base/cover1n3.pdf

Insert Land Management Map 1 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa11n3.pdf

Insert Land Management Map 2 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa21n3.pdf

Insert Land Management Map 3 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa31n3.pdf

Insert Land Management Map 4 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa41n3.pdf

Insert Land Management Map 5 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa51n3.pdf

Insert Land Management Map 6 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa61n3.pdf

Insert Land Management Map 7 of 7 here - to view the map from the ARRT website, please go to the DNR ***Prevention and Emergency Response Subarea Plan Maps*** website located at:

http://www.asgdc.state.ak.us/maps/cplans/nwa/nwa71n3.pdf