Technical Memorandum

Wildlife and Fish Resources

To:	Marie Heidemann, Project Manager, Alaska Department of Transportation and Public Facilities
From:	Kristen Hansen, Environmental Lead, DOWL
Date:	February 23, 2023
Project:	Juneau Douglas North Crossing PEL Study Project Numbers: SFHWY00299/0003259

PEL Study Description

The Alaska Department of Transportation and Public Facilities (DOT&PF) in cooperation with City and Borough of Juneau (CBJ) is studying possible transportation corridor to connect Juneau with the north end of Douglas Island. A connection has been studied since the 1980s but has not progressed beyond identification and recommendation of preliminary alternative alignments. The previous studies highlighted several reasons for a north crossing:

- Congestion during peak periods on the existing Douglas Island Bridge
- Concerns about safety and emergency response in the event of a bridge closure
- The potential for residential, commercial, industrial, and port development at west Douglas Island

DOT&PF has chosen to use the Planning and Environmental Linkages (PEL) process to identify and evaluate a purpose and need (P&N) and recommend alternatives for connecting Juneau with the northern end of Douglas Island. The PEL process will provide opportunities for public input and involvement. The analyses conducted may be incorporated into a future National Environmental Policy Act (NEPA) process.

The study area boundary, where the proposed crossing may be located, is shown in Figure 1. The study area encompasses the area where prior studies and community outreach identified potential alternative crossing locations.

Figure 1: Study Area

Purpose of the Technical Memorandum

This memorandum is an initial step in the development of the proposed alternatives for the Juneau Douglas North Crossing PEL Study (Project Numbers: SFHWY00299/0003259). It is intended to confirm data for identifying existing wildlife and fish habitat areas in the study area. The wildlife and fish resources described in this memorandum are aquatic species, essential fish habitat (EFH), streams used by anadromous fish, marine macroinvertebrates, marine mammals, amphibians, land mammals, birds, threatened and endangered species, and other species of concern. Additionally, described is data related to known fish passage issues. This memorandum includes the methods and assumptions for collecting data and developing maps of wildlife and fish resources in the study area, along with a summary of the key findings.

Data Collection Methods

Previous reports and studies were reviewed that evaluated wildlife and fish resources in the study area. Geographic information system (GIS) data was obtained from the City and Borough of Juneau (CBJ), the National Oceanic and Atmospheric Administration Marine Fisheries Service (NMFS), the Alaska Department of Fish and Game (ADF&G), US Fish and Wildlife Service (USFWS), US Forest Service (USFS), and the Southeast Alaska GIS Library.

Reports and studies reviewed include:

- Draft Environmental Impact Statement (DEIS): Project Development Summary Report, Juneau Second Crossing (HDR Alaska, Inc., May 2005)
- Fish passage assessment and prioritization of culverts in Gustavus, Haines, Juneau, Skagway, and Sitka, 2011–2012 (ADF&G Fishery Data Series No. 20-12; Eisenman and O'Doherty, 2020)
- Alaska Wildlife Action Plan (ADF&G, 2015)
- Incidental Harassment Authorization[1] (IHA) issued by NMFS to the City of Juneau for in-water demolition and construction activities associated with a harbor improvement project in Statter Harbor (83 Federal Register [Federal Register] 52394, October 17, 2018)
- Protected Species Final Report, State of Alaska Auke Bay Ferry Terminal Modification and Improvements, Juneau Alaska (HDR Alaska, Inc., August 2021)

GIS data and online resources include:

- CBJ mapping of streams and fresh waterbodies
- Tongass National Forest cover type mapping
- USFWS National Wetlands Inventory[2] (NWI) mapping data
- NMFS Protected Resources Division, Alaska Endangered Species and Critical Habitat Mapper Web Application[3]
- Environmental Systems Research Institute (ESRI) World Imagery Service Layer[4]
- ADF&G Alaska Fish Resource Monitor[5]
    - ADF&G Fish Passage Points
    - Alaska Anadromous Waters Catalog
- ADF&G web page for the Mendenhall Wetlands State Game Refuge[6]
- Digitized versions of Alaska Habitat Management Guide map atlases[7]
- USFWS Information for Planning and Consultation (IPaC) website[8]
- eBird, the community science program run by the Cornell Lab of Ornithology[9]

[1] The Marine Mammal Protection Act prohibits activities that harm or harass marine mammals. Activities such as in-water construction work can generate noise that causes harassment in the form of behavioral disturbance and auditory injury. Project proponents can apply for an IHA from NMFS, allowing the incidental, but not intentional, harassment of small numbers of marine mammals.
[2] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/
[3] https://alaskafisheries.noaa.gov/portal/apps/webappviewer/index.html?id=446543503a2e4660b0f5ee55e6407d27
[4] ESRI World Imagery Wayback: https://livingatlas.arcgis.com/wayback/ (imagery dated 2019)
[5] https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive
[6] https://www.adfg.alaska.gov/index.cfm?adfg=mendenhallwetlands.main
[7] Distribution, human use, and community use of various fish and wildlife species. The original atlases were published in 1985 and 1986 as 1:250000-scale quadrangle maps; they show general areas, not site-specific points, of species concentrations and uses.
[8] https://ipac.ecosphere.fws.gov/location/index
[9] https://ebird.org/home

Mapping Methods

Three maps (see attached) were developed depicting wildlife and fish resources in the study area:

- **Figure 2, Essential Fish Habitat**—This map is based on GIS data obtained from NMFS. The data are models designed to encompass 95 percent of the population of each life stage for each species. For example, 95 percent of the areas likely to provide habitat for yellowfin sole larvae in the Gulf of Alaska are contained within polygons classified as EFH for yellowfin sole larvae. The GIS models are interpretations of the textual definitions of EFH and may not fully represent the complexity of the habitats described. The data was reviewed, and three distinct areas were identified that have been designated as EFH for various species or groups of species. These areas and species are described below in the summary.
- **Figure 3, Anadromous Fish Streams**—This map is based on data from the ADF&G Catalog and Atlas of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes. ADF&G cautions that the data likely represent a fraction of the streams, rivers, and lakes used by anadromous species.
- **Figure 4, Habitat Areas for Upland Species**—Similar to the process used for the 2005 DEIS, vegetation classification was used to identify habitats for upland species (i.e., wildlife species that are not restricted to aquatic habitats—in other words, amphibians, birds, and mammals other than marine mammals). This process entailed combining GIS data for wetlands, upland forested habitats, and disturbed areas. Data from NWI were used to identify wetland and open-water habitats. Classification of vegetation in areas outside of mapped wetlands was based on cover type mapping obtained from the U.S. Forest Service, Tongass National Forest. Finally, aerial imagery was evaluated to identify areas disturbed by human activities. Some vegetation cover data from the NWI and Tongass National Forest databases was manually realigned to improve the correlation between mapped cover types and the underlying aerial imagery. Table 1 summarizes how data from these sources were classified into land cover types for this analysis.
- **Figure 5, Species Habitat**—This map is based on ADF&G data from the mid-1980s identifying areas of important habitat for species valued for commercial and/or subsistence uses. The map additionally displays seabird colony nesting data from the eBird mapper produced by the community science program run by the Cornell Lab of Ornithology.

Table 1: Land Cover Type Classification

Land Cover Type	NWI Classifications	Tongass National Forest Cover Types[1]	Example Wildlife Species
Open Water	Estuarine Subtidal; Lacustrine Limnetic; Riverine Tidal or Lower Perennial; Palustrine Aquatic Bed or Unconsolidated Bottom	Non-forest—Freshwater	Fish, marine mammals, seabirds
Unvegetated Intertidal	Estuarine Unconsolidated Shore or Rocky Shore	N/A	Crabs, benthic invertebrates, northwestern crow
Intertidal Marsh	Estuarine Emergent	N/A	Canada goose, great blue heron, American pipit, savannah sparrow
Forested Wetland	Palustrine Forested	N/A	Woodpeckers, great horned owl, olive-sided flycatcher
Scrub-Shrub Wetland	Palustrine Scrub-Shrub	N/A	Fox sparrow, yellow warbler, beaver
Freshwater Emergent Wetland	Palustrine Emergent	N/A	Western toad, western snipe, belted kingfisher
Coastal Meadow	N/A	Non-forest—Natural Grassland	Long-tailed vole, northern harrier, American kestrel
Coniferous Forest	N/A	Forested	Steller's jay, varied thrush, Sitka black-tailed deer, black bear
Disturbed[2]	N/A	N/A	Rock pigeon, European starling, glaucous-winged gull

[1] Tongass National Forest cover types were used to identify vegetation cover where NWI data are not available.
[2] Disturbed areas, as identified through evaluation of aerial imagery, supersede all underlying cover types.

Assumptions

- Information in the May 2005 DEIS Project Development Summary Report, listing and describing the natural histories of species that use habitats in the study area, is still accurate.
- Information in the May 2005 DEIS Project Development Summary Report, describing the general characteristics of wetland and upland habitat types in the study area, is still accurate.

Summary

The May 2005 DEIS Project Development Summary Report provides a thorough accounting of wildlife and fish resources in the study area. The report includes a large amount of general information that is still valid. The following subsections identify updates and refinements of the information presented in the May 2005 DEIS Project Development Summary Report.

Aquatic Species

Collectively, the three maps that accompany this memorandum identify areas that provide habitat for fish and other aquatic species. First, the maps of EFH (Figure 2) and streams used by anadromous fish (Figure 3) show areas explicitly designated or identified as fish habitat. These resources are discussed in the following subsections. Figure 3 also depicts streams where anadromous fish have not been documented; these streams may provide habitat for resident fish, such as threespine stickleback or rainbow trout. Finally, the map of habitat types for upland species (Figure 4) shows the locations of fresh and marine waterbodies where fish and other aquatic species may be present. The May 2005 DEIS Project Development Summary Report includes descriptions of species and life history stages that use aquatic habitats in the study area. That information is still valid.

Marine habitats at the eastern end of Fritz Cove and in Gastineau Channel extending from Entrance Point to Salmon Creek lie within the Mendenhall Wetlands State Game Refuge. The refuge has been identified as an important nursery rearing area for juvenile salmon and other marine fishes.

In the mid-1980s, ADF&G developed maps identifying areas of important habitat for species valued for commercial and/or subsistence uses. These maps continue to be the primary source of information about the locations of the following species in the study area:

- Pacific herring—Winter concentration areas are mapped in Fritz Cove and along the western shore of Mendenhall Peninsula.
- Eulachon—Spawning concentration areas are mapped in the Mendenhall River estuary.

Essential Fish Habitat

The study area includes designated EFH for several species. NMFS has not designated any Habitat Areas of Particular Concern or other areas protected from fishing in the study area. As shown in Figure 2, the study area includes three generalized areas of designated EFH.

Area 1 extends along the eastern shore of Auke Bay and into the southern portion of Fritz Cove. Marine habitats in Area 1 include EFH for the following groundfish species from the Gulf of Alaska fishery:

- Alaska plaice
- Arrowtooth flounder
- Dover sole
- Flathead sole
- Northern rock sole
- Pacific cod
- Pacific Ocean perch
- Rex sole
- Sablefish
- Southern rock sole
- Walleye pollock
- Yellowfin sole

Area 1 includes marine waters designated as EFH for larvae of all these species except yellowfin sole. It also includes areas designated as EFH for eggs of Alaska plaice, Dover sole, flathead sole, rex sole, walleye pollock, and yellowfin sole.

Area 2 encompasses Area 1 as well as the entirety of Fritz Cove and Gastineau Channel. Marine habitats in Area 2 have been designated as EFH for mature adults of all five Pacific salmon species in Alaska (Chinook salmon, chum salmon, coho salmon, pink salmon, and sockeye salmon). These habitats are also designated as EFH for juveniles of all these species except Chinook salmon, as well as EFH for immature adults of Chinook, chum, and sockeye salmon.

Area 3 consists of a small area along the northeastern shore of Gastineau Channel immediately north of the existing crossing. Marine habitats in Area 3 have been designated as EFH for eggs of yellowfin sole.

Streams Used by Anadromous Fish

Several stream networks in the study area provide spawning and/or rearing habitat for the following species of anadromous fish (Table 2):

- Chinook salmon
- Chum salmon
- Coho salmon
- Cutthroat trout
- Dolly Varden
- Pink salmon
- Sockeye salmon
- Steelhead

These streams are depicted in Figure 3 which is accompanied by a tabular summary of the species that have been documented in each stream reach, as well as the nature of each species' use of that reach (spawning, rearing, or presence [i.e., no life stage or behavior specified]). The streams identified as habitat for anadromous fish are afforded protection under Alaska Statute 16.05.871, and federal protections under the Magnuson-Stevens Act.

Table 2: Use of Streams in the Juneau Douglas North Crossing Study Area by Anadromous Fish[1]

Map Reach Label[2]	Stream Name	Chinook Salmon	Chum Salmon	Coho Salmon	Cutthroat Trout	Dolly Varden	Pink Salmon	Sockeye Salmon	Steelhead
1	Pederson Hill Creek		S	R		R			
2	Casa del Sol Creek		P	R		R			
3	Unnamed Tributaries to Casa del Sol Creek		P	R		R			
5	Duck Creek		P	R	R	P	P		
6	Jordan Creek		P	P	P	P	S	P	
7	Tributary No. 2002 to Jordan Creek			R					
8	Stream 111-50-10625 and tributaries			R					
9	Tributary No. 2003 to West Creek			R					
10	West Creek		S	S, R		R			
11	East Creek		P	R		R	S		
12	Switzer Creek		P	P	R	P	P	P	
13	Tributary No. 2001 to Switzer Creek			R					
14	Tributary No. 2003 to Switzer Creek			P		P			
15	Lemon Creek		S	P		P	P		
16	Vanderbilt Creek		S	S, R		R	S		
17	Salmon Creek		S	S, R		P	P		
18	Tributary No. 2000 to Fish Creek			R					

Map Reach Label[2]	Stream Name	Chinook Salmon	Chum Salmon	Coho Salmon	Cutthroat Trout	Dolly Varden	Pink Salmon	Sockeye Salmon	Steelhead
19	Fish Creek	P	P	R	P	P	P		S, R
20	Tributary No. 2003 to Fish Creek			R					
21	Tributary No. 2006 to Fish Creek			R					
22	Ninemile Creek		S	R		P	S		
23	Johnson Creek			P	R	P	S		
24	Tributary No. 2002 to Hendrickson Creek			R					
25	Hendrickson Creek			R	R	P	S		
26	Neilson Creek			R		P			
27	Falls Creek					P			
28	Eagle Creek		P	P		P	P		
29	Grant Creek		P	R					
30	Kowee Creek		S				S		

[1] Use codes: S = spawning; R = rearing; P = present (no life stage or behavior specified); blank = no documented use.

[2] See Figure 3.

Known Fish Passage Issues

ADF&G maintains a database of stream crossings that have been assessed for fish passage. The Fish Passage Inventory Database includes assessments of 51 culverts at road-stream crossings in the study area. Based on evaluations of gradient, outfall height, and constriction ratio (calculated as culvert width divided by stream channel width), each culvert was assigned to one of the following categories:

- Red: Assumed to be a barrier to passage for juvenile salmonids or weak-swimming fish
- Gray: Likely to be a barrier to passage for juvenile salmonids or weak-swimming fish
- Green: Assumed to be adequate for passage for juvenile salmonids or weak-swimming fish
- Black: Status unknown

Twelve of the 51 culverts are rated as red, indicating a high likelihood that they impede fish passage for one or more species. Seven of these are along North Douglas Highway on Douglas Island. Three are near the intersection of Glacier Highway and Engineer's Cutoff Road in the northwestern portion of the study area. One is in a residential area north of Glacier Highway near Sunny Point, and one is on a private driveway north of North Douglas Highway.

Eleven culverts are rated as gray (barrier status likely). Five of these are on Glacier Highway or Egan Drive east of Juneau Airport. The others are evenly divided between Douglas Island and mainland Juneau. Of the remaining culverts, 22 are rated green (no barrier) and six are rated black (status unknown).

Eisenman and O'Doherty (2020) evaluated fish passage at road crossings in and around Juneau, assigning prioritization scores based on the potential ecological benefits of reconfiguring or replacing the existing culvert with a structure that does not impede fish passage. Prioritization scores are based on the amount of habitat available upstream of the crossing, the number of fish species present in the stream, and the severity of the barrier. Higher scores indicate a higher degree of impact on fisheries resources.

Of 59 Juneau-area culverts evaluated by Eisenman and O'Doherty (2020), 24 are in the study area. Seven of the ten culverts with the highest prioritization scores in the study area are along North Douglas Highway (at the crossings of Neilson, Johnson, Hendrickson, Falls, Grant, Eagle, and Ninemile Creeks, in descending order of prioritization score). The crossing with the highest prioritization score is Jordan Creek at the airport.

Marine Macroinvertebrates

In the mid-1980s, ADF&G developed maps identifying areas of important habitat for species valued for commercial and/or subsistence uses. Figure 5 shows the ADF&G data for commercial harvest of marine macroinvertebrates. These maps continue to be the primary source of information about the locations of the following species in the study area:

- Tanner crab—Commercial harvest areas near the mouth of Fritz Cove (south of Mendenhall Peninsula and Spuhn Island) and in Auke Bay off the western shore of Mendenhall Peninsula.
- Shrimp—Harvest areas for pink, sidestripe, and humpie shrimp are mapped in Gastineau Channel southeast of Sunny Point and along the northern shore of Douglas Island.

- King crab—Marine habitats throughout Fritz Cove and Gastineau Channel are identified as harvest areas for red king crab and blue king crab. Fritz Cove and portions of Gastineau Channel west of Sunny Point are also identified as harvest areas for golden (brown) king crab. Figure 5 shows data for commercial harvest of king crab species, however non-commercial harvest is known throughout the study area.
- Dungeness crab—Most of Fritz Cove (except for deeper, mid-cove waters) is identified as commercial harvest area for Dungeness crab. The May 2005 DEIS Project Development Summary Report includes a detailed description of habitat use by Dungeness crabs in Fritz Cove.

Marine Mammals

NMFS recently issued an IHA to the City of Juneau for construction activities associated with a harbor improvement project in Statter Harbor. Statter Harbor is in Auke Bay immediately north of the study area; marine mammals present at that site are also likely to use habitats in the study area.

According to the IHA, seven species of marine mammals under the jurisdiction of NMFS have been documented in the waters of Southeast Alaska near the study area. These species are harbor seal, harbor porpoise, Dall's porpoise, killer whale, humpback whale, minke whale, and Steller sea lion. Only three of these (harbor seal, Steller sea lion, and humpback whale) are known to be present in Statter Harbor and are expected to use marine habitats in the study area. Two of the other four species (Dall's porpoise and minke whale) have been observed only in open-ocean waters west of the study area and are not expected to enter the study area. Killer whales have been sighted infrequently and irregularly in the outer portions of Auke Bay and in the Gastineau Channel south of the Douglas Bridge; killer whales may enter the study area from the south. Harbor porpoises might use waters in or near the study area, but they are an inconspicuous species and difficult to detect (83 FR 52394, October 17, 2018). A protected species final report documenting monitoring observations for the Statter Harbor improvements confirmed the presence of both Dall's and Harbor porpoises, humpback whales, killer whales, harbor seals, and Stellar sea lions in Auke Bay.

The other marine mammal species that may be present in the study area is the northern sea otter, which is under the jurisdiction of USFWS. Sea otters are not commonly seen in inland waters such as Fritz Cove and Gastineau Channel, but they may enter the study area on occasion.

Humpback whales and Steller sea lions are discussed further under Threatened and Endangered Species, below.

Amphibians

The May 2005 DEIS Project Development Summary Report described amphibians known or expected to use habitats in the study area. That information is still valid. The May 2005 DEIS identified western toads, wood frogs, rough skinned newts in freshwater ponds in the Juneau Area. ADF&G confirmed the east pond adjacent the mouth of Fish Creek is one documented breeding area for western toads (personal communication, 10/28/22). Additionally, the Columbia spotted frog and Pacific chorus frog have been documented in southeast, but not near Juneau. An emerging concern is the spread of chytridiomycosis, an infectious disease of amphibians caused by the fungus *Batrachochytrium dendrobatidis*. The disease has caused the decline or complete extinction of more than 200 species of frogs and other amphibians worldwide. Reports of

chytridiomycosis have been recorded from the Kenai Peninsula to Prince of Wales Island. The disease has not yet been reported in the study area, however.

Land Mammals

The May 2005 DEIS Project Development Summary Report described mammals known or expected to use habitats in the study area. That information is still valid. The May 2005 DEIS Sitka black-tailed deer and black bears as important species in the study area. The ADF&G habitat management guide for black bears identifies spring concentration areas on Mendenhall Peninsula and along lower reaches of Jordan Creek in the study area (Figure 5). Sitka black-tailed deer use many of the habitats in the project area and according to the May 2005 DEIS, are commonly seen in the study area around Fritz Cove and Auke Bay, and near Lemon and Salmon creeks. The study area habitat also supports a number of furbearers and small land mammals throughout.

Birds

The May 2005 DEIS Project Development Summary Report described birds known or expected to use habitats in the study area. That information is still valid. The DEIS states that three hundred bird species have been documented in the Juneau area in a variety of habitat types.

Data from eBird identify several sites in the study area that support large numbers and diverse assemblages of birds (Figure 5). Examples include the following:

- Airport Dike Trail, Mendenhall Wetlands State Game Refuge—233 different species, including shorebirds and waterfowl numbering in the thousands
- East of River Mouth, Mendenhall Wetlands State Game Refuge—199 different species, including waterfowl, shorebirds, and gulls numbering in the thousands
- Fish Creek Delta, Mendenhall Wetlands State Game Refuge—180 different species, including waterfowl, gulls, and occasionally migratory songbirds (pine siskins) numbering in the thousands
- West of River, Mendenhall Wetlands State Game Refuge—177 different species, including waterfowl, shorebirds, and gulls numbering in the thousands

The ADF&G habitat management guides indicate the presence of a comparatively small (fewer than 1,000 birds) nesting colony of seabirds in the marshlands immediately south of Juneau Airport. That source also identifies Gastineau Channel between Entrance Point and Salmon Creek as a spring and fall concentration area for waterfowl and shorebirds.

The May 2005 DEIS indicated bald eagles congregate in the Mendenhall wetlands and the Mendenhall River area in the spring, the mouth of the Mendenhall River throughout the year, and the confluence of the Chilkat and Tsirku rivers (north of Haines) in the fall. Habitat for bald eagle nesting and perching in southeast Alaska is identified as large spruce trees along the coast and rivers. The May 2005 DEIS included a figure showing the locations of known eagle nests. An unknown number of those nests are likely to have been abandoned since then, and other nests have likely been established at new locations. Congregation areas and patterns of habitat use in the study area are expected to be similar to what was described in the May 2005 DEIS.

Threatened and Endangered Species and Species of Concern

The USFWS IPaC website indicates that one Endangered Species Act (ESA)-listed wildlife species under the jurisdiction of USFWS may use habitats in the study area. That species is the short-tailed albatross, which is listed as endangered. Although the USFWS website indicates that the short-tailed albatrosses may use the study area as habitat, short-tailed albatrosses are generally associated with shelfbreak and slope regions of the northwestern Pacific Ocean and the Bering Sea which are not qualities of the study area, as such they are not expected to use the inland waters of the study area.

Two ESA-listed species under the jurisdiction of NMFS may use habitats in the study area. These are humpback whales and Steller sea lions. Two distinct population segments (DPSs) of humpback whales occur in southeast Alaska—Mexico and Hawaii. The Hawaii DPS is not listed under the ESA; however the Mexico DPS is threatened. Two percent of all humpback whales in southeast Alaska are members of the Mexico DPS and all others are from the Hawaii DPS. Humpback whales are regularly observed foraging in Fritz Cove. They are also occasionally sighted in the southern portion of Gastineau Channel but are unlikely to venture into the shallow waters north of the existing Douglas Bridge.

Populations of Steller sea lions are divided into two DPSs—eastern and western. Most Steller sea lions that enter the study area are from the eastern DPS. In 2013, citing population recovery and other factors, NMFS removed the eastern DPS from the list of endangered and threatened species (78 FR 66139, November 4, 2013).

The western DPS, which is ESA-listed as endangered, includes all Steller sea lions originating from rookeries west of Cape Suckling (144° west longitude). Cape Suckling is more than 300 miles from the study area. However, Steller sea lions are a wide-ranging species, and animals from this DPS may wander into the waters of the study area. The proportion of western DPS Stellar sea lion in the Lynn Canal region (the larger geographical region in which the study area is located) is approximately 18 percent. Steller sea lions from the western DPS have occasionally been observed near Statter Harbor (83 FR 52394, October 17, 2018). It is possible, therefore, that some ESA-listed Steller sea lions may use habitats in the study area.

No areas that have been designated as critical habitat for any ESA-listed species are present in the study area.

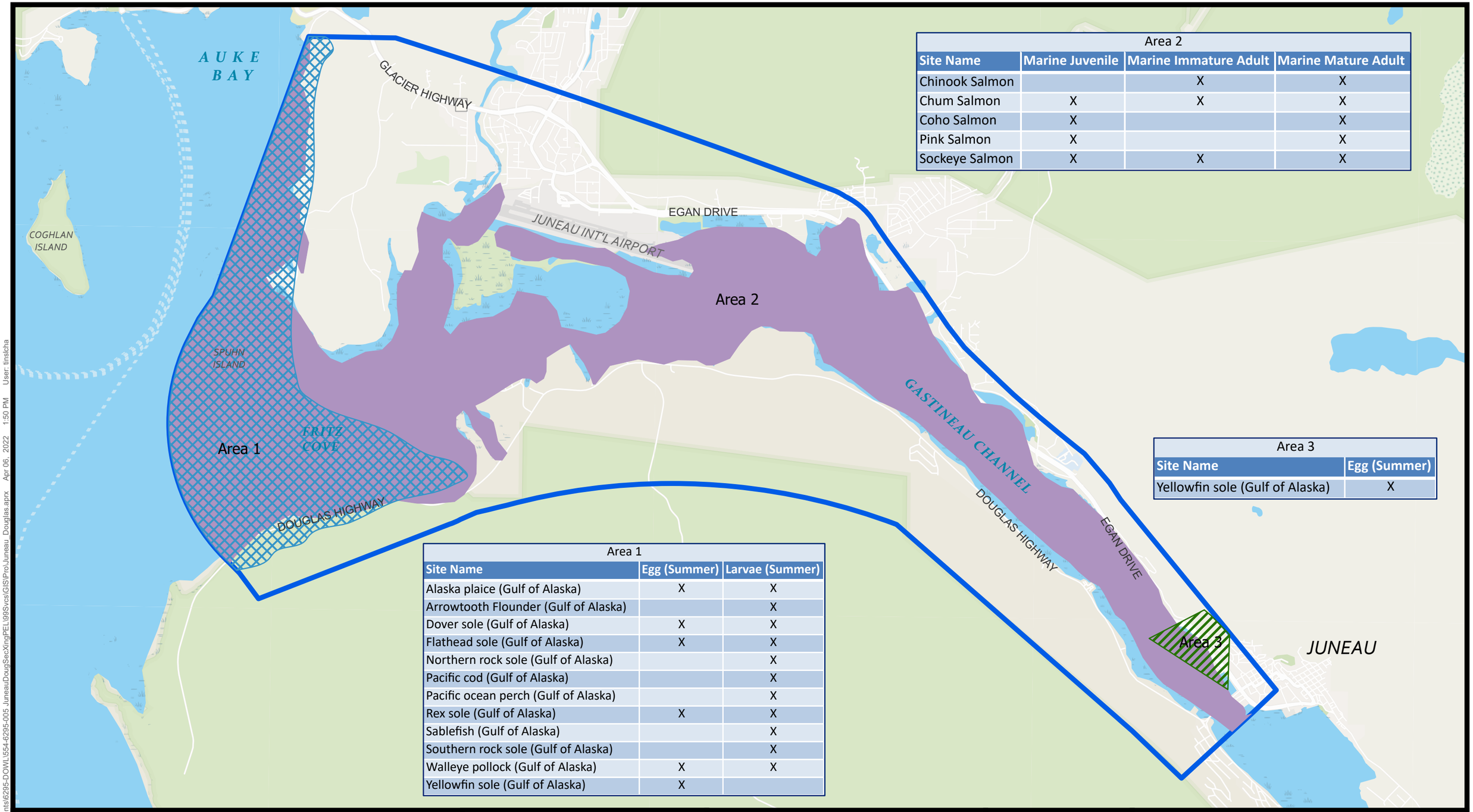
In addition to being ESA-listed, short-tailed albatrosses, humpback whales, and Steller sea lions are also on the State of Alaska's list of endangered species.

As of August 15, 2011, ADF&G no longer maintains a list of Species of Special Concern. The list has not been reviewed and revised since 1998 and is no longer considered valid. Since that time, the Department has completed Alaska's Wildlife Action Plan. That plan evaluates the status of wildlife populations and recommends actions to conserve wildlife and vital habitat before they become more rare and more costly to protect.

The action plan identifies species of greatest conservation need (SGCN), which include species whose population is small, declining, or under significant threat ("at-risk" species); species that are culturally, ecologically, or economically important; species that function as sentinel species (indicators of environmental change); and stewardship species (species with a high percentage of their North American or global

populations in Alaska). Examples of SGCN that may be present in the study area include salmon and trout, trumpeter swan, bald eagle, golden eagle, marbled murrelet, olive-sided flycatcher, northern flying squirrel, and various species of bats.

The action plan also includes examples of priority species. Such species have small populations, declining populations, and/or populations under threat, or they are species for which Alaska has high stewardship responsibility. The plan identifies 15 species or subspecies as examples of high-priority SGCN that meet these criteria. High-priority SGCN that may be present in the study area include western DPS Steller sea lion, king eider, marbled godwit, rock sandpiper, and Kittlitz's murrelet.



Area 2			
Site Name	**Marine Juvenile**	**Marine Immature Adult**	**Marine Mature Adult**
Chinook Salmon		X	X
Chum Salmon	X	X	X
Coho Salmon	X		X
Pink Salmon	X		X
Sockeye Salmon	X	X	X

Area 3	
Site Name	**Egg (Summer)**
Yellowfin sole (Gulf of Alaska)	X

Area 1		
Site Name	**Egg (Summer)**	**Larvae (Summer)**
Alaska plaice (Gulf of Alaska)	X	X
Arrowtooth Flounder (Gulf of Alaska)		X
Dover sole (Gulf of Alaska)	X	X
Flathead sole (Gulf of Alaska)	X	X
Northern rock sole (Gulf of Alaska)		X
Pacific cod (Gulf of Alaska)		X
Pacific ocean perch (Gulf of Alaska)		X
Rex sole (Gulf of Alaska)	X	X
Sablefish (Gulf of Alaska)		X
Southern rock sole (Gulf of Alaska)		X
Walleye pollock (Gulf of Alaska)	X	X
Yellowfin sole (Gulf of Alaska)	X	

PROPOSED STUDY AREA

ESSENTIAL FISH HABITAT[1]

AREA 1

AREA 2

AREA 3

0 2,000 4,000 Feet

SOURCE:
1: NOAA FISHERIES. EFH AREA GEOMETRIES HAVE BEEN GENERALIZED FOR DISPLAY INTO THREE CORE AREAS.

ESSENTIAL FISH HABITAT

SEC 25 - 27, 34 - 36, T 40S, R 65E; SEC 30 - 34, T 40S, R 66E
SEC 1 - 12, 15 - 17, T 41S, R 66E;
SEC 4 - 10, 15 - 17, 21 - 23, 27 T 41S, R 67E

COPPER RIVER MERIDIAN, ALASKA

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

DOT&PF PROJECT NO. SFHWY00299/0003259
JUNEAU DOUGLAS NORTH CROSSING PEL STUDY

CITY AND BOROUGH OF JUNEAU, ALASKA

APRIL 06, 2022 | FIGURE 2

AUKE BAY
COGHLAN ISLAND
SPUHN ISLAND
FRITZ COVE
DOUGLAS ISLAND
JUNEAU
GLACIER HIGHWAY
PEDERSEN HILL CREEK
MENDENHALL RIVER
DUCK CREEK
JORDAN CREEK
JUNEAU INT'L AIRPORT
EGAN DRIVE
CASA DEL SOL CREEK
WEST CREEK
EAST CREEK
SWITZER CREEK
LEMON CREEK
VANDERBILT CREEK
GASTINEAU CHANNEL
NINEMILE CREEK
JOHNSON CREEK
HENDRICKSON CREEK
NEILSON CREEK
SALMON CREEK
FISH CREEK
DOUGLAS HIGHWAY
COVE CREEK
ELEVENMILE CREEK
FALLS CREEK
EAGLE CREEK
GRANT CREEK
GOLD CREEK
KOWEE CREEK
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 20 21 22 23 24 25 26 27 28 29 30

PROPOSED STUDY AREA

STREAMS WITH ANADROMOUS SPECIES PRESENT[1]

STREAMS WITH ANADROMOUS SPECIES PRESENT[1]

STREAMS WHERE ANADROMOUS SPECIES HAVE NOT BEEN DOCUMENTED

STREAM REACH ID; SEE TABLE 2

N

0 2,000 4,000 Feet

SOURCE:
1: ALASKA DEPARTMENT OF FISH AND GAME (ADFG) - ANADROMOUS WATERS CATALOG (AWC)

STREAMS USED BY ANADROMOUS FISH

SEC 25 - 27, 34 - 36, T 40S, R 65E; SEC 30 - 34, T 40S, R 66E
SEC 1 - 12, 15 - 17, T 41S, R 66E;
SEC 4 - 10, 15 - 17, 21 - 23, 27 T 41S, R 67E

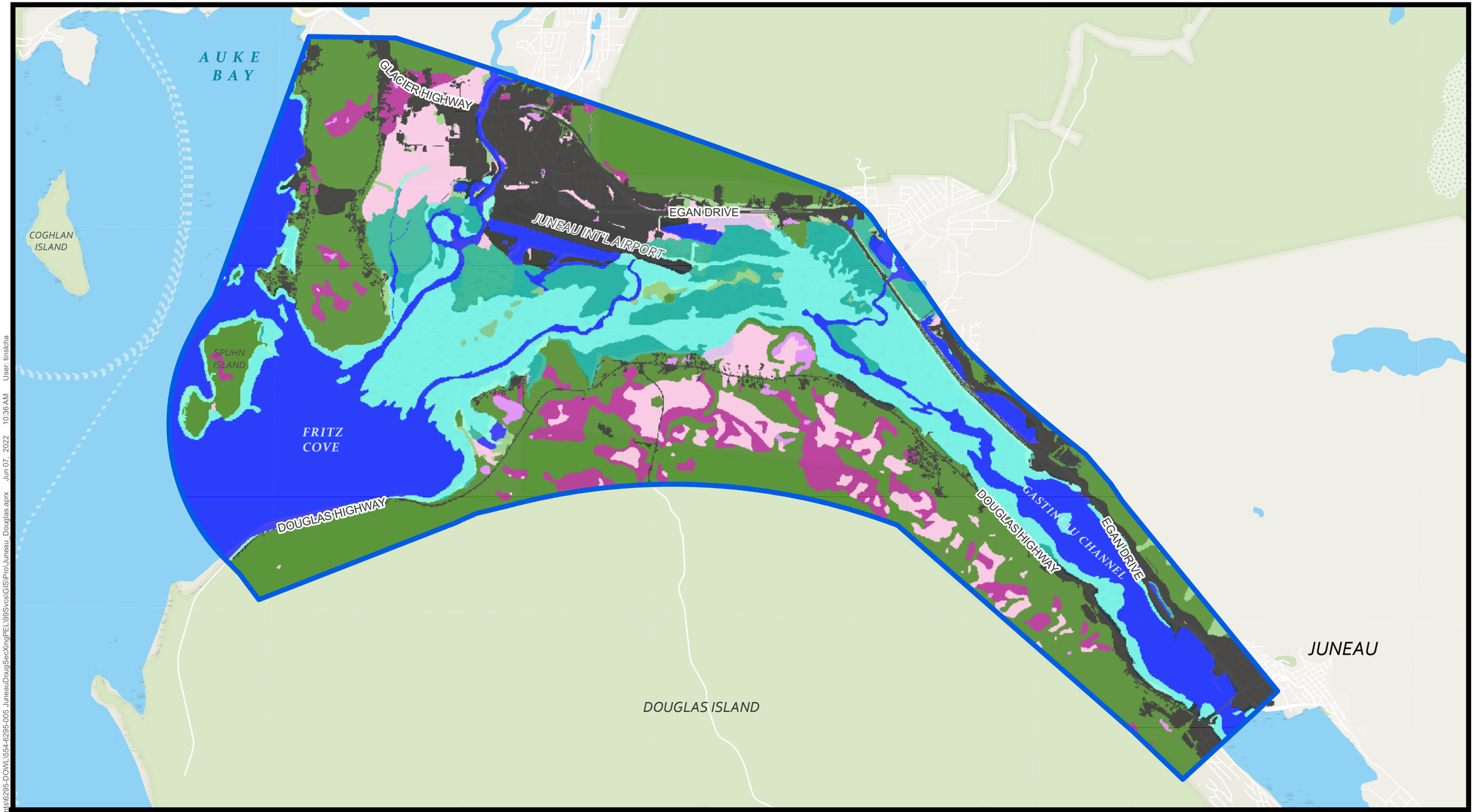
COPPER RIVER MERIDIAN, ALASKA

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

DOT&PF PROJECT NO. SFHWY00299/0003259
JUNEAU DOUGLAS NORTH CROSSING PEL STUDY

CITY AND BOROUGH OF JUNEAU, ALASKA

APRIL 06, 2022 | FIGURE 3



Sources:
1: LAND COVER IS MADE UP OF THE FOLLOWING DATASETS: FWS NATIONAL WETLAND INVENTORY, USFS TONGASS NATIONAL FOREST COVER TYPE MAPPING

HABITAT AREAS FOR UPLAND SPECIES

SEC 25 - 27, 34 - 36, T 40S, R 65E; SEC 30 - 34, T 40S, R 66E
SEC 1 - 12, 15 - 17, T 41S, R 66E;
SEC 4 - 10, 15 - 17, 21 - 23, 27 T 41S, R 67E

COPPER RIVER MERIDIAN, ALASKA

STATE OF ALASKA
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JUNEAU DOUGLAS NORTH CROSSING PEL STUDY

CITY AND BOROUGH OF JUNEAU, ALASKA

JUNE 07, 2022 | FIGURE 4

AUKE BAY
GLACIER HIGHWAY
COGHLAN ISLAND
JUNEAU INT'L AIRPORT
EGAN DRIVE
SUNNY POINT
Lemon Creek
MENDENHALL PENINSULA
SPUHN ISLAND
FRITZ COVE
GASTINEAU CHANNEL
DOUGLAS HIGHWAY
EGAN DRIVE
JUNEAU
DOUGLAS ISLAND

PROPOSED STUDY AREA

BIRD SPECIES OBSERVED

- 1 - 15
- 15 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 400
- 400 - 500
- 500+

HABITAT DISTRIBUTION

- BLACK BEAR (SPRING)
- SEABIRD NESTING COLONY

COMMERCIAL HARVEST AREA

- TANNER CRAB
- PINK, SIDESTRIPE, AND HUMPIE SHRIMP
- KING CRAB
- DUNGENESS CRAB

0 2,000 4,000 Feet

SPECIES HABITAT

SEC 25 - 27, 34 - 36, T 40S, R 65E; SEC 30 - 34, T 40S, R 66E
SEC 1 - 12, 15 - 17, T 41S, R 66E;
SEC 4 - 10, 15 - 17, 21 - 23, 27 T 41S, R 67E

COPPER RIVER MERIDIAN, ALASKA

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

DOT&PF PROJECT NO. SFHWY00299/0003259
JUNEAU DOUGLAS SECOND CROSSING PEL STUDY

CITY AND BOROUGH OF JUNEAU, ALASKA

JUNE 06, 2022 | FIGURE 5

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