
















Primary Data Sources








- Contingency Plan (C-Plan) Regional Boundaries: Alaska Department of Environmental Conservation (ADEC) (scale approximately 1:1 million; automated in 1995 by ADNR from 18AAC 75.495 specifications).
- State Land Ownership: Alaska Department of Natural Resources (ADNR), Land Administration System (section-level resolution; December 1998).
- State Legislatively Designated Areas: ADNR, Land Administration System (section-level resolution; February 1995).
- Native and Other Private: Alaska Native Claims Settlement Act, Bureau of Land Management (section-level resolution; December 1998); ADNR, Land Administration System (section-level resolution; December 1998)
- Patented Disposed Federal Lands (Native Allotments or Private Parcels): Bureau of Land Management (section-level resolution; December 1998).
- Conservation System Units: Bureau of Land Management (1991) and ADNR edits since then (February 1998).
- Wilderness Designations:
 - U.S. Geological Survey (1:2 million scale; May 1995).
 - U.S. Fish & Wildlife Service (1:2 million scale; May 1995).
 - U.S. Forest Service (1:63,360; May 1995).
 - U.S. National Park Service (1:63,360; May 1995).
 - Bureau of Land Management (section-level resolution; December 1998).
- Military Lands: Bureau of Land Management (section-level resolution; December 1998).
- Coastline: ADNR, Land Records Information Section; US Geological Survey; US Forest Service, Chugach; US Forest Service, Tongass; EVOS Trustee Council, (February 1998).
- Streams and Lakes: Digital Chart of the World, Defense Mapping Agency (1:1 million scale; 1991 data released by Environmental Systems Research Institute).
- Roads & Railroads: Digital Chart of the World, Defense Mapping Agency (1:1 million scale; 1991 data released by Environmental Systems Research Institute).
- Geographic Place Names: Dictionary of Alaska Place Names (1967) and U.S. Geological Survey Quadrangle Maps, (1:1 million scale; automated by U.S. Geological Survey, 1994, and annotated by ADNR, June 1996).
- Borough Boundaries: Alaska Department of Community & Regional Affairs (1997) (1:250,000 scale) and ADNR (1997).
- Native Corporation Boundaries: ADNR (approximately 1:1 million scale; automated from U.S. Census Bureau digital files, verified and updated by ADNR, July 1995).

Master Legend

Land Management

	National Forest Service		Both State and ANCSA Lands within section
	National Park Service		Alaska Native Claims Settlement Act (ANCSA) Lands
	National Wildlife Refuges		Municipal or Other Private Parcels
	Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service		Federal Designated Wilderness Areas or Wilderness Study Areas
	Bureau of Land Management		State Selected
	Military		State Wildlife, Park, Forest, and other Multiple Use Areas
	State Lands		Native Selected
			Private Parcels (Disposed Federal Lands) or Native Allotments

Other Map Features

	C-Plan Boundary (On Land)
	C-Plan Boundary (Offshore)
	Borough Boundary
	Native Corporation Boundary
	Wilderness Study Area Boundary
	Major Highways
	Other Roads

To Re-Order Maps

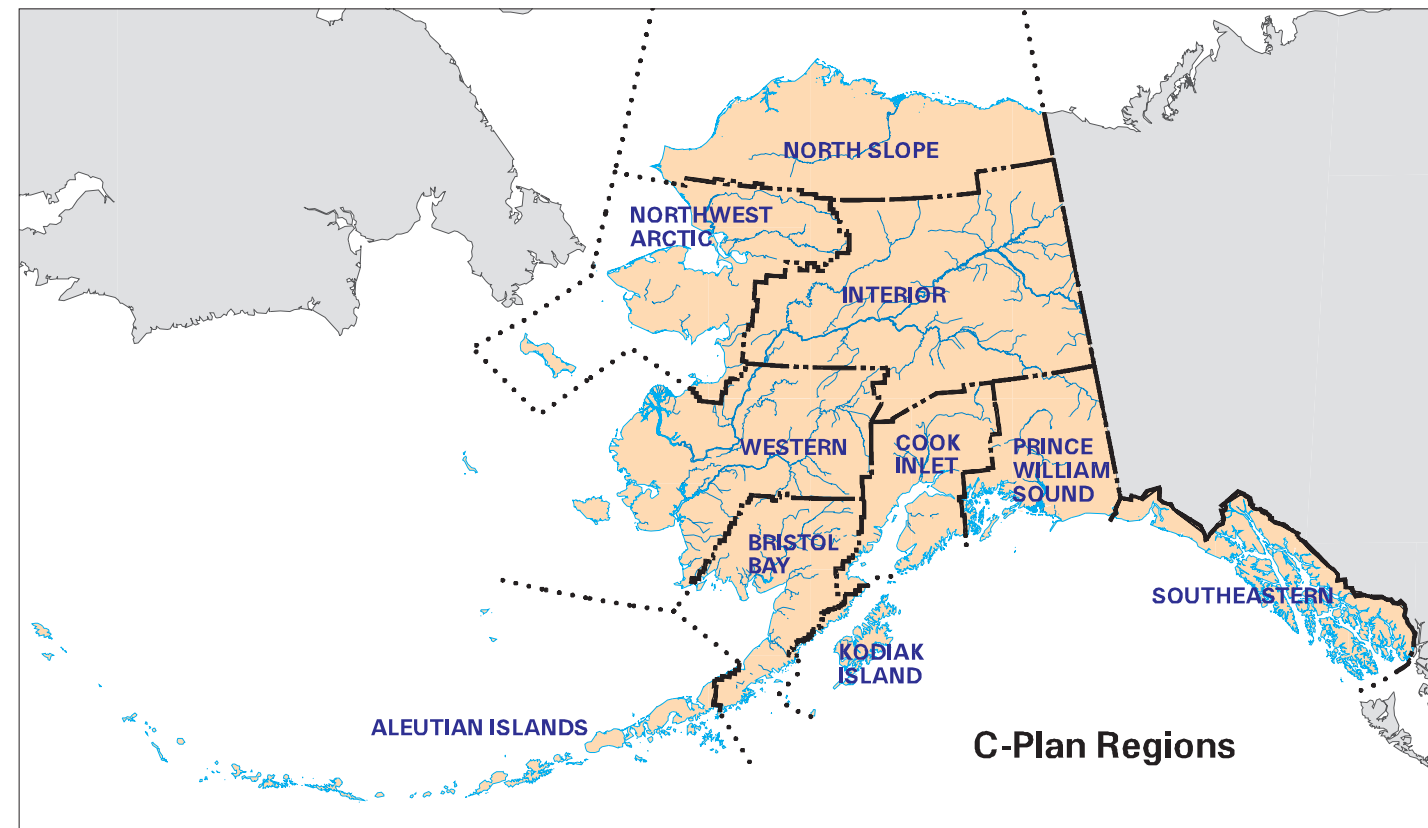
This legend page and the Sensitive Areas Land Management maps were produced using ARC/INFO software and output as digital postscript files.

To purchase copies of the Sensitive Areas Land Management maps, please contact:

Alaska Department of Natural Resources
 Division of Support Services
 Land Records Information Section
 550 W 7th Avenue, Suite 706
 Anchorage, Alaska 99501
 (907)269-8833

CONTINGENCY PLANNING

Sensitive Areas Land Management Maps



Hierarchy for Depicting Land Ownership

The land management maps in this C-Plan series depict ownership according to the following hierarchy (e.g., any portion of a section that is State Patented or Tentatively Approved causes the whole section to be depicted as State land):

- State Municipal Entitlements or Land Exchanges or other Land Disposals.
- Patented Disposed Federal Lands (Native Allotments or Private Parcels).
- State Patented or Tentatively Approved (includes casetypes 101-114, 116-117, 128-129).
- Alaska Native Claims Settlement Act (ANCSA) Patented or Interim Conveyed.
- Major Military.
- National Wildlife Refuges, National Park System Units.
- National Wild & Scenic Rivers outside National Park System Units and National Wildlife Refuges.
- National Forests and Monuments, National Petroleum Reserve-Alaska, National Recreation Areas and National Conservation Areas.
- Bureau of Land Management Public Lands.

Note: Cross-hatched areas indicate an overlay of State-Selected lands (including Alaska National Interest Lands Conservation Act topfilings) and Alaska Native Claims Settlement Act-Selected lands.

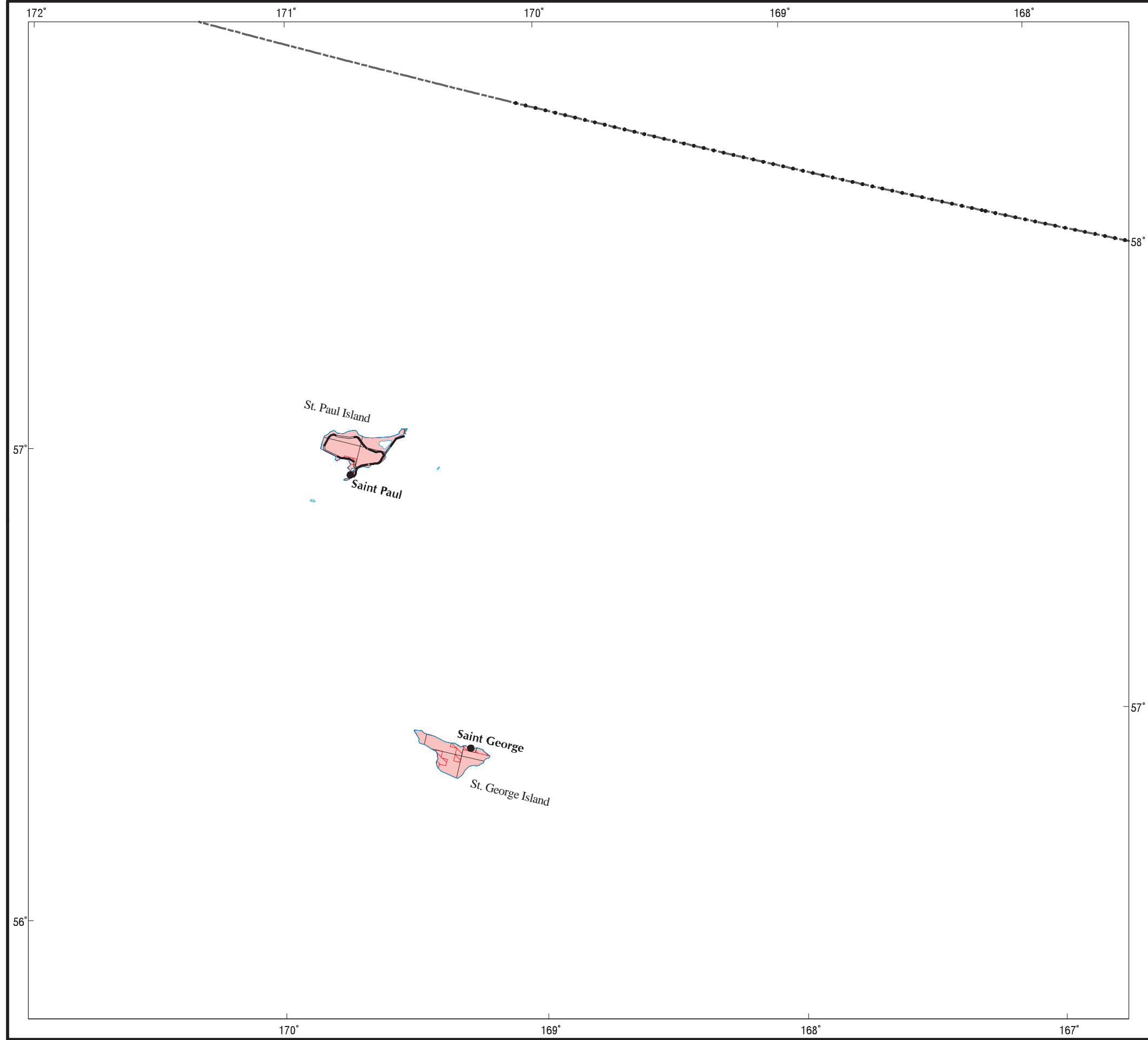
Note: The Alaska Maritime National Wildlife Refuge (NWR) is not completely depicted. Areas where it is depicted are shaded, however, they are not outlined. The Alaska Maritime NWR is described as follows:

The Alaska Maritime NWR consists of all public lands, including submerged waters and interests therein on islands, islets, rocks, reefs, spires, and designated capes and headlands in the coastal areas and adjacent seas of Alaska within five designated subunits: Chukchi Sea, Bering Sea, Aleutian Islands, Alaska Peninsula, and Gulf of Alaska Units; and includes an undetermined quantity of submerged land, if any, retained in Federal ownership at the time of statehood around Kodiak and Afognak Islands. The refuge is generally depicted on the USGS maps entitled, "Alaska Maritime National Wildlife Refuge" dated October 1979.

Background

The Alaska Department of Natural Resources (ADNR), under agreement with the Alaska Department of Environmental Conservation (ADEC), produced digital land management maps for each of the Contingency Plan (C-Plan) Region Subareas, using an ARC/INFO based Geographic Information System (GIS). The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. More detailed State Status Plats portraying State land ownership by township are available at the Alaska Department of Natural Resources' Public Information Centers. Master Title Plats portraying Federal and Alaska Native Claims Settlement Act land ownership are available at the Bureau of Land Management's Public Room, Federal Building.

The land management maps summarize land ownership and represent a hierarchical, section-level index to the underlying, detailed land ownership.


















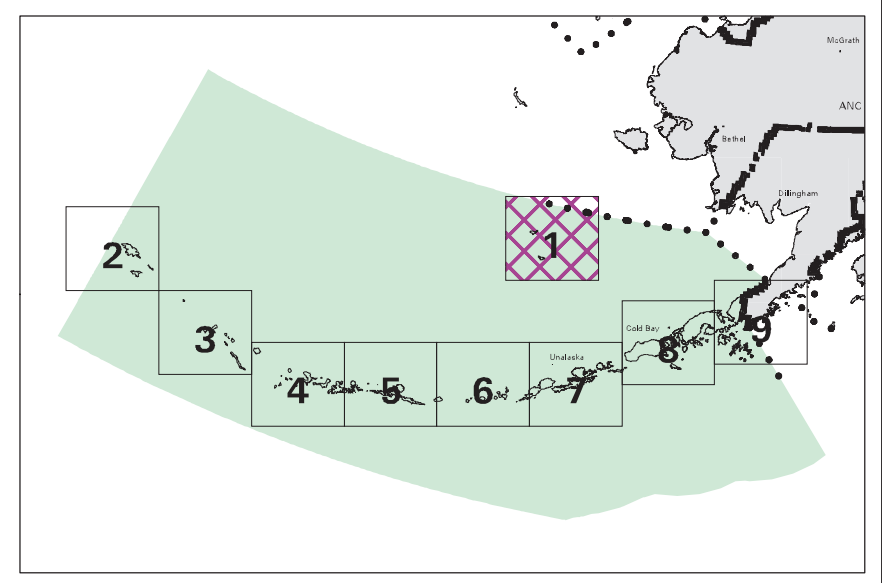
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

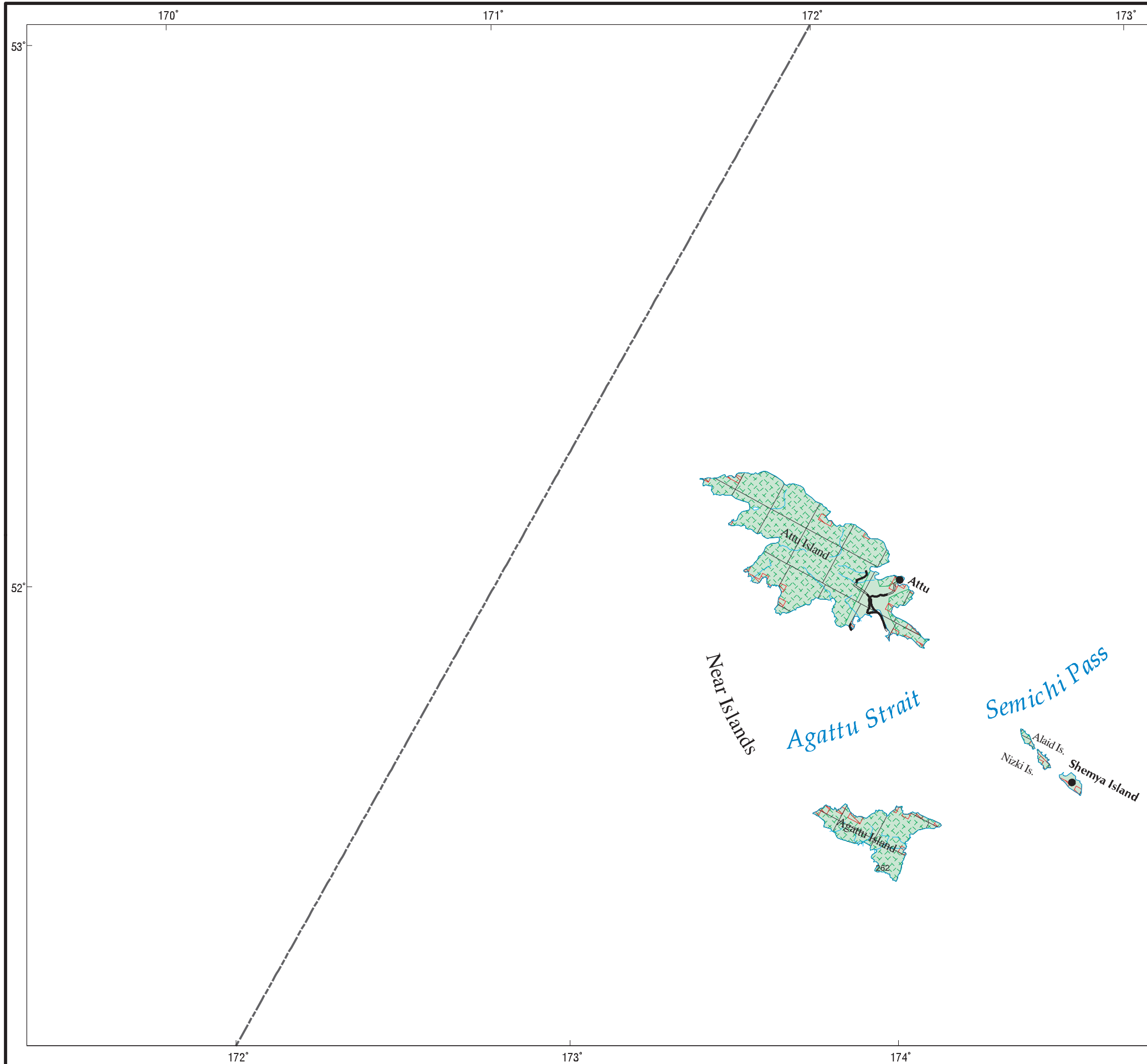
Map 1 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
-  National Park Service
-  National Wildlife Refuges
-  Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
-  Bureau of Land Management
-  Military
-  State Lands
-  Both State and ANCSA Lands within section
-  Alaska Native Claims Settlement Act (ANCSA) Lands
-  Municipal or Other Private Parcels
-  Federal Designated Wilderness Areas or Wilderness Study Areas
-  State Selected
-  State Wildlife, Park, Forest, and other Multiple Use Areas
-  Native Selected
-  Private Parcels (Disposed Federal Lands) or Native Allotments






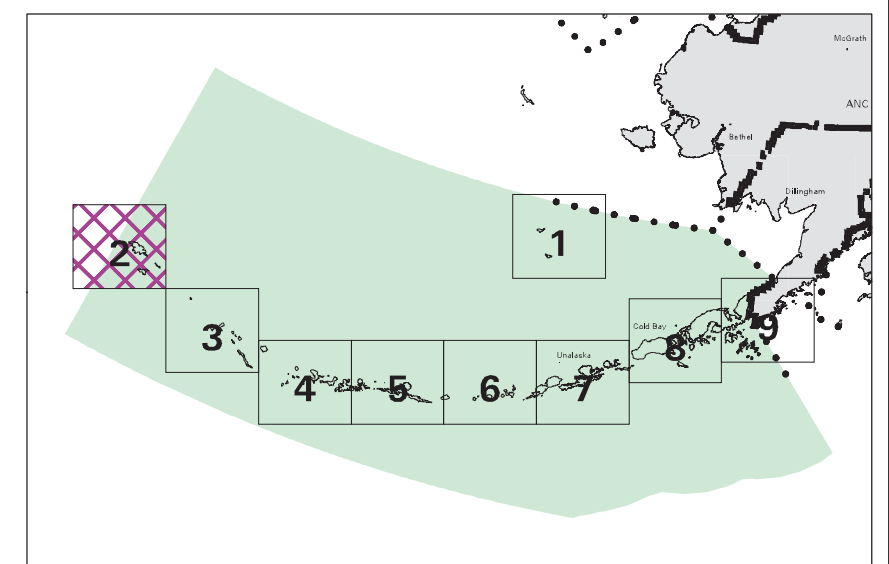
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

Map 2 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
-  National Park Service
-  National Wildlife Refuges
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-  State Selected
-  State Wildlife, Park, Forest, and other Multiple Use Areas
-  Native Selected
-  Private Parcels (Disposed Federal Lands) or Native Allotments






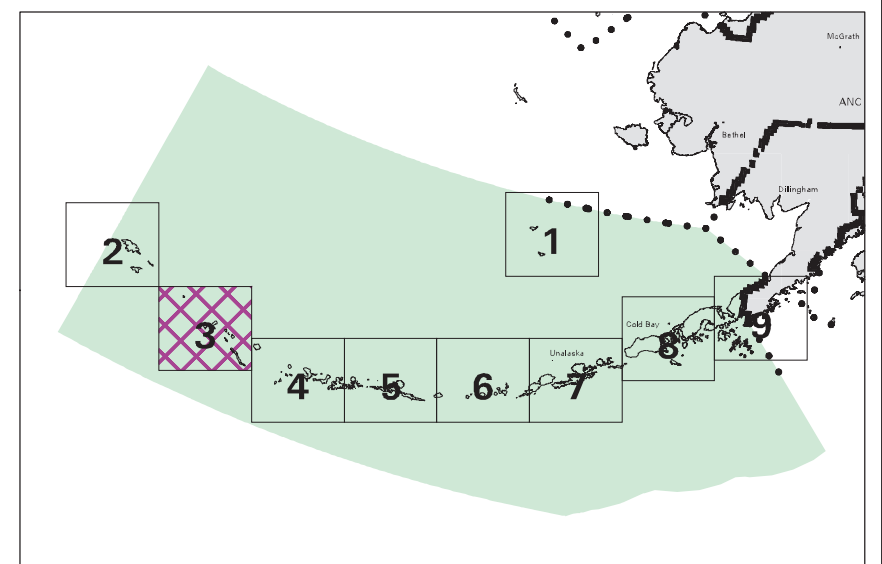
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

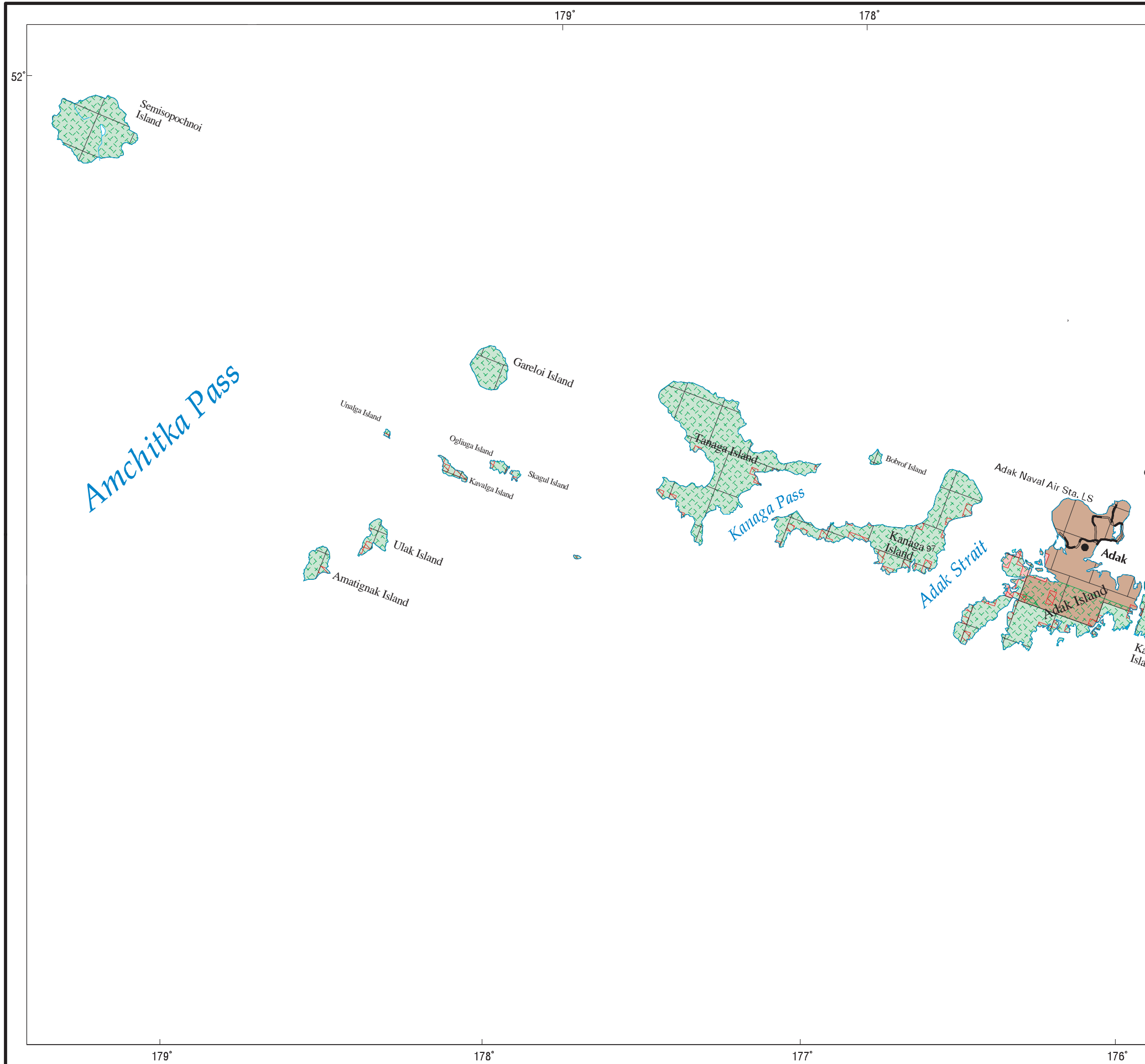
Map 3 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
-  National Park Service
-  National Wildlife Refuges
-  Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
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












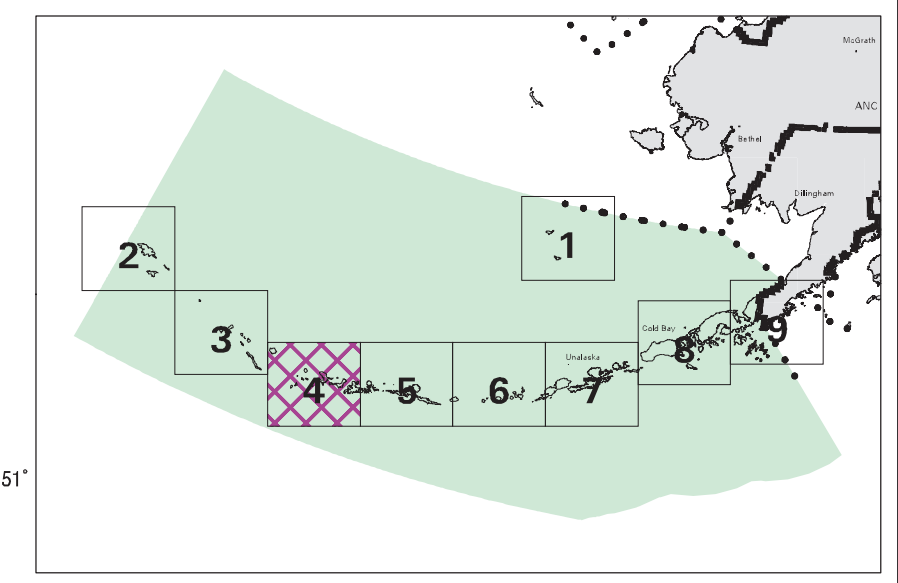
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

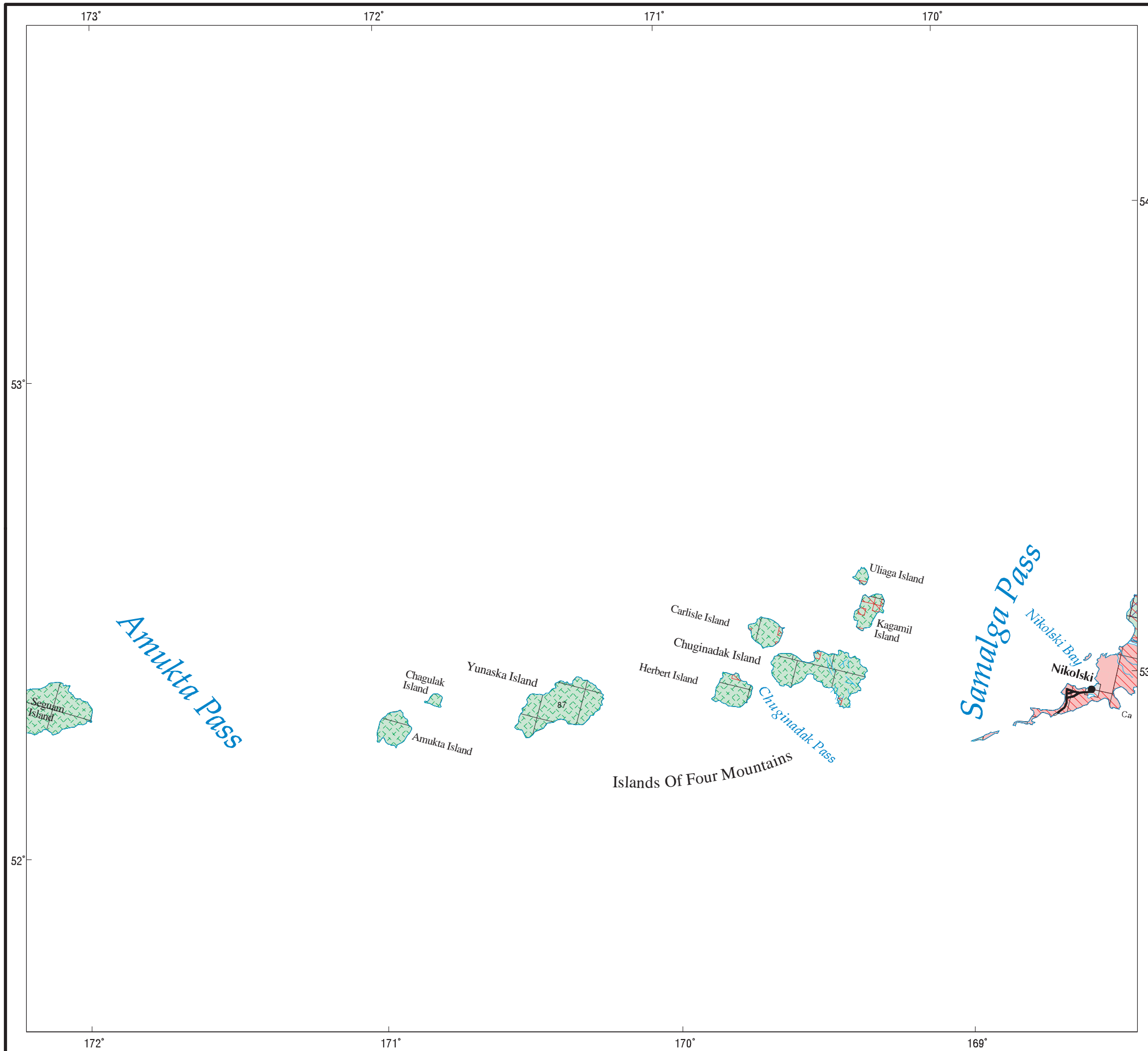
Map 4 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
-  National Park Service
-  National Wildlife Refuges
-  Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
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-  State Selected
-  State Wildlife, Park, Forest, and other Multiple Use Areas
-  Native Selected
-  Private Parcels (Disposed Federal Lands) or Native Allotments





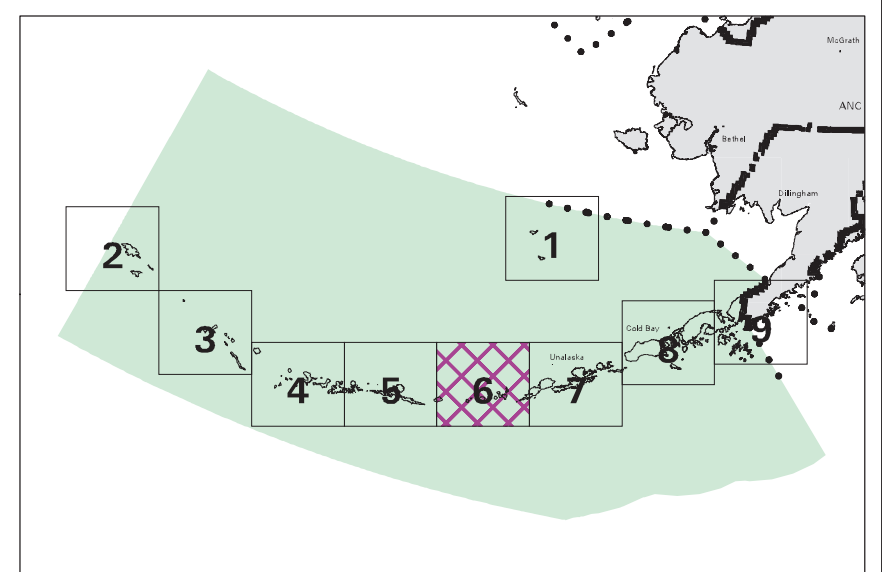
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

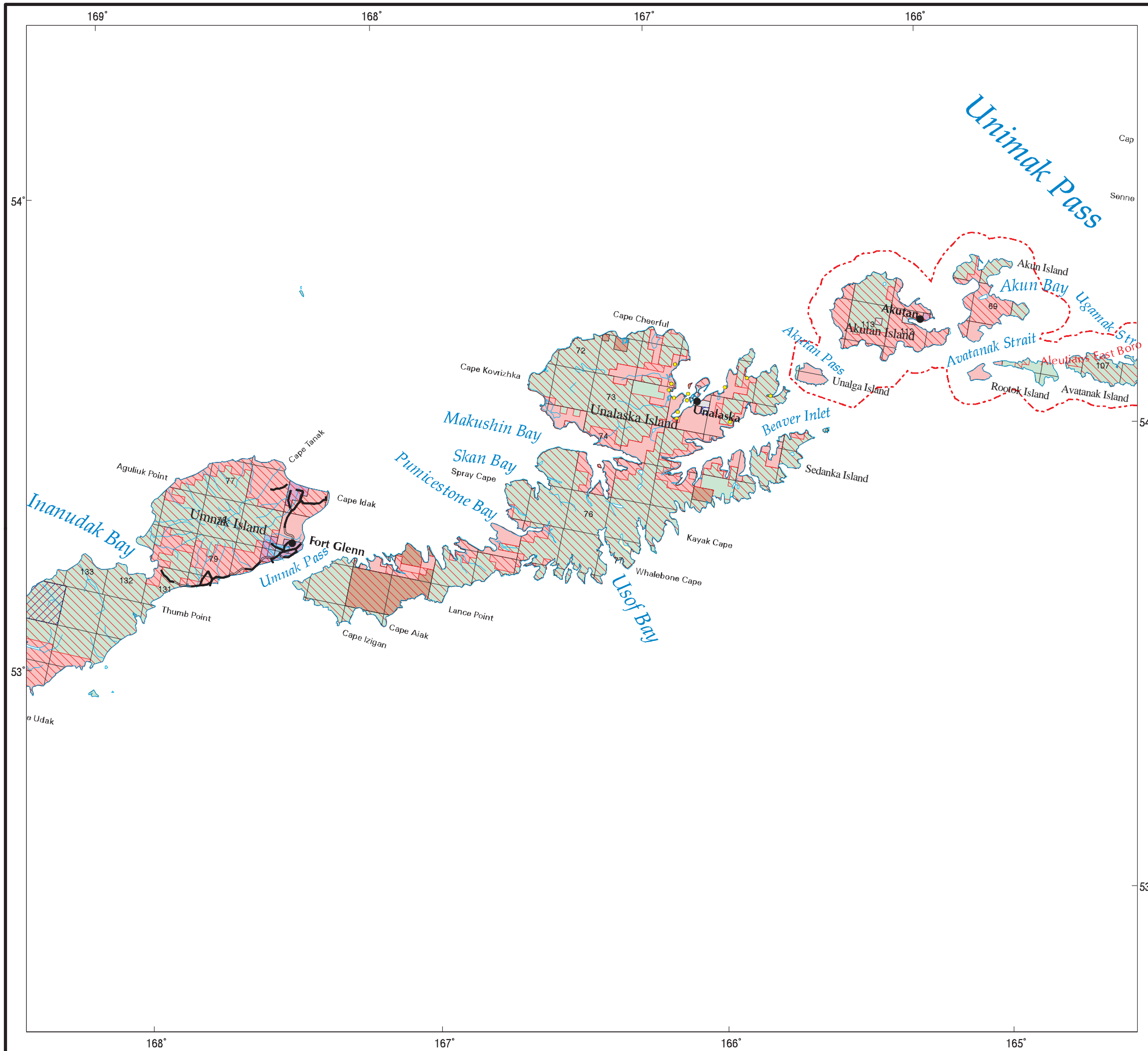
Map 6 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
-  National Park Service
-  National Wildlife Refuges
-  Wild and Scenic Rivers outside of the National Wildlife Refuges or National Park Service
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












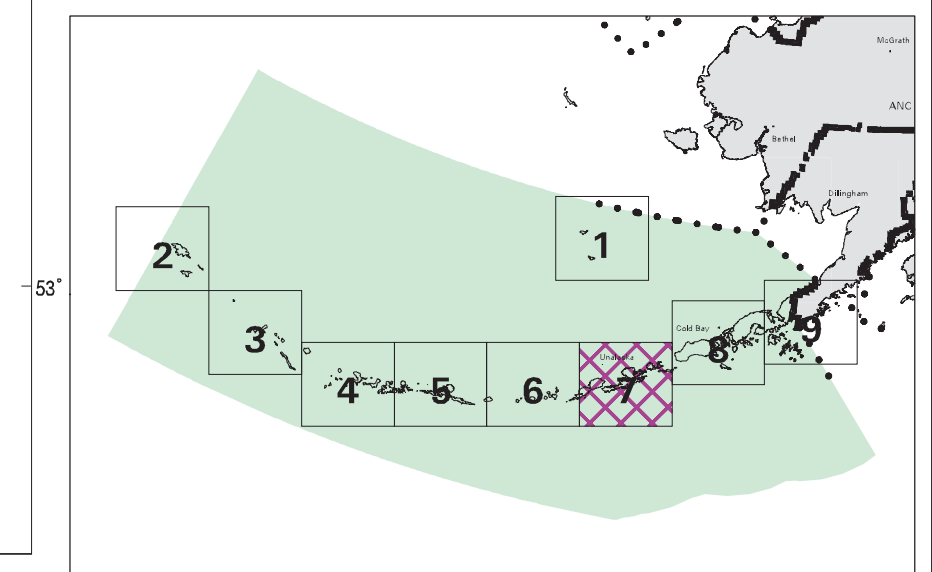
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

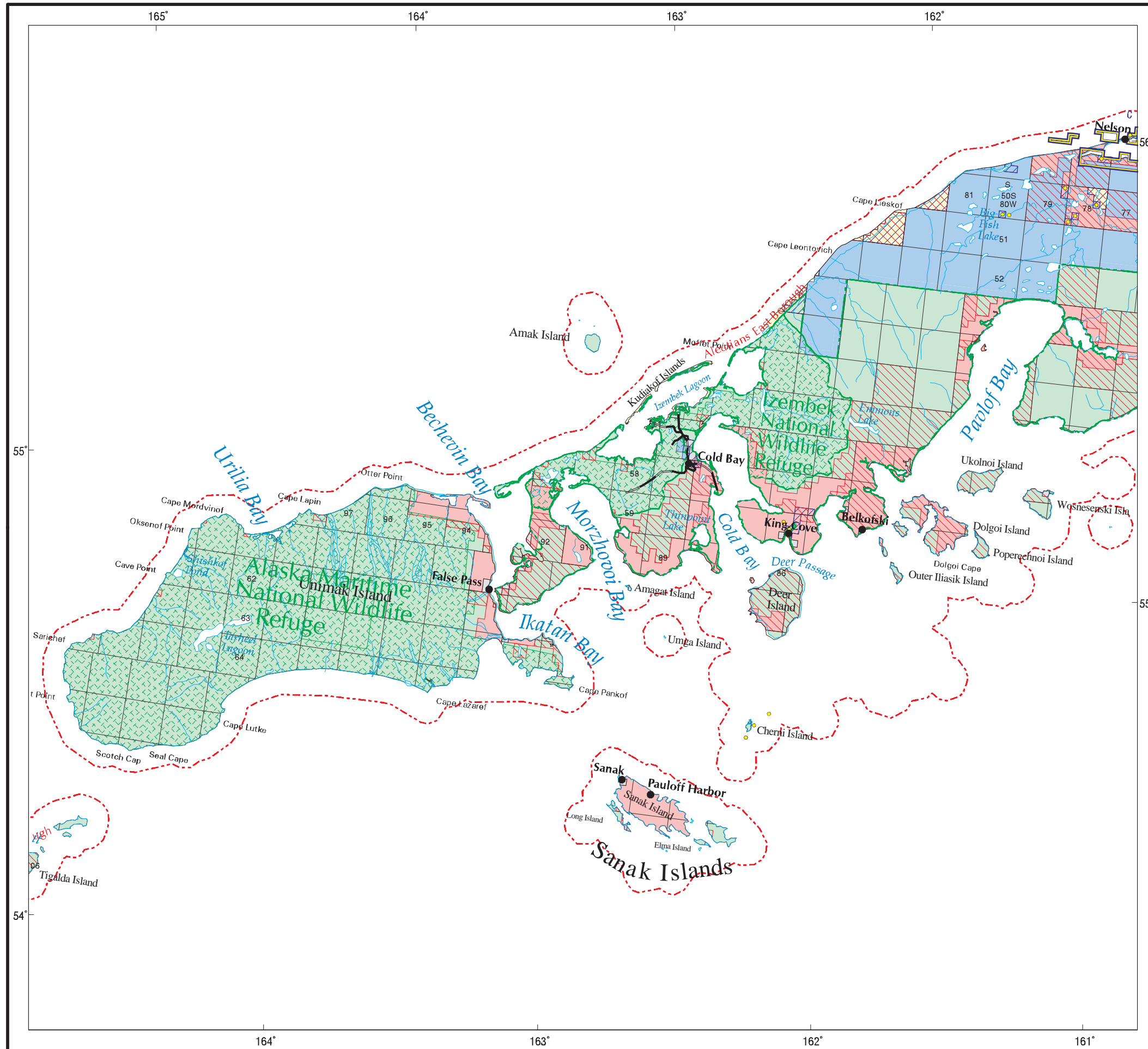
Map 7 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
-  National Park Service
-  National Wildlife Refuges
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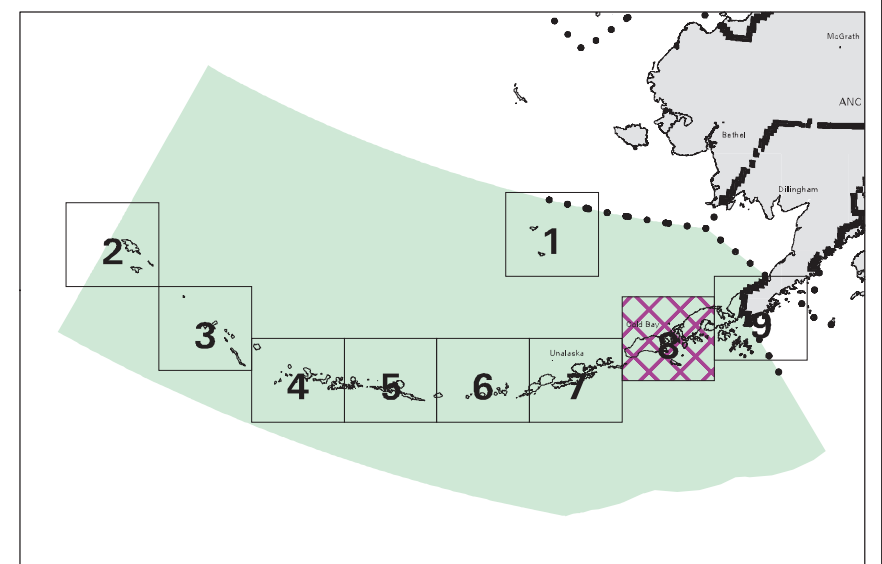
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

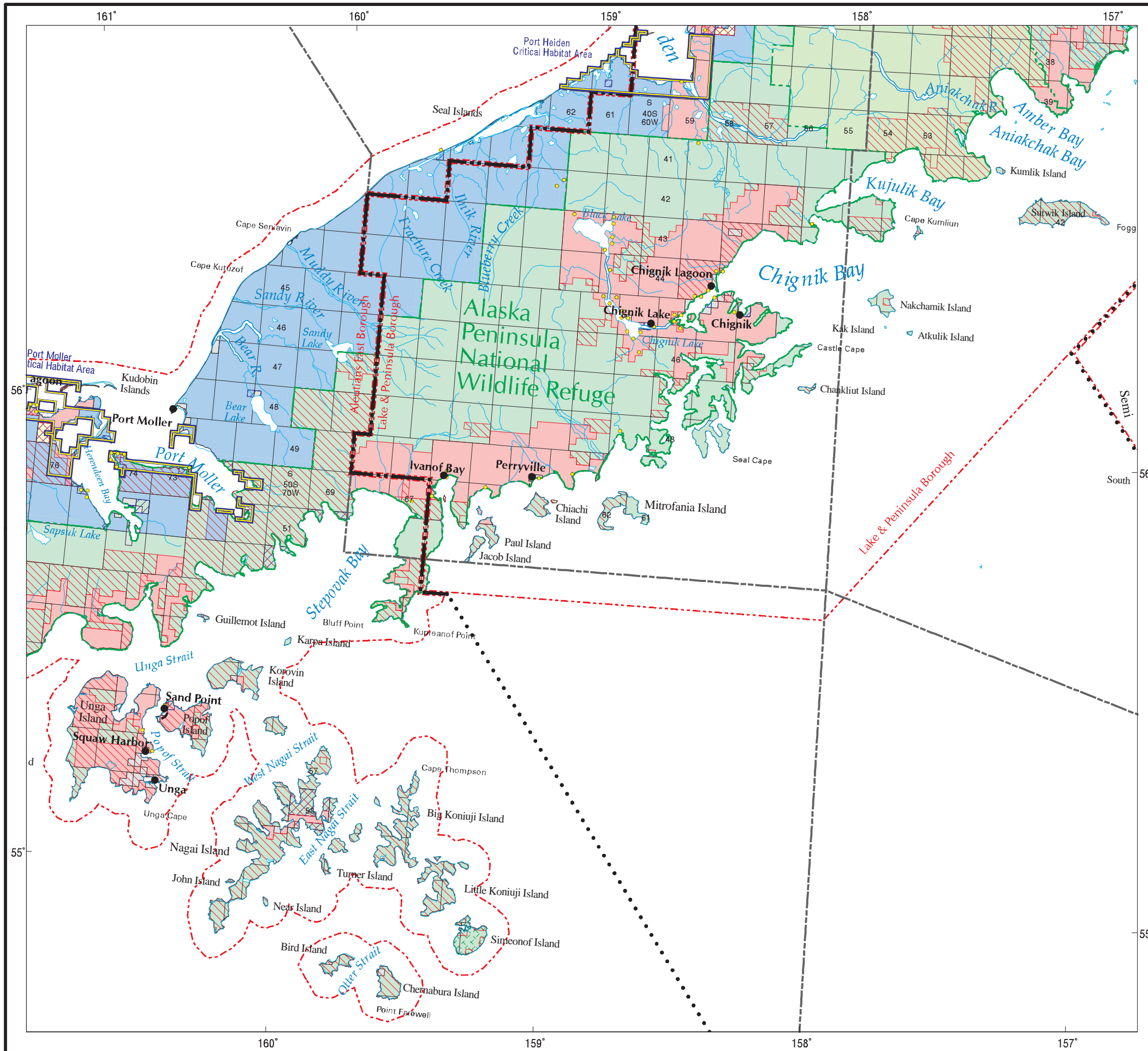
Map 8 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

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-  National Park Service
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












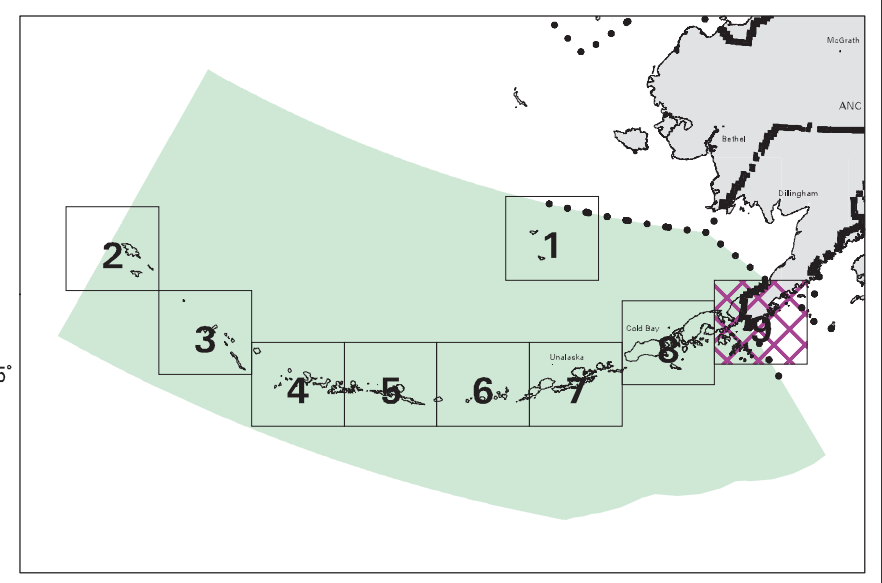
LAND MANAGEMENT ALEUTIAN ISLANDS REGION

Map 9 of 9

Albers Equal Area Projection
Scale 1:1,000,000
0 25 miles

LEGEND

-  National Forest Service
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A. LAND MANAGEMENT DESIGNATIONS

1. State

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

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

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

2. Federal

Izembek National Wildlife Refuge Covering 320,893 acres, the Refuge faces the Bering Sea on the tip of the Alaska Peninsula. The landscape features volcanoes, glaciers, valleys, tundra and lagoons. Izembek Lagoon features one of the largest eelgrass beds in the world. The Lagoon provides a feeding area for migratory birds, including the world's population of black brant and thousands of Canada and emperor geese. Most waterfowl arrive in August/September. A second wave of mostly sea ducks arrives in November to overwinter. Thousands of shorebirds, as well as brown bear, caribou, ptarmigan, and furbearers inhabit the Refuge. Waterfowl and other sport hunting are primary visitor activities.

Alaska Maritime National Wildlife Refuge Only a portion of this vast Refuge occurs within the Aleutians Subarea. The entire Refuge covers over 4.5 million acres and consists of over 2,400 islands, headlands, rocks, islets, spires, and reefs along the Alaskan coast, stretching from Southeast Alaska to Cape Lisburne on the Chukchi Sea. Of this, the Island groups within the Subarea include the Aleutian, Pribilof and Shumagin islands.

About 75 percent of Alaska's marine birds (15 to 30 million individuals from 55 species) use the Refuge. In addition, it is also home to thousands of sea lions, seals, walrus, and sea otters. Wildlife viewing, photography and backpacking are primary uses of the Refuge.

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 the Environmental Sensitivity Index Guidelines (October 1997). Currently, there are ESI maps for the eastern portion of the subarea.

1. Benthic Habitats

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

2. Shoreline Habitats

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

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

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

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

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

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

ESI #6--High permeability substrates: substrate is highly permeable with oil penetration up to 100 cm, slope is 10 to 20 degrees, rapid burial and erosion of shallow oil can occur during storms, high annual variability in degree of exposure and frequency of wave mobilization, sediments have

lowest traffic ability of all beaches, natural replenishment rate is the lowest of all beaches, low populations of infauna and epifauna except at lowest intertidal levels.

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

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

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

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

3. Upland Habitats

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills has been identified. 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. However, none are currently available for the Aleutians Subarea. For additional information contact the National Wetland Inventory (ESIC/USGS) in Anchorage at 786-7011.

ESI HABITAT RANKING

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

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