
APPENDIX C

ENVIRONMENTAL REPORTS



WETLANDS ASSESSMENT

This wetlands assessment is based on an overflight survey of the three airport relocation alternatives conducted on 28 August 2006; no ground survey was conducted. Thus, wetland descriptions are based on oblique aerial photographs taken during the overflight and previous knowledge of wetland communities in the region. Vegetation (Hanson 1951, 1953; NOAA 2002), wetland (B & B Environmental 1996), U.S. Fish and Wildlife National Wetlands Inventory (NWI) maps (Appendix A), and soil surveys (Rieger et al. 1979) also were reviewed to assist in the evaluation.

A preliminary evaluation of the relative functional value of the wetland habitats found in each alternative also was conducted (Table 1), based on functional information compiled for comparable habitats in the region (ABR, in preparation, B & B Environmental 1996, Shannon and Wilson and ABR 1995). Because the entire project area is underlain by permafrost, functional values associated with groundwater discharge and recharge are low, although estuarine marshes and mudflats and coastal wetland complexes do help buffer the effects of storm surges. The primary functions of wetlands are to provide feeding, nesting, and staging habitats for migratory birds and large mammals such as moose, caribou, and brown (grizzly) bears. Wetlands important to wildlife also score high in terms of subsistence and recreational support, as these areas are popular traditional hunting areas and may attract visitors for wildlife viewing. Wildlife use of the three alternatives is described in the Fish and Wildlife Summary.

ALTERNATIVE AREA 1

The dominant wetland communities in this area are Moist Sedge Tundra (including Tussock Tundra) and Moist Sedge-Shrub Tundra (Photos 1–3), although Wet Sedge Meadow Tundra (Photo 4), Low Willow Shrub Tundra (Photos 4–5), and Fresh Sedge Marsh (Photo 6) also occur along the margins of lakes and ponds and watercourses. Plant species associated with the Moist Sedge and Sedge-Shrub communities include cottongrass tussock (*Eriophorum angustifolium*), Bigelow sedge (*Carex bigelowii*), diamondleaf willow (*Salix pulchra*), and Richardson willow (*S. richardsonii*). A variety of ericaceous shrubs also are commonly present, including blueberry and cranberry (*Vaccinium* spp.) and Labrador tea (*Ledum decumbens*). Low Willow Shrub Tundra is dominated by diamondleaf, Richardson, and Alaska bog willow (*S. fuscescens*). Other

associated species may include bluejoint (*Calamagrostis canadensis*), fescue grass (*Festuca altaica*), and forbs such as arctic dock (*Rumex arcticus*) and roseroot (*Sedum rosea*). Although several large lakes occur in the study area (e.g., Devil's Lake), well-developed emergent wetlands or complexes of ponds, marshes, and wet meadows are generally lacking. The soils are typically ice-rich silts with a moderately thick, surface organic horizon. Depth to permafrost is generally shallow, although probably somewhat deeper along streams and pond and lake margins. Some segregation ice (ice wedges) are likely to be present, although patterned ground features are not widespread. Much of the coastal margin of this portion of the Baldwin Peninsula is composed of steep bluffs (Photo 7), thus, salt marshes and other coastal wetlands valuable to waterbirds also are limited. The highest value wetlands, in terms of habitat use, are located in the vicinity of the current airport, which includes estuarine habitats (Figure 1).

Most of the area was classified as Waters of the US (surface waters and wetlands) on the NWI maps (Appendix Figures A1 and A2), but uplands do occur as small inclusions along the margins of drained lake basins, on ridges associated with hilly terrain northeast of Kotzebue, and along the coastal margins of the peninsula (Photo 7). They are probably dominated by low and tall (depending on degree of wind exposure) shrubs such as willow and alder (*Alnus* sp.), and dwarf ericaceous shrubs such as mountain avens sp. (*Dryas*), white arctic mountain heather (*Cassiope tetragona*), and crowberry (*Empetrum nigrum*).

ALTERNATIVE AREA 2

Alternative Area 2 includes Sadie Creek and encompasses the middle portion of the Baldwin Peninsula. This area is similar in habitat composition to Area 1 (e.g., Photo 8), although the Sadie Creek area includes a well-developed wetland complex associated with the creek, several old lake basins (Photos 9&10), and tidally influenced marshes. This area was identified as having the greatest proportion of high-value wetlands (Figure 1). Alternative Area 2 also includes a higher density of waterbodies than Alternative Area 1 (Photo 11), which likely support wetland fringes of Wet Sedge Meadow Tundra, Low Willow Shrub Tundra, and Fresh Sedge Marsh. Plant species associated with these wetland complexes include willow, water sedge, loose-flowered alpine sedge (*Carex rariflora*), round-fruited sedge (*C. rotundata*), and tall cottongrass (*Eriophorum angustifolium*). Floating mats of *Sphagnum* moss also are likely to be associated

with the drained lake basin complexes. Similar to Alternative Area 1, the coastal zone was mostly bordered by steep bluffs, with the exception of the area surrounding Sadie Creek.

Uplands include an even smaller proportion of the study area than Area 1 and are almost exclusively associated with the coastal zone (bluffs) (Appendix A).

ALTERNATIVE AREA 3

For Alternative Area 3 (which includes Cape Blossom [Figure 12]), the most notable wetland areas are two estuarine marsh and mud flat complexes associated with drainages intersecting the coast approximately 1.5 miles and 4.5 miles east of Cape Blossom (Photo 13). Wet Sedge Meadow Tundra and Fresh Sedge Marsh also likely occur upstream, beyond the zone of coastal influence. Plant species commonly associated with salt marshes in the region include lyngbye sedge (*Carex lyngbyaei*), hoppner sedge (*C. subspathacea*), alkali sedge (*Puccinellia* spp.), and low chickweed (*Stellaria humifusa*). The remainder of Alternative Area 3 shares many of the same wetland types as the other alternatives, although the area is wetter overall. Large expanses of Wet and Moist Sedge Tundra were evident during the field survey (Photo 14). The steeply faced coastal bluffs of the two other alternatives also occur along the coastline of Area 3.

Similar to Area 2, uplands are restricted to the bluffs along the coastal margin (Appendix Figures A3 and A4).



Photo 1. View west, Moist Sedge Tundra, Area 1.



Photo 2. View southwest, Moist Sedge Tundra, Area 1.

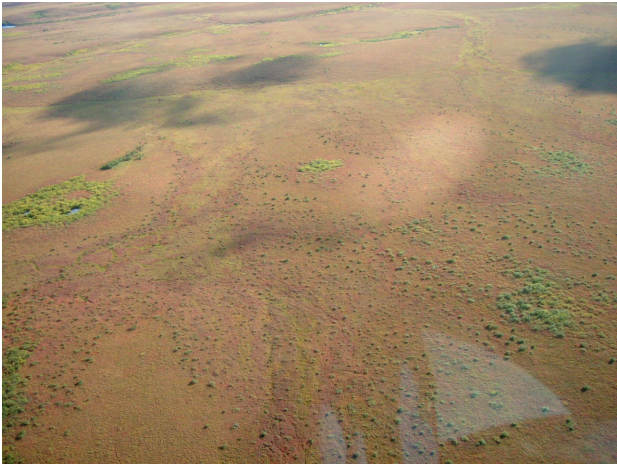


Photo 3. View north, Moist Sedge-Shrub Tundra, Area 1.

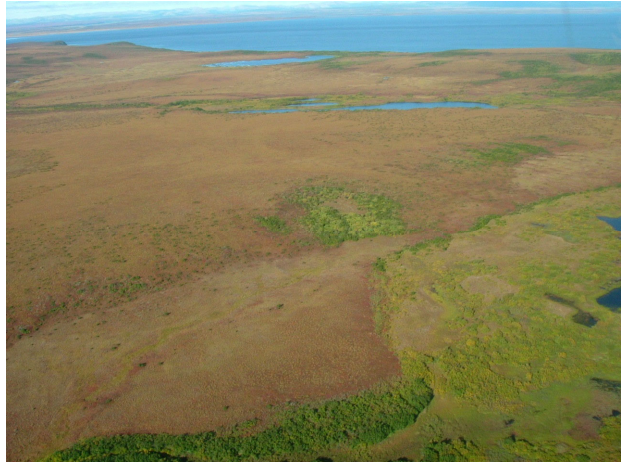


Photo 4. View east, Low Willow Shrub and Wet Sedge Meadow Tundra, Area 1.



Photo 5. View north, Low Willow Shrub, Area 1.

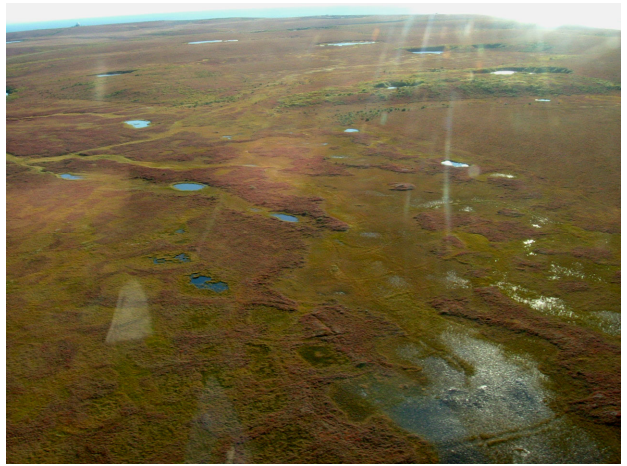


Photo 6. View south, Fresh Sedge Marsh, Area 1.



Photo 7. View southeast, coastal bluff (north end of peninsula), Area 1.



Photo 8. View north, Low Willow Shrub and Wet Sedge Meadow Tundra, Area 2.



Photo 9. View west, Sadie Creek, Area 2.



Photo 10. View south of wetland complex near mouth of Sadie Creek, Area 2.



Photo 11. View southwest, Area 2.



Photo 12. View southeast, Cape Blossom, Area 3.

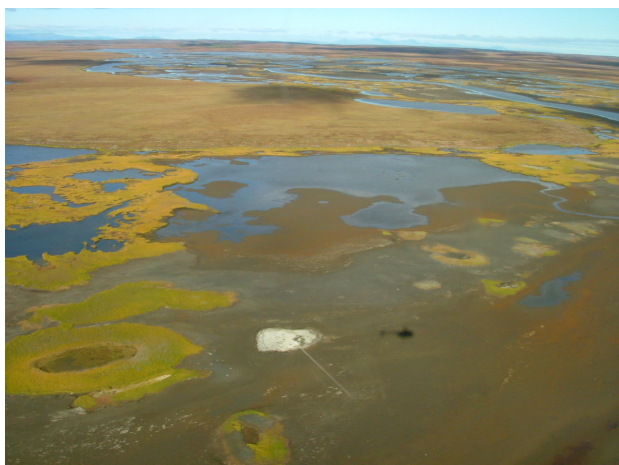


Photo 13. View northeast of salt and brackish water marshes, Area 3.



Photo 14. View north of Wet Sedge and Moist Sedge Meadow Tundra, Area 3.

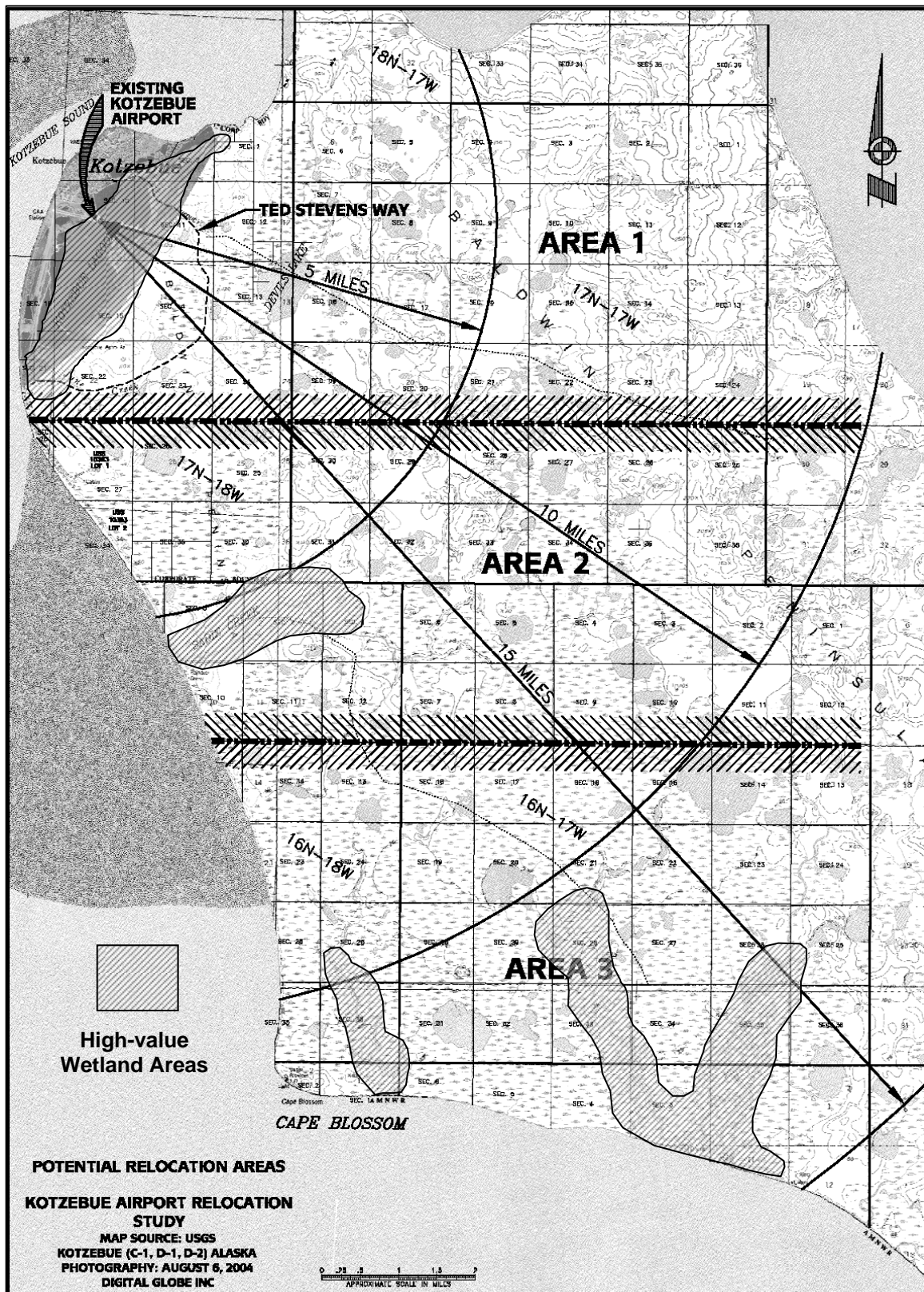


Figure 1. Location of wetlands with high wildlife habitat value among the three airport location alternatives.

Table 1. Relative ranking of functions and values of wetlands among the three airport relocation alternatives, Kotzebue, Alaska, 2006.

| Functions and Values | Alternative 1 | Alternative 2 | Alternative 3 |
|-------------------------------------|---------------|---------------|---------------|
| Groundwater Discharge | Low | Low | Low |
| Groundwater Recharge | Low | Low | Low |
| Erosion Control and Flow Regulation | Low | Moderate | Moderate |
| Sediment/Toxicant Retention | Low–Moderate | Low–Moderate | Low–Moderate |
| Nutrient Retention | Moderate | Moderate | Moderate |
| Production Export | Low | Low | Moderate |
| Aquatic Habitat | Low | Low | Moderate |
| Wildlife Habitat | Moderate | Moderate | Moderate |
| Regional Ecological Diversity | Low | Low | Moderate |
| Subsistence/ Recreation Use | High | Moderate | Moderate |

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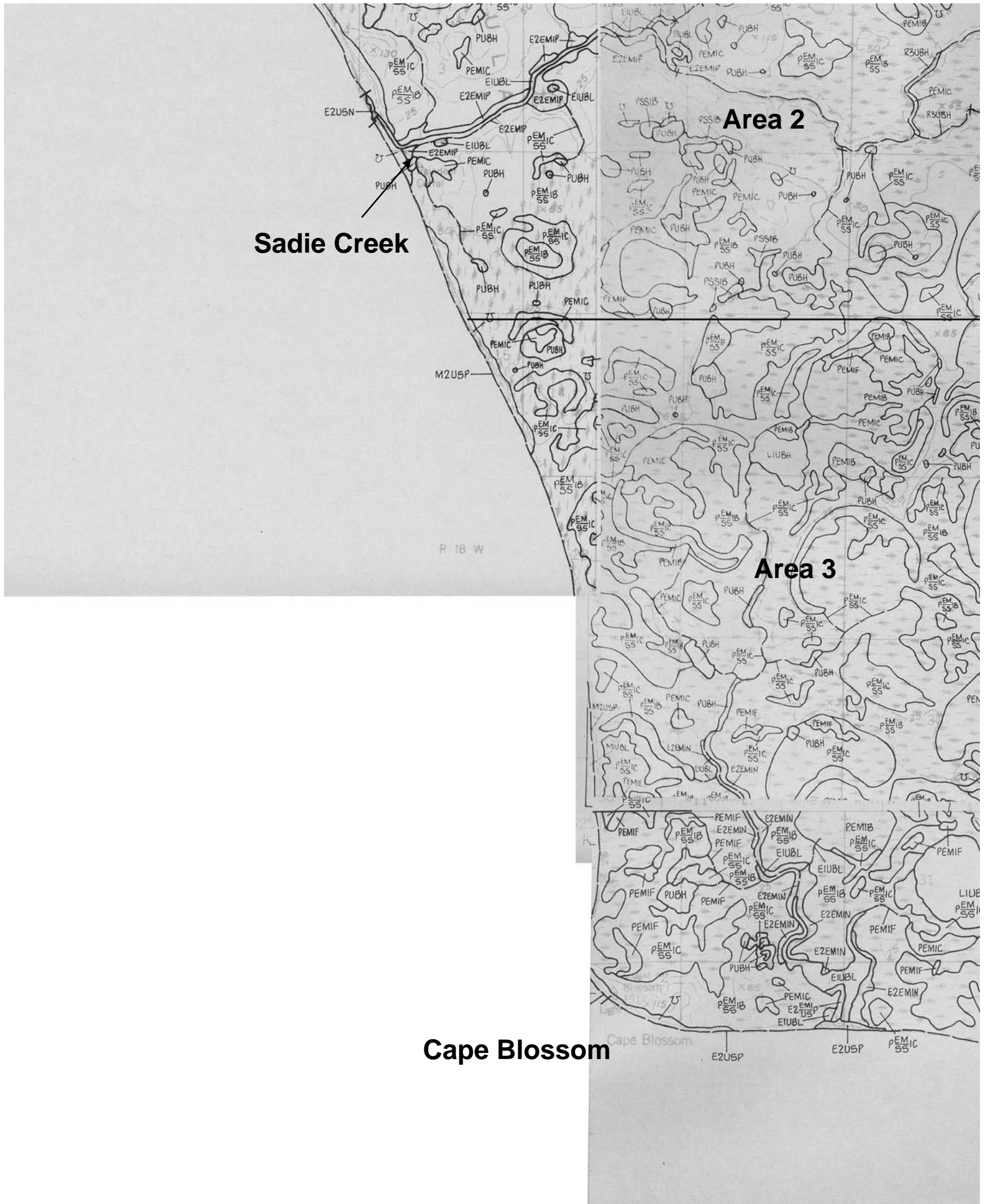
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**APPENDIX A. U. S. FISH AND WILDLIFE SERVICE NATIONAL WETLANDS INVENTORY (NWI)
MAPS, KOTZEBUE AIRPORT RELOCATION AREAS**



Appendix Figure A2. NWI map of northeastern portion of Kotzebue airport relocation study areas.



Appendix Figure A3. NWIS map of southwestern portion of Kotzebue airport relocation study areas (Sadie Creek and Cape Blossom).

Fish and Wildlife Resources

Fish

No anadromous fish streams are present in the project area according to the Alaska Department of Fish and Game *Atlas to the Catalog of Waters Important to the Spawning, Rearing or Migration of Anadromous Fishes* (www.sf.adfg.state.ak.us/SARR/FishDistrib/anadcat.cfm).

Wildlife Resources

The project area supports a diversity of terrestrial wildlife species typical of wet and moist tundra habitats found in western Alaska. Terrestrial mammal species in the project area include those important to local residents for hunting and other subsistence activities (trapping): caribou *Rangifer tarandus* (and feral reindeer), moose *Alces alces*, brown (grizzly) bears *Ursus arctos*, and small mammals, such as arctic ground squirrels *Spermophilus parryii*, tundra (arctic) and snowshoe hares (*Lepus othus* and *L. americanus*), red foxes *Vulpes vulpes* (occasionally arctic foxes *Alopex lagopus*), river otters *Lutra canadensis*, and microtines (lemmings and voles).

The Baldwin Peninsula lies within the range of the Western Arctic Caribou Herd and is primarily used as a migratory area during spring and fall, when large numbers (tens of thousands) of animals may cross the Baldwin Peninsula (Dau 2005; J. Dau, ADF&G, pers. comm.). Caribou are generally not resident in the project area, however. Caribou are an important subsistence and sport hunting resource to Kotzebue residents. Moose are not very abundant in the project area but a few moose were observed during the reconnaissance survey in August 2006 near Kotzebue. Moose use the riparian willow thickets in the project area and overall numbers on the Baldwin Peninsula are in the range of 25–30 animals (J. Dau, ADF&G, pers. comm.). Although some moose are hunted on the peninsula, most moose harvested in Game Management Unit 23 (which encompasses the project area) are taken in the mainland drainages rather than in the project area (Dau 2004). A small herd of muskoxen *Ovibos moschatus* also use the project area, but are not hunted by local residents. These animals are apparently attracted to airport runways and have been hazed from the Kotzebue runway in the past (J. Dau, ADF&G, pers. comm.).

Grizzly bears are present in the project area during summer and travel the coastal beaches in search of marine mammal carcasses, but also likely access tundra areas when berries are plentiful. Grizzly bears are not normally seen during winter and spring in the project area, but Jim Dau, ADF&G regional biologist, reported that one grizzly bear den was found one year approximately 12 miles east-southeast of Kotzebue at the base of a small bluff.

Trapping of small mammals (primarily red foxes, but also some river otters) by local residents does occur in the project area, primarily as a recreational activity. The Baldwin Peninsula also supports a population of tundra (arctic) hares, which are a relatively rare small mammal species and have a restricted range in western coastal Alaska (J. Dau, ADF&G, pers. comm.).

The Baldwin Peninsula and Kotzebue area support a high diversity of both terrestrial and marine birds that use the rich coastal and tundra habitats in the area. Other than a few resident species (common raven *Corvus corax*, ptarmigan (*Lagopus* spp.), a few passerines), most birds use the project area only during the summer months (late April–early October) when suitable habitats and food are available to support breeding activities. The tundra breeding-bird community is dominated by waterbirds, particularly the waterfowl (geese, ducks, swans) and shorebirds species that are the primary nesting species in the wetlands, ponds, and lakes in the project area. The wetland habitats around Sadie Creek in Alternative Area 2 have been identified as supporting populations of breeding waterbirds, including loons (Yellow-billed, Pacific, and Red-throated loons [*Gavia adamsii*, *G. pacifica*, *G. stellata*]), waterfowl (geese, Greater Scaup *Aythya marila*, Northern Pintail *Anas acuta*, Tundra Swan *Cygnus columbianus*) and other waterbirds (Red-breasted Merganser *Mergus serrator*, Arctic Terns *Sterna paradisaea*) (NOAA 2002; M. Spindler, USFWS, pers. comm.). A small breeding colony of Aleutian Terns *Sterna aleutica* is located near the Kotzebue airport in Alternative Area 1 (NOAA 2002). Breeding Tundra Swans also can be found at the larger lakes in the project area (USFWS, unpubl. data). Shorebird populations in the area are not well studied but are likely similar to those of the nearby Seward Peninsula (Kessel 1999). The grassy meadows and wetlands complexes found in Alternative Areas 2 and 3 in the Sadie Creek to Cape Blossom region have been identified by local residents as important hunting areas and are used by local residents for hunting geese and ducks, as well as egging during early summer (J. Dau, ADF&G, pers. comm.).

Threatened and Endangered Species

No terrestrial species of birds or mammals listed as threatened or endangered under the Federal Endangered Species Act (1973, as amended) are likely to occur in the project area (S. Conn, USFWS, pers. comm.). Two species of threatened seabirds, the Steller's Eider (*Polysticta stelleri*) and Spectacled Eider (*Somateria fischeri*) nest on the Yukon-Kuskokwim Delta to the south of Kotzebue, but they are not known to commonly migrate through the Kotzebue area or use the Baldwin Peninsula (USFWS 1996, 2002).

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Personal Communications:

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Date: December 8, 2010 **W.O.#:** 1173900
To: Ryan Anderson, P.E., DOT&PF **cc:** Sara Lindberg, USKH
From: Daniel De Bord, USKH
Project: Kotzebue Airport and Safety Area Improvements, No. 63181
Subject: Polar Bear Critical Habitat Designation and Kotzebue RSA Improvements Project

Purpose

The purpose of this technical memorandum is to provide the Alaska Department of Transportation & Public Facilities (DOT&PF) information on the designation of critical habitat for the polar bear, potential implications for the Kotzebue RSA Improvement Project, and recommendations. This memorandum and accompanying figure is based on documents authored by the U.S. Fish and Wildlife Service (USFWS) found at http://alaska.fws.gov/fisheries/mmm/polarbear/esa.htm#critical_habitat.

Background Information

On May 15, 2008, the USFWS listed the polar bear as a threatened species. In a Final Rule, dated November 22, 2010, the USFWS designated 187,157 square miles of onshore and offshore areas of northern and western Alaska as critical habitat essential for the conservation of the polar bear. All of the Baldwin Peninsula, where the Ralph Wien Memorial Airport (OTZ) is located, is within the boundaries of this critical habitat (see Figure 1). Additionally, the USFWS designated a no-disturbance zone, which extends one mile out from the mean tide line.

A critical habitat designation increases the protections afforded to the polar bear by requiring that any federal agency's activities (which they undertake, authorize, permit, or fund) do not destroy or adversely modify the polar bears critical habitat. The critical habitat designation does not include existing manmade structures, and the land on which they are located, as of the effective date of the Final Rule. Examples of manmade structures that are excluded from critical habitat include houses, gravel roads, airport runways and facilities, pipelines, housing facilities or hotels, construction camps, pump stations, piers, docks, jetties, seawalls, and breakwaters. However, undeveloped areas adjacent to these structures, such as the Kotzebue RSA expansion area, are not excluded from the critical habitat designation. Activities that could be classified as disturbance include, but are not limited to: construction of ice and gravel roads; construction of drilling pads; use of fixed wing aircraft, boats, snow machines, and vehicles by industry and local inhabitants to access sites such as work sites, hunting areas, and fish camps; construction and maintenance of facilities, gravel mining, and other types of onshore and offshore development, along with the noise associated with these activities. Even so, the USFWS states that some projects with a small footprint within developed areas, such as building construction or road upgrades, will likely have no adverse effects to the polar bear or its critical habitat.

The Consultation Process

The Federal Aviation Administration (FAA) is required by Section 7 of the Endangered Species Act (ESA) to consult with the USFWS because the proposed project is within the designated boundaries of polar bear critical habitat and/or may impact the bear and/or adversely modify its habitat. Actions that adversely modify critical habitat are 1) those that would reduce the availability or accessibility of polar bear prey species, 2) those that would directly impact primary constituent elements required for polar bear survival and recovery, or 3) those that would render critical habitat areas unsuitable for use by polar bears. Consultations with the USFWS may be either informal or formal. Informal consultation is designed to identify and resolve potential concerns at an early stage in the planning process. The process may conclude informally when the USFWS concurs in writing that the proposed Federal action is “not likely to adversely affect” the polar bear or its critical habitat. However, if the USFWS determines through informal consultation that adverse impacts are likely to occur, then formal consultation is initiated.

Formal consultation is concluded when the USFWS issues a biological opinion on whether the proposed project will likely jeopardize the continued existence of the polar bear or adversely modify its critical habitat. When the USFWS issues a jeopardy opinion, the USFWS will also provide reasonable and prudent alternatives to the project, if any are identifiable. “Reasonable and prudent alternatives” are defined as alternatives that 1) can be implemented in a manner consistent with intended purpose of the project, 2) can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, 3) are economically and technologically feasible, and 4) would avoid jeopardizing the continued existence of the listed species or destroying or adversely modifying critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. The formal consultation process generally takes 135 days. DOT&PF and FAA may choose to develop their own alternative based on what they perceive as the best available scientific and commercial data. However, this alternative may be challenged in court.

Kotzebue RSA Expansion Project

Kotzebue RSA project would expand the developed area of the airport to both the east and west of the main runway. One leading alternative would likely require erosion protection to be placed on the shoreline north of the main runway. These areas are within designated critical habitat and no-disturbance zones, however are not used as denning or feeding habitat for polar bears, and their proximity to populated areas make them unlikely candidates for successful breeding and feeding grounds. According to the airport wildlife hazard management plan, large mammals present little hazard at the airport and therefore no permits or plans are in place to haze or take such species that could present a concern to human or facility safety.

DOT&PF conducted informal consultations with resource agencies in October, 2009 at the start of the RSA project. USFWS did not express concern regarding polar bear habitat, however the marine mammal section was not explicitly consulted. The National Marine Fisheries Service marine mammal section stated that they did not have any concerns with the City of Kotzebue marine area. In addition, communications with local residents and the airport manager suggest that polar bears have not been seen locally in decades.

Recommendations

USKH recommends that the DOT&PF initiate informal consultation with USFWS as soon as possible. We recommend the alternatives from the agency scoping letters be presented, followed by a discussion of how our current proposed western extension is greatly reduced in length. Based on our research and the coordination completed to date, it is likely the USFWS will determine the project to have “no adverse effect” to polar bear or its critical habitat. Should informal consultation result in the USFWS determining that a western expansion of the main runway would likely result in impacts to the polar bears’ critical habitat, DOT&PF and FAA may need to consider an eastern only expansion as the preferred alternative. If a formal consultation moves forward for the western expansion, we anticipate that USFWS possesses enough information regarding the area to make a determination of impacts and discuss mitigation without a project specific biological assessment, which would conclude the formal consultation process faster than the average timeframe.

Figure 1

