Environmental Critical Issues Analysis

Prepared for:
State of Alaska
Department of Transportation and
Public Facilities

Prepared by:
Stantec Consulting Services Inc

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Project/File:
Knik Arm Tunnel Feasibility Study

Stantec Consulting Services Inc.

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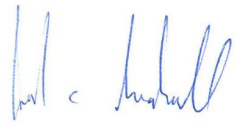

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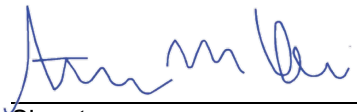

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Executive Summary

Stantec Consulting Services Inc. (Stantec) has prepared this Environmental Critical Issues Analysis to support the Department of Transportation and Public Facilities (DOT&PF) Knik Arm Tunnel Feasibility Study (Figure 1). This report was commissioned to analyze:

- Regulatory requirements and environmental issues/constraints
- Beluga impact assessment
- Next steps for environmental compliance and risk mitigation

Table ES-1 summarizes the findings of the environmental resources screening conducted by Stantec.

Table ES-1: Summary Table

Resource	Proposed Project	Risk
Air Quality Non-Attainment Areas	None (Maintain compliance with State Implementation Plan)	Manageable
Anadromous Fish Stream Crossings	0	Manageable
Essential Fish Habitat	Yes	Manageable
Endangered Species Act (ESA)	Highest for beluga whales	High
Other ESA/Marine Mammal Protection Act (MMPA) Species Risk	Killer whale, harbor seal, harbor porpoise, short-tailed albatross	High
Eagle Nest within 1 mile (USFWS Nest Atlas)	0	Manageable
Migratory Bird Species of Concern	28	Manageable
Cultural Resources	Additional Analysis Required	High
Tribal Consultation	Required	High
Farmlands	None	Manageable
Coastal Use Approvals	Municipality of Anchorage (MOA)and Matanuska-Susitna Borough (MSB)	Manageable
Active DEC Contaminated Sites	2 (Hazard IDs 639, 1804) Additional Analysis Required	Manageable
ADNR Potentially Hazardous Sites within ½ mile	0	Manageable
Wetlands	Yes	Manageable
Floodplains	Yes	Manageable
Wild and Scenic Rivers	No	Manageable
Land Ownership	Other Leaseholders	High
Viewshed Considerations	MOA and MSB codes/ Landowner restrictions	Manageable

Resource	Proposed Project	Risk
Noise	MOA and MSB noise codes	Manageable

The next steps in consideration of the feasibility of the project is evaluating the proposed project versus the potential permitting for impacts. The major environmental concerns to address include:

- Belugas and Marine Mammals: One of the major environmental impacts of the previously proposed bridge was the impacts to belugas and other marine mammals. The Tunnel Boring Machine (TBM) is of less regulatory concern for noise impacts, and use of the TBM would lessen the impacts of the project, which would reduce one of the potential triggers for preparation of an Environmental Impact Statement.

- Cultural Resources and Tribal Consultation: There are numerous cultural resources in the study area. Development would require a detailed analysis of baseline conditions, potential impacts, and mitigation. Negotiation of these with stakeholders and agencies can take extend periods of time.

- Land Ownership: Land in the proposed project area is under a variety of ownerships and uses, including federal, municipal, and state land. Any final alignment would require acquisition of appropriate easements, potential realignment of estimated or draft routings away from non-compatible land uses, and considerations regarding pre-existing ownerships, infrastructure, or leases.

The next steps for mitigating the risk of environmental topics would include:

- Develop a project description and alignment
    - » In particular, detail the types and quantities of activities that may result in take to beluga whales and potential impacts to cultural resources.
- Conduct a detailed desktop analysis, with appropriate fieldwork to support
    - » Marine mammal take analysis
    - » Cultural Resource analysis
    - » Contaminated Sites Analysis
    - » Wetlands Delineation
    - » Floodplain Analysis
    - » Landownership and Right of Way Analysis
    - » Visual Analysis
    - » Noise Analysis

The appropriate level of National Environmental Policy Act (NEPA) analysis is based on the level of impact to the environment. Projects without a significant impact can undergo a Categorical Exclusion. Projects with an unknown level of impacts can undergo an Environmental Assessment. Projects with a significant impact can undergo an Environmental Impact Statement.

Given the previous level of public controversy, it is currently expected that this proposed project would require an Environmental Impact Statement. As the project advances in design, stakeholder outreach, and environmental impact analysis, the appropriate level of NEPA analysis be better defined.

Acronyms / Abbreviations

ACHP ..... Advisory Council on Historic Preservation
ADEC ..... Alaska Department of Environmental Conservation
ADF&G ..... Alaska Department of Fish and Game
ADNR ..... Alaska Department of Natural Resources
AHRS ..... Alaska Heritage Resources Survey
APDES ..... Alaska Pollutant Discharge Elimination System
ARPA ..... Archaeological Resources Protection Act
AS ..... Alaska Statue
AWC ..... Anadromous Waters Catalog
BMPs ..... Best Management Practices
CSMP ..... Contaminated Soils Management Plan
CFR ..... Code of Federal Regulations
CWA ..... Clean Water Act
dB ..... Decibels
DOT&PF ..... Department of Transportation and Public Facilities
EFH ..... Essential Fish Habitat
EO ..... Executive Order
ESA ..... Endangered Species Act
FEMA ..... Federal Emergency Management Agency
FHWA ..... Federal Highway Administration
ft ..... feet
GIS ..... Geographic Information System
HRMP ..... Hazardous Material Response Plan
Hz ..... hertz
IHA ..... Incidental Harassment Authorization
IPaC ..... Information for Planning and Consultation
JBER ..... Joint Base Elmendorf Richardson
km ..... kilometers
LOA ..... Letter of Authorization
m ..... meter
MBTA ..... Migratory Bird Treaty Act
mi ..... miles
MLLW ..... Mean Lower Low Water
MMPA ..... Marine Mammal Protection Act
MOA ..... Municipality of Anchorage
MSB ..... Matanuska-Susitna Borough
NAC ..... Noise Abatement Criteria
NEPA ..... National Environmental Policy Act
NHPA ..... National Historic Preservation Act

NMFS ..... National Marine Fisheries Service
NOAA ..... National Oceanic and Atmospheric Administration
NRHP ..... National Registry of Historic Places
NWI ..... National Wetland Inventory
OHA..... Office of History and Archaeology
PSO ..... Protected Species Observer
PM ..... Particulate Matter
RMS ..... Root Mean Squared
SHPO..... State Historic Preservation Officer
SPCCP ..... Spill Prevention, Control, and Countermeasures Plan
Stantec ..... Stantec Consulting Services, Inc.
SWPPP ..... Stormwater Pollution Prevention Plan
TBM ..... Tunnel Boring Machine
USACE..... United States Army Corps of Engineers
USCG ..... United States Coast Guard
USDA ..... United States Department of Agriculture
USDOT ..... US Department of Transportation
USFWS ..... United States Fish and Wildlife Service
yd ..... yard

1 Introduction

Stantec Consulting Services Inc. (Stantec) has prepared this Environmental Critical Issues Analysis to support the Department of Transportation and Public Facilities (DOT&PF) Knik Arm Tunnel Feasibility Study (Figure 1). This report was commissioned to analyze:

- Regulatory requirements and environmental issues/constraints
- Beluga impact assessment
- Next steps for environmental compliance and risk mitigation

This report summarizes the critical issues for each regulatory resource category. The potential impacts to belugas are detailed in the wildlife section.

2 Air Quality

A review of the Alaska Department of Environmental Conservation (ADEC), Division of Air Quality Air Non-Point and Mobile Sources and 2010 Rural Dust Survey websites (ADEC 2025a, ADEC 2025b) to determine if the project is in ADEC air quality maintenance or non-attainment sampling for National Ambient Air Quality Standards or fugitive airborne particulate dust found:

- Anchorage is in a maintenance area for Carbon Monoxide. Anchorage completed its 20-year maintenance period in July 2024 for transportation conformity. The other maintenance and requirements with the State Implementation Plan need to be maintained, but this issue is not anticipated to be a critical issue for the project.
- Matanuska-Susitna Valley is listed as an area of concern for PM_{10} (Particulate Matter) for windblown silt in the spring and fall. This is not anticipated to be a critical issue for the project.
    - The Matanuska-Susitna Valley is also listed as an area of concern for $PM_{2.5}$. This concern is limited to the area around Butte, which is not located in the area of the project.

3 Biological Resources

3.1 Fish

3.1.1 Alaska Department of Fish and Game

The Alaska Department of Fish and Game (ADF&G) has the statutory responsibility for protecting freshwater anadromous fish habitat and providing free passage for all fish in freshwater bodies (Alaska Statue [AS] 16.05.841-871). A review of the ADF&G Fish Resource Monitor (ADF&G 2025) disclosed that there are four ADF&G-listed Anadromous Waters Catalog (AWC) streams in the project vicinity. The four streams are Sixmile Creek on Elmendorf Air Force Base (Joint Base Elmendorf Richardson [JBER]) approximately 3.5 miles north of the Port of Alaska, Ship Creek approximately 1.5 miles south of the Port of Alaska; Mule Creek on the west side of Knik Arm, and EOD Creek (about 1 mile north of Sixmile creek). No anadromous streams are crossed by the project (Figure 2).

3.1.2 National Oceanic and Atmospheric Administration

Consultation with National Oceanic and Atmospheric Administration (NOAA) Fisheries is required whenever a federal agency works, funds or provides permitting for work in an area that will affect federally-defined Essential Fish Habitat (EFH). An April 2025 review of the NOAA EFH mapper (NOAA 2025a) provided that within the area under consideration for project routing under the Knik Arm of Cook Inlet, there is a matrix of federally-recognized and regulated EFH areas, or the presence of NOAA-managed species absent spatial distribution data, for approximately thirty (30) marine and anadromous fish species or species complexes (Table 1). While a cursory report on each species or complex and their EFH criteria can be generated for any discrete location along the proposed project route, species-specific EFH polygons and their attributes vary by location, even within the confines of Cook Inlet. Consequently, NOAA provides the following consultation guidance on their EFH mapper page: "*In most cases mapping data cannot fully represent the complexity of the habitats that make up EFH…A location-specific evaluation of EFH for any official purposes must be performed by a regional expert.*"

Table 1: Essential Fish Habitat

Species	Life Stage	Level	Type	Season
Chinook Salmon (*Oncorhynchus tshawytscha*)	Juvenile	1	-	-
Chinook Salmon	Mature	1	-	-
Chum Salmon (*O. Keta*)	Juvenile	1	-	-
Chum Salmon	Mature	1	-	-
Coho Salmon (*O. kisutch*)	Juvenile	1	-	-
Coho Salmon	Mature	1	-	-
Pink Salmon (*O. gorbuscha*)	Juvenile	1	-	-
Sockeye Salmon (O. *nerka*)	Juvenile	1	-	-
Sockeye Salmon	Mature	1	-	-
Arrowtooth Flounder (*Atheresthes stomias*)	Early Juvenile	1	Distribution	Summer
English Sole (*Parophrys vetulus*)	Early Juvenile	1	Distribution	Summer
Flathead Sole (*Hippoglossoides elassodon*)	Early Juvenile	1	Distribution	Summer
Pacific Cod (*Gadus macrocephalus*)	Early Juvenile	1	Distribution	Summer
Pacific Cod	Early Juvenile	3	Condition	Summer
Pacific Cod	Early Juvenile	3	Growth Potential	Summer
Pacific Ocean Perch (*Sebastes alutus*)	Early Juvenile	3	Growth Potential	Summer
Rex Sole (*Glyptocephalus zachirus*)	Early Juvenile	1	Distribution	Summer
Rock Sole (*Lepidopsetta bilineata*)	Early Juvenile	1	Distribution	Summer
Rock Sole	Early Juvenile	3	Growth Potential	Summer
Sablefish (*Anoplopoma fimbria*)	Early Juvenile	1	Distribution	Summer
Sablefish	Early Juvenile	3	Growth Potential	Summer
Starry Flounder (*Platichthys stellatus*)	Early Juvenile	1	Distribution	Summer
Walleye Pollock (*Gadus chalcogrammus*)	Early Juvenile	1	Distribution	Summer
Walleye Pollock	Early Juvenile	3	Condition	Summer
Walleye Pollock	Early Juvenile	3	Growth Potential	Summer
Yellow Fin Sole (*Limanda aspera*)	Early Juvenile	1	Distribution	Summer
Yellow Fin Sole	Early Juvenile	3	Growth Potential	Summer
Kamchatka Flounder (*Atheresthes evermanni*)	Adult	1	Distribution	Spring

Any potential disturbance or alteration of EFH within Cook Inlet would require that consultation be undertaken between the lead federal agency providing approval for the project proponent's compliance with the National Environmental Policy Act (NEPA), and the Alaska Region office of NOAA Fisheries. An overview of the consultation, impact assessment, and approval processes can be accessed and reviewed at: https://www.fisheries.noaa.gov/national/habitat-conservation/consultations-essential-fish-habitat.

Non-fishing activities that could impact EFH for this project could include

- Dredging
- Disposal of Dredged Material
- Discharge of Fill Material
- Pile Driving
- Shoreline Protection
- Utility Lines, Cables, and Pipelines
- Point-Source Discharges
- Water Intake Structures and Discharge Plumes
- Invasive Species

Specific impacts and mitigation measures from these activities would be detailed in an EFH assessment. In general, mitigation measures include minimizing activities, seasonal timing windows, and implementation of a variety of mitigation measures (i.e. spoil disposal locations, silt curtains, bubble curtains).

3.2 Wildlife

3.2.1 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544) aims to conserve federally listed threatened and endangered flora and fauna, and their habitats. The ESA prohibits actions that may harm these species; restricts their import, export, and trade; charges federal agencies to aid in species' conservation; and requires the agencies to ensure that activities are not likely to jeopardize listed species' continued existence, or destroy or adversely modify their designated critical habitat. The primary federal agencies responsible for implementing the ESA are the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries). With respect to marine species protected under the ESA, the USFWS is responsible for certain marine mammals (polar bears and sea otters), while NOAA Fisheries is responsible for all other marine mammals (whales, dolphins, porpoises, seals, and sea lions), and anadromous and marine fish. All ESA-listed

marine mammal species are also considered ‘trust species’, which allots them specific management and conservation efforts under their respective agency.

While the regulations continue to evolve, it is currently unlawful to take ESA-protected species, where ‘take’ means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

3.2.2 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972, as Amended, provides a national policy and regulatory framework aimed at preventing marine mammal species and population stocks from declining beyond the point where they cease to be significant functioning elements of their ecosystems. It applies to all species of marine mammals (i.e., regardless of conservation status) and prohibits the take of any marine mammal species in U.S. waters. For MMPA purposes, and similar (but not identical) to the ESA, "take" is defined as the act of hunting, killing, capture, and/or harassment of any marine mammal; or, the attempt at such (NOAA 2025b). Responsibility for implementing the MMPA is shared across three agencies: USFWS, NOAA Fisheries, and the Marine Mammal Commission, which provides independent, science-based oversight of federal policies and actions affecting marine mammals.

Any proposed development or construction in or under fully marine or intertidal environments, including project specific marine vessel traffic, as well as development within onshore areas adjacent to Cook Inlet Critical Habitats, would require that consultation be undertaken between the lead federal agency providing approval for the project proponent’s compliance with the NEPA, and the NOAA Fisheries Marine Mammal Program. Consultations would require an assessment of potential adverse impacts to both ESA-listed and non-ESA listed marine mammals and, if determined necessary, submittal of an application for incidental take (NOAA 2025c).

3.2.3 NOAA Trust Species

As noted above, all marine mammal species are protected under the MMPA, and all ESA-listed marine mammal species are also considered trust species. NOAA Fisheries Alaska Region Protected Resources Division has developed a mapping application that provides approximate distributions for species protected by the ESA and the MMPA. According to this tool, and review of other USFWS and NOAA Fisheries resources, the proposed tunnel location in Knik Arm potentially overlaps with the distribution of non-ESA listed killer whales (*Orcinus orca*), harbor seals (*Phoca vitulina*), and harbor porpoises (*Phocoena phocoena*), as well as the ESA-listed endangered population of Cook Inlet beluga whales (*Delphinapterus leucas*) (Alaska Regional Office 2025). Additionally, the range of the Endangered Western Distinct Population Segment of Steller sea lions includes portions of Cook Inlet, south of prominent headlands known as the East- and West Forelands (NOAA 2018), but this range is south of the study area. Importantly, the study area overlaps with the Cook Inlet beluga whale’s designated Critical Habitat Area 1; the remainder of this section therefore focuses on this species.

3.2.3.1 Cook Inlet Beluga Whales

3.2.3.1.1 Critical Habitat

Cook Inlet beluga whales occur in the study area, and in May 2011, regulatory Critical Habitat was designated for Cook Inlet beluga whale over an area of 3,016 square miles of marine habitat (50 Code of Federal Regulations [CFR] Part 226), including the entire marine study area of the preliminary proposed Knik Crossing. The physical or biological features of this habitat that were deemed essential to preservation of the Cook Inlet beluga whales include the following:

(1) Intertidal and subtidal waters of Cook Inlet with depths less than 30 feet (ft; mean lower low water [MLLW]) (9.1 meters [m]) and within 5 miles (mi; 8 kilometers [km]) of high and medium flow anadromous fish streams.

(2) Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon (*Thaleichthys pacificus*), Pacific cod (*Gadus macrocephalus*), walleye pollock (*G. chalcogrammus*), saffron cod (*Eleginus gracilis*), and yellowfin sole (*Limanda aspera*).

(3) Waters free of toxins or other agents of a type and amount harmful to Cook Inlet beluga whales.

(4) Unrestricted passage within or between the critical habitat areas.

(5) Waters with in-water noise below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales.

Two critical habitats were designated in the final rule, but only Critical Habitat Area 1, in the northern portion of Cook Inlet, overlaps the study area. This habitat was established to protect the important summer feeding locations, and the shallow bathymetric foraging and calving habitat. Critical Habitat 2 is in the middle portion of Cook Inlet and extends along some shorelines of southern Cook Inlet. This habitat encompasses fall and winter use areas.

3.2.3.1.2 Activities with Potential for Take

Activities that create underwater noise capable of exceeding regulatorily defined thresholds for marine mammal disturbance may cause a “take” of beluga whales and are therefore restricted. Impulsive noise producing activities that are anticipated to exceed the current 160 decibels (dB) re 1 µPa root mean square (rms) threshold for behavioral disturbance are likely to be highly scrutinized during permitting, though minor amounts of these activities may be possible to permit, under special conditions. The number of belugas that can be exposed to underwater noise above 120 dB re 1 µPa behavioral disturbance threshold from continuous sound sources is also very limited[1]. Exceedance of either of these

[1] The 120 and 160 dB re 1 µPa rms behavioral thresholds for continuous and non-explosive impulsive sound sources (respectively) are currently being re-evaluated by National Marine Fisheries Service (NMFS), and a draft revision to these is expected by the end of 2025.

thresholds would be considered a Level B take (i.e., harassment) based on current NOAA Fisheries guidance regarding behavioral disturbance. Activities predicted to cause Level B take may still be approved, but require consultation and permitting, which can involve substantial lead time. Impulsive noise generating activities such as impact pile driving have the potential to cause Level A take (i.e., injury). Acoustic thresholds for injury are based on a dual metric criteria and vary by marine mammal hearing group[2]. Level A takes are unlikely to be authorized for Cook Inlet belugas, and thus activities that generate underwater source levels above the Level A thresholds will require sufficient mitigation measures to offset the risk (e.g., it is likely that the regulatory agencies will require that these activities be shut down when Cook Inlet belugas approach or enter the Level B harassment zones). Noise-producing activity associated with the project will therefore require careful planning (i.e., through attainment of an Incidental Harassment Authorization [IHA] or Letter of Authorization [LOA]), Project design (e.g., through the use of equipment with lower source levels), mitigation measures (e.g., bubble curtains), scheduling (e.g., to reduce overlap with periods of high beluga whale abundance), and monitoring of Level B harassment zones by Protected Species Observers (PSOs).

To assist with planning of proposed activities, the following potential activities have been identified as possible sources of underwater noise.

- In-water or nearshore dredging and pile driving (impact, vibratory, or down-the-hole hammer) may be required to install and later remove temporary vessel moorings within Knik Arm, and/or install temporary work trestles, docks, berms, or support-of-excavation walls on either side of Knik Arm.
- Project support vessels such as dynamic positioning vessels and construction crew/equipment/material vessels and barges would emit underwater noise during transit or station-keeping.
- In addition to underwater noise, the presence of increased vessel traffic could increase the chance of a marine mammal-vessel strike.

Ships' operations are an example of an underwater noise-producing activity that is likely to require analyses for the proposed action. Blackwell and Greene (2002) measured the noise from three vessels in Cook Inlet, providing useful example radii for how far vessels must stay away from belugas. Underwater noise measured from these examples included:

  - The cargo-freight ship *Northern Lights*, while docked in Anchorage during loading or unloading, was below 120 dB rms at 350 yards (yd; 320 m).
  - The tug *Leo*, while pushing the gravel barge *Katie II* towards a dock, and then while maneuvering and holding the barge against the dock:

[2] Additional details on current acoustic thresholds are available at: Marine Mammal Acoustic Technical Guidance & Other Acoustic Tools | NOAA Fisheries

        - while pushing a barge, was below 120 dB rms at 650 yd (600 m).
        - while maneuvering the barge, was above 120 dB rms at all measured ranges.
    - The cargo-bulk carrier *Emerald Bulker* while being held at the dock by two tugs immediately preceding its departure, and then during its departure from Anchorage harbor, was above 120 dB at all measured distances.

Dynamic positioning vessels, if used, typically have source levels (at 1 m) ranging from 150 to 180 dB re 1 µPa rms, depending on the size, type, and operation (e.g., highest during station-keeping) (McPherson et al. 2016). In cases where it is not possible to select equipment with source levels below 120 dB, other approaches need to be considered. This is often accomplished through the implementation of a suite of mitigation and monitoring measures detailed in the Project's IHA. These typically include a combination of time of year restrictions, systematic aerial surveys, the use of PSOs, and vessel speed restrictions and other measures.

Any in-water or nearshore marine construction activity required for the Project also has the potential to produce underwater noise, either directly into the water column, or radiated through the seabed. Sound levels can vary dramatically based on equipment selected, substrate, time of year (which affects acoustic transmission), and any mitigation measures applied (e.g., bubble curtains or hammer cushion pads). A recent ESA Section 7(a)(2) Biological Opinion published by the National Marine Fisheries Service (NMFS) for the Port of Alaska North Extension Stabilization Step 1 in Anchorage presented predicted Level B harassment zones for a number of proposed marine construction activities in Knik Arm; some examples of the Level B harassment zone radii follow:

- Vibratory installation of 24-inch and 36-inch steel pipes: 2,247 m and 4,514 m, respectively
- Vibratory removal of 24-inch and 36-inch steel pipes: 6,861 m and 1,700 m, respectively
- Vibratory or splitter removal of sheet piles: 1,954 m
- Impact removal of sheet piles: 858 m (NMFS 2023).

The use of a tunnel boring machine (TBM) may also generate underwater noise and vibrations that are radiated upwards from the seabed. Personal communication with NMFS indicates that they "*would not expect that noise from tunnel boring machines have any reasonable potential to cause take of marine mammals.*" During our discussions with NMFS, they stated that through their large body of monitoring data, there is not an indication that responses that equate with harassment are observed when exposed to these types of noise sources. For example in permitting the Hampton Roads Bridge Tunnel, (an underwater tunnel in Virginia), the TBMs were not found to have potential impacts to marine mammals. These findings are one of the causes for why NMFS is reevaluating the 120 dB sound source threshold – and has been working to update regulations to de-emphasize that criterion.

Beluga whales are considered a primarily high-frequency cetacean, and are generally more sensitive to acoustic pressure waves than vibrations. Sound from TBMs have been previously reported as primarily low frequency (<500 hertz [Hz]; National Grid 2018), and thus most of the acoustic content is likely to fall

outside beluga whales' peak hearing sensitivity. Based on acoustic modelling for a marine tunneling project in North Wales, sound pressure levels of 175 dB rms have been predicted in the water column immediately above the seabed adjacent to TBM (National Grid 2018), suggesting that marine mammals would need to be located in the water column immediately above the seafloor to be exposed to behavioral disturbance thresholds.

The use of the TBM would reduce the project impacts, when compared to the previous proposed bridge constructed on piles. Pile driving harassment zones for the Port of Alaska North Extension Stabilization Step 1 (discussed above) illustrate a representative example for the harassment zones around each of the piles required for the previously proposed bridge. These impacts would be eliminated if the piles are not constructed.

Belugas remain within Cook Inlet year-round but exhibit seasonal distribution patterns and have historically been reported in Knik Arm primarily during the late summer and fall (Funk et al. 2005). NOAA restricts activity in the "Susitna River Delta Exclusion Zone" during this time (commonly defined as June 1 – September 7) when belugas are known to occupy this habitat. This area is to the southwest of where project activities are planned; however, underwater sound from impulsive activities such as impact pile driving may radiate over large distances. Takes of beluga whales will be highly regulated in the Susitna River Delta Exclusion Zone, and where possible, noise producing activities with the potential for large noise radii should be scheduled outside of this time period. Seasonal timing restrictions for underwater noise producing activities are anticipated to be one of the primary mitigation measures expected by regulatory agencies.

As a note, there is an exclusion zone in Cook Inlet Beluga Whale Critical Habitat. The shape of this zone makes it difficult to use for the project. Noise radii extending beyond the zone also would need to be analyzed as potential impacts, greatly reducing permitting efficiencies from confining the project to this area.

Mitigation programs for projects operating in Cook Inlet Beluga Whale Critical Habitat often include aerial monitoring of beluga movements in advance of operation, so that project activities can be delayed or ceased if belugas move toward the project. Use of PSOs can serve a similar, real-time role by monitoring for beluga whales from aboard project vessels. Additionally, should construction involve any project-specific marine shipping, its potential disturbance or alteration of ESA-listed critical habitats within Cook Inlet would require that consultation be undertaken between the lead federal agency providing approval for the project proponent's compliance with the NEPA, and the Alaska Region office of NOAA Fisheries. Typically, vessel speeds are also limited, both to reduce sound levels and the risk of a marine mammal vessel strike.

As project planning develops, permitting the potential impacts to beluga whales will be a major environmental regulatory consideration, inclusive of an in-depth mitigation and monitoring program. If the project anticipates conducting activities with the potential to cause incidental takes to beluga whales, an IHA will need to be obtained from NOAA Fisheries, which would take at least 5-8 months of agency processing time (and often much longer) after a permit application has been prepared and submitted. If

NMFS feels like proposed activities may place the species or habitat in jeopardy, then the project will not be allowed to proceed.

3.2.4 USFWS Trust Species

A review of the USFWS Information for Planning and Consultation (IPaC) site on April 2, 2025 (USFWS 2025a) indicated that the project route in the Knik Arm of Cook Inlet has the potential to impact one (1) federally endangered bird species, the Short-tailed Albatross (*Phoebastria albatrus*).

Short-tailed Albatross spend most of their time at sea, ranging from western Pacific China, South Korea and Japan to Russia, Alaska and Canada, to the southwest coast of North America. They breed on remote islands, mostly in the western Pacific Ocean. During breeding, the majority feed along continental shelf-break areas east of Honshu, Japan. During non-breeding season, they feed along shelf break areas of the Bering Sea, Aleutian Islands and in other Alaskan, Japanese, and Russian waters (USFWS 2025b). Currently, no federally established Critical Habitat Areas for USFWS-managed endangered Short-tailed Albatross occur in the proposed project area (USFWS 2025a)

Development of the proposed project would require that consultation be undertaken between the lead federal agency providing approval for the project proponent's compliance with the NEPA, and the Southern Alaska Field Office of the USFWS. An overview of the consultation, impact assessment, and approval processes can be accessed and reviewed at: https://www.fws.gov/service/esa-section-7-consultation.

3.2.5 Bald and Golden Eagles

The Bald and Golden Eagle Protection Act (BGEPA; 16 U.S.C. 668-668d) prohibits unpermitted taking of Bald or Golden eagles, including their parts (including feathers), nests, or eggs. Under the Act, a take is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" eagles, with "disturb" further defined as "to agitate or bother bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.6) (USFWS 2025c).

The USFWS generally recommends a minimum radius of 330 ft around a bald eagle nest to prevent take for most disturbance activities, and a radius of 660 ft for louder restricted activities like pile driving.

The USFWS used to maintain an eagle nest atlas. This effort has been abandoned, and is no longer updated, but a historic copy is maintained for reference purposes by ABR (2025). This is an example of historic eagle nests that were reported to USFWS but is not a current and accurate mapping of existing eagle nesting locations. The proposed project tunnel and road routing on both the western and eastern sides of the Knik Arm of Cook Inlet is >1 mi away from historic recorded eagle nesting locations (ABR 2025, Figure 2).

A comprehensive eagle nest survey effort should be conducted throughout the proposed project alignment to ensure unrecorded eagle nests are identified to prevent unanticipated eagle take.

3.2.6 Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. 703-712) is intended to ensure the sustainability of populations of all protected migratory bird species, and prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS.

In addition to the ESA-listed Short-tailed Albatross, twenty-eight (28) other non-listed, federally regulated migratory birds, including both Bald and Golden eagles, are identified by the USFWS as potentially occurring in the proposed project area (USFWS 2025a).

The USFWS provides technical assistance to protect migratory birds during breeding and nesting periods when vegetation clearing, ground disturbance, and other site construction activities can destroy active bird nests, eggs, or nestlings; and publishes a table recommending times to avoid these activities in various regions of Alaska (USFWS 2025d). For the proposed project area, the USFWS recommends avoiding vegetation clearing and ground disturbance for each type of project area bird habitat listed below during the respective periods provided:

- Forest/Woodland: 1 May-15 July (*a,b)
- Shrub/Open: 1 May-15 July (*a,b)
- Seabird colonies (incl. cliff & burrow colonies): 15 April-7 September (*d)
- Eagles: 1 March-31 August (*e)

*(*a) Raptors may nest 2+ months earlier than other birds.*
*(*b) Canada geese and swans begin nesting April 20.*
*(*d) Seabird colonies in Interior refer to terns and gulls*
*(*e) Eagles and eagle nests have additional protections under the Bald and Golden Eagle Protection Act, and a permit may be required to conduct activities near an eagle nest.*

If project work is proposed during any these periods, a qualified biologist can survey areas proposed for disturbance to identify bird nests and flag boundaries of areas that cannot be disturbed.

4 Historic, Cultural, Architectural, or Archaeological Resources

Section 106 of the National Historic Preservation Act (NHPA), as Amended, and as implemented in 36 CFR Part 800, requires federal agencies to consider the effects of federally funded, regulated, or licensed undertakings on Historic Properties (cultural resources listed in or eligible for inclusion in the National

Register of Historic Places [NRHP]). In addition, the federal agency must afford the Advisory Council on Historic Preservation (ACHP) the opportunity to comment if an undertaking will have an adverse effect on a History Property.

Any potential disturbance or alteration of historic or cultural resources within the proposed project area would require that consultation be undertaken between the lead federal agency providing approval for the project proponent's compliance with the NEPA, and a combination of the Alaska Office of History and Archaeology (OHA) and federally recognized Alaska Native Tribes, as well as other consulting parties potentially impacted by the proposed action. Collectively, this consultation is commonly referred to as the "Section 106 process" and generally involves the lead federal agency informing these parties of project initiation, receiving and incorporating their comments and other information on potential project impacts on identified resources into an effects analysis, and making a final determination of project effect on historic and cultural resources. The lead federal agency then seeks State Historic Preservation Officer (SHPO) concurrence on their effects determination and, if impacts are considered significant, SHPO may request mitigation of those impacts. The Alaska Department of Natural Resources OHA provides a helpful synopsis of the Section 106 processes at their Review and Compliance website (ADNR 2025a).

The SHPO maintains the Alaska Heritage Resources Survey (AHRS), which documents and archives recorded cultural and historic resources (archaeological sites, buildings, structures, objects or locations) in Alaska. This database is used to identify previously recorded cultural resources potentially impacted by a project or undertaking. Notably, only cultural resource professionals can access this AHRS information to assist with project development and avoidance because this information is confidential and cannot be shared publicly. This protects cultural and historic resources from theft, vandalism or unwarranted destruction.

The AHRS lists over 200 known cultural resources within the study area. The proposed tunnel alignment intersects at least six previously recorded sites, including one historic district determined by SHPO and JBER to be eligible for NRHP listing in April 2025. The details of these sites are confidential. Considering the project location on generally undeveloped land along Knik Arm, intersection of the project with a circa 1940's Air Force base, density of recorded resources available on AHRS, and likely incomplete cultural resources survey within the study area, the proposed tunnel alignment is expected to intersect additional, currently unrecorded cultural resources that could be eligible for NRHP listing.

Identification of potentially affected Historic Properties, assembling information to provide to consulted parties, and fulfillment of the full suite of Section 106 procedures can be time consuming. Section 106 processes can take from six months to many years to complete depending on the size and availability of existing data for the study area, coupled with the scale of potential project effects on Historic Properties. Preliminary to the Section 106 process being initiated, it may also be determined by either the lead federal agency or the SHPO that a project-specific, cultural resource field survey be conducted to avoid inadvertent discovery or damage to Historic Properties during project construction. That survey requires permitting by OHA on state-lands and an Archaeological Resources Protection Act (ARPA) permit on federal-lands, and must be conducted by professionally credentialed archaeologists during snow-free seasons to allow ground visibility and sampling of potential resource sites, and must be summarized in a detailed report requiring review and acceptance by both the lead federal agency and the SHPO.

After the field survey is completed, a final project design must be selected, which would avoid resources as much as possible. Then the potential direct and indirect impacts would be assessed. The project would need to mitigate the adverse effects, which can be determined through consultation and establishment of a Memorandum of Agreement. If historic properties cannot be avoided, mitigation can include full excavation, moving resources, or other actions that would be determined through consultation.

5 Government to Government Consultation with Alaska Tribes

Executive Order (EO) 13175 (EO 2000) entitled "*Consultation and Coordination with Indian Tribal Governments (Nov. 6, 2000)*", directs federal agencies to "have an accountable process to ensure meaningful and timely input by Tribal officials in the development of regulatory policies that have Tribal implications." EO 13175 further directs that "[o]n issues relating to Tribal self-government, Tribal trust resources, or Indian Tribal treaty and other rights, each agency should explore and, where appropriate, use consensual mechanisms for developing regulations, including negotiated rulemaking."

Additionally, uniform standards for conducting Tribal consultations have been established to streamline and standardize the appropriateness, processes, and recording of Tribal consultation efforts across the range of federal agencies applying these practices (Presidential Documents 2022).

The lead federal agency providing approval for the project proponent's compliance with the NEPA must engage in direct "Government-to-Government" consultations with recognized Alaska Native Tribal Governments and Alaska Native Corporations to ensure regulatory measures and/or project elements potentially impacting Tribal trust resources (lands, waters, culturally significant places, etc.) are identified, considered and, if warranted, mitigated. Alaska Native Governments and Corporations can have interest in the project vicinity, and completing the Government-to-Government consultation process will be one of the most important steps in the permitting process. While this process can only be completed by the lead federal agency, early and frequent consultation between the project proponent and Alaska Native organizations is highly recommended.

6 Prime and Important Farmlands

An April 2025 review of the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service's National Resource Inventory database (USDA 2017) indicated that there are no Prime Farmlands located within the proposed project area.

7 Coastal Use Approvals

The Alaska Coastal Management Program expired on June 11, 2011, and is no longer in effect. As such, the State of Alaska does not currently direct a coastal management program.

As proposed, some portion of the route will construct infrastructure in regulated coastal zones of either the Municipality of Anchorage (MOA) and/or the Matanuska-Susitna Borough (MSB). The MOA regulates coastal development through the 2007 Coastal Management Plan and municipal ordinance, and the MSB regulates coastal development and enforces a 2007 Coastal Management Plan in the Borough code. These respective planning documents outline specific enforceable policies projects must comply with prior to being granted authorization. These policies should be incorporated into project planning and design to ensure degradation of coastal environments does not occur during project construction or subsequent operation.

8 Hazardous Materials, Solid Waste, and Pollution Prevention

8.1 Hazardous Materials

8.1.1 ADEC Contaminated Sites

A review of the ADEC Contaminated Sites Database Mapper provides that there are known contaminated sites located in onshore areas proximate to where the proposed project tunnel and road would be routed (Figure 3). There are no contaminated sites documented in the ADEC database at Port MacKenzie. There are variously characterized sites as ‘Active’, ‘Cleanup Complete’, or ‘Cleanup Complete - Institutional Controls’ associated with JBER, and more notably associated with the Port of Alaska (Figure 3). Metadata on the origin, history and ADEC management of contaminated sites is also available from the ADEC site mapper (ADEC 2025c).

Of the sites characterized as ‘Active’, the ADEC database provides that two (Hazard IDs 639 and 1804) are proximate to a potential road alignment on east side of Knik Arm of Cook Inlet on JBER (Figure 3). With absent information on a more fully identified project alignment or routing to a specific terminus point at the Port of Alaska, it is not possible to speculate which Active or other contaminated sites may lie proximate to, or directly within, the final project footprint. During a more detailed, future analysis it would be required to directly assess listed contaminated sites of all classifications for their potential to affect the proposed project and, additionally, identify project development activities that may potentially threaten any contaminated site’s integrity or ADEC cleanup status. Carefully selecting excavation and spoil disposal options will help minimize and mitigate the potential impacts.

ADEC provides guidance on the purchase or redevelopment of properties containing contaminated sites, cautioning that real or perceived contamination can complicate the reuse of property and impact the economic well-being of many Alaskans. The ADEC *Contaminated Real Estate In Alaska* website (ADEC 2025d) provides tools to promote reuse or redevelopment of contaminated lands, as well as recommendations on navigating issues of site control, purchase, and owner liability.

The Alaska Department of Natural Resources (ADNR) also maintains a digital database listing of “Potentially Hazardous Sites” (ADNR 2025b). No such sites are located directly adjacent to the alignment.

8.1.2 Project Hazardous Materials Management

During construction of the proposed project, an ADEC-approved Contaminated Soils Management Plan (CSMP) would likely be required to address identification, testing, handling, and disposal of potentially contaminated materials discovered or excavated during construction activities. The construction contractor would implement the CSMP to avoid and minimize the release or spread of contamination encountered during construction activities.

Additionally, both a Hazardous Materials Response Plan (HRMP) and Spill Prevention, Control, and Countermeasures Plan (SPCCP) would likely need to be developed and implemented by the construction contractor to respectively identify appropriate storage, use and disposal protocols for project-related hazardous materials (fuels, lubricants, solvents, adhesives, etc.) present during construction, and to outline spill response procedures.

8.2 Solid Wastes

Solid wastes generated during construction and not subsequently recycled would be required to be disposed of at an ADEC permitted landfill or, alternatively, as identified per the ADEC-approved CSMP for contaminated materials. A database of ADEC-approved and permitted solid waste facilities in Alaska is available at: https://dec.alaska.gov/Applications/EH/SWIMS/

8.3 Pollution Prevention

Pollution prevention is best summarized as the implementation of best management practices (BMPs) before, during and after construction activities, and additionally during subsequent operation of the proposed project. Identification, development and implementation of BMPs would be considered and assessed for applicability during development and approval of proposed project NEPA documentation and may affect the selection of a preferred alternative for project construction. ADEC also provides primary regulatory oversight for the development and approval of such BMP/pollution prevention mechanisms as a Stormwater Pollution Prevention Plan (SWPPP) for construction/development activities, as well as issuing Alaska Pollutant Discharge Elimination System (APDES) Stormwater Permits. An extensive review of the full suite of pollution prevention planning vehicles and permits is beyond the scope of this review but may also include approvals and/or permitting by the Alaska Department of Fish and Game (Title 16 Fish Habitat permits), the Alaska Department of Natural Resources (various Title 11 water use permits), and municipal governments (water discharge, zoning restrictions).

9 Waters

9.1 Wetlands and Waters of the United States

The USFWS hosts the National Wetlands Inventory (NWI), a desktop planning level evaluation of potential wetlands and waters in the project area (USFWS 2025e, Figure 4).

The MOA and MSB each host their own respective wetlands atlas, which is an updated aerial photo interpretation of potential wetlands and waters (Figure 5).

Wetlands and water habitats would be subject to regulation under local regulation and Section 404 of the Clean Water Act (CWA). All Cook Inlet marine waters are included as Waters of the United States. In addition, the NWI, MOA, and/or MSB map wetland habitats on, or in the vicinity of, the onshore components of the project.

A specific wetland impact estimate would depend on the proposed project footprint. Portal locations would be selected to minimize the impacts to wetlands and Waters of the United States.

A summer field survey will most likely be required, along with 6 - 9 months of permitting and processing through the U.S. Army Corps of Engineers (USACE), Regulatory Branch. Infrastructure routing must avoid, minimize, and mitigate potential impacts to wetlands. Wetland mitigation may be required, which can have substantial costs (>$250,000 per acre).

9.2 Navigable Waters

The project involves building a structure under the Knik Arm of Cook Inlet, which is a navigable water regulated under Section 10 of the Rivers and Harbors Act of 1899. Any in-water work, including dredging, placement of fill, or pile driving, will require a permit from the USACE. Discharge of dredged material will require a Section 404 permit from the USACE and a Section 10 approval for clearance of potential project effects on navigation in Cook Inlet. Dredging may also require sampling of marine substrates prior to proposed activities to permit the disposal of dredge spoils.

During the USACE permitting process and attending public notice period, the United States Coast Guard (USCG) would also be responsible for review and approval of proposed infrastructure development in Cook Inlet.

NOAA Office of Coast Survey provides charts for Cook Inlet that describe its bathymetry as well as locations of existing submarine cables, pipelines, and caution/obstruction areas (Figure 6). These are provided for the project proponent’s information only and have not been verified by Stantec. There may be additional, existing infrastructure not depicted on the maps provided.

9.3 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Map Service Center is the official public source for flood hazard information produced in support of the National Flood Insurance Program and provides limited mapping capabilities for regulatory floodplains nationwide (FEMA 2025a).

A review of FEMA floodplain data for the proposed project area provided that while there is some limited regulatory floodplain mapping data available for the area around the Port of Alaska, within the MOA boundary, there are no FEMA floodplain data included for JBER, or for area around Port MacKenzie. Much of the area around the Port of Alaska is mapped as Zone “A,” which is recognized as having a

1percent annual probability of flooding. Other areas around the Port of Alaska is Zone X, which is considered an Area of Minimal Flood Hazard.

EO 13690 (2015) established policy of the United States to improve the resilience of communities and federal assets against the impacts of flooding, and FEMA provides a web link to an extensive review of its associated rules and updated policy on regulatory implementation of federal flood risk management standards (FEMA 2025b).

In addition to federal mandates on development and other activities within regulatory floodplains, municipality and borough flood management may also impact the project. The MOA and MSB may require a Flood Hazard Permit for construction, including a study to support a No Rise certification (MOA 2025, MSB 2025a).

As project details are developed, they can be compared with federal and MOA/MSB regulations to determine if permitting is required to ensure compliance. Additionally, for proposed project construction alternatives extending into potential areas of either unmapped or undetermined FEMA flood hazard characterization, it is recommended that a hydrologic field study and flood hazard assessment be conducted to determine the extent of proposed project incursions into potential floodplain risk zones, and whether any developed project floodplain encroachment may result in adverse impacts.

9.4 Wild and Scenic Rivers

There are no federally-designated Wild or Scenic rivers in the vicinity of the proposed action (NWSRS 2025).

10 Land Ownership and Land Use

Land in the proposed project area is under a variety of ownerships and uses, including federal, municipal, and state land. Additional detailed land ownership and right of way research is required, as the analyses in this report are based on publicly available MOA/MSB Geographic Information System (GIS) data, which may be incomplete (Figure 7).

On the west side of the Knik Arm the project is on property within and owned by the MSB. The MSB, under Title 17: Zoning, Chapter 17.23 has designated the Port MacKenzie Special Use District. This district is generally designated to support commercial and industrial development and support of the port. Any project construction and assets will have to be in compliance with this designation (MSB 2025b). The adjacent tidelands and submerged lands are designated as the Waterfront Dependent District under the same Title 17 zoning. This district is designated for waterfront uses necessary to operate a commercial/industrial port (MSB 2025b).

On the east side of the Knik Arm the majority of project is on property under the jurisdiction of the United States Air Force (JBER). Parcels within the Port of Alaska are owned by both MOA and private landowners.

The State of Alaska owns much of the tideland and submerged lands up to 3 miles offshore in the proposed project area, and these lands are managed by the ADNR. The federal government owns most of the Cook Inlet submerged lands farther than 3 miles offshore.

The ADNR provides leasing and land use data and other information for the project area. Available GIS data layers can help refine routing choices for the project, and include (Figures 8, 9):

- ADNR Land Permits, Easements, Leases: Current permits, easements, and leases are depicted for the project area.
    - ADL 200151 is owned by Chugach Electric for a utility line
    - ADL 231246 and ADL 231246 is owned by the Knik Arm Bridge and Toll Authority
    - ADL 201898 is owned by the MSB, to maintain a public easement
    - ADL 32384 is owned by the DNR, to maintain a public easement
    - ADL 24521 and ADL 217880 are DNR tideland leases (shown, but not labeled on Figure 8 due to size)
- Oil and Gas Leases: Current Oil and Gas Leases and existing wells are identified. Project design must account for existing identified infrastructure, along with the other unidentified infrastructure including underwater pipelines and drilling platforms.
- The project avoids the Susitna Flats State Game Refuge.

The planning-level alignment of the project is not at sufficient detail to determine potentially impacted land ownerships and uses. For example, the project currently is mapped using an estimated route. Any final alignment would require acquisition of appropriate easements, potential realignment of estimated or draft routings away from non-compatible land uses, and considerations regarding pre-existing ownerships, infrastructure, or leases.

Our current understanding is that the previous bridge alternative only acquired a portion of the required land. This new alternative would potentially have a different footprint, whose alignment is still being defined. Major landowners include JBER, State of Alaska, MOA, MSB, Port of Alaska, and private landowners.

11 Viewsheds or Other Visual Resources

The proposed action would create permanent visible landscape features, and temporary construction activities would be visible to the viewshed. No specific viewshed criteria were identified for the proposed lands, but MOA and MSB Code encourages limiting visual impacts. MOA/MSB code will encourage the incorporation of project design measures that minimize potential impacts to visual resources, such as

localized burial of power transmission cable to reduce viewshed impacts, particularly near residential or areas of high recreational use.

12 Noise

Noise is measured in units of dB. A 3 dB change is about the smallest change in noise that the human ear can detect. A 5 dB change in noise can be perceived by most people.

Descriptive ranges for common noise levels, in dB, are as follows:

- 30 – 35 dB: Very quiet, rural area
- 40 – 50 dB: Urban night-time
- 44 – 65 dB: Storms, avalanches, wildlife, conversation between people 3 to 6 ft apart
- 70 – 80 dB: Urban daytime
- 110 dB: Intolerable noise

For the purposes of analyses and permitting of discharges to wetlands or waters of the United States as per Section 404(B) of the CWA, the USACE incorporates the review of project effects on ambient noise into their potential impacts to "aesthetics" as per guidance provided by 40 CFR 230.53(b) (USACE 2024). Specifically, during permit application review, USACE would assess project activities for their potential to cause "*(b) Possible loss of values: The discharge of dredged or fill material can adversely affect the particular features, traits, or characteristics of an aquatic area which make it valuable to property owners. Activities which degrade…noise levels may reduce the value of an aquatic area to private property owners."*

While USACE (2024) does not provide specific noise impact evaluation significance criteria, Federal Highway Administration (FHWA) traffic noise abatement criteria (NAC) are provided in 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (FHWA 2024). This sets U.S. Department of Transportation (USDOT) project-effected limits of 67 dB for residences, churches, schools, recreational uses, and similar areas; and 72 dB for commercial and industrial use areas. While these limits apply only to USDOT projects, they may serve as noise impact guidance for the proposed project.

The Alaska DOT&PF Noise Policy limits traffic noise to within 1 dB of FHWA NAC (DOT&PF 2018). Therefore, industrial impacts occur at 71 dB. DOT&PF also considers a 15 dB increase over existing noise levels a substantial increase. This limitation may also serve as guidance for the proposed project regarding potential impacts to ambient noise levels.

In addition to potential federal and state level noise impact limitations and, depending on land status, the MOA Code can also regulate "excessive noise" at the MOA/MSB level.

It is anticipated that the project will be required to conform to regulatory noise impact criteria of some form and/or use appropriate mitigation to limit potential effects to ambient noise both during construction and future operation of the proposed project. A noise analysis would help predict the potential impacts to the surrounding environment, including sensitive receivers such as residential or recreational stakeholders.

Permitting or authorizations associated with NOAA ESA compliance for noise impacts specifically to beluga whales, impacts to other MMPA-regulated species, and impacts to BGEPA resources may also likely impose limitations on project generated noise, including noise transmitted in the underwater environment.

13 Summary

DOT&PF is evaluating the feasibility of a Knik Arm Tunnel crossing from Anchorage to the MSB.

The major environmental concerns to address include (Table 2):

- Belugas and Marine Mammals: One of the major environmental impacts of the previously proposed bridge was the impacts to belugas and other marine mammals. The TBM is of less regulatory concern for noise impacts, and use of the TBM would lessen the impacts of the project, which would reduce one of the potential triggers for preparation of an Environmental Impact Statement.
- Cultural Resources and Tribal Consultation: There are numerous cultural resources in the study area. Development would require a detailed analysis of baseline conditions, potential impacts, and mitigation. Negotiation of these with stakeholders and agencies can take extend periods of time.
- Land Ownership: Land in the proposed project area is under a variety of ownerships and uses, including federal, municipal, and state land. Any final alignment would require acquisition of appropriate easements, potential realignment of estimated or draft routings away from non-compatible land uses, and considerations regarding pre-existing ownerships, infrastructure, or leases.

A preliminary list of permits that may be required is provided in Table 3. This list will change as project design advances.

Table 2: Summary Table

Resource	Proposed Project	Risk
Air Quality Non-Attainment Areas	None (Maintain compliance with State Implementation Plan)	Manageable
Anadromous Fish Stream Crossings	0	Manageable
Essential Fish Habitat Presence	Yes	Manageable
Endangered Species Act	Highest for beluga whales	High
Other ESA/MMPA Species Risk	Killer whale, harbor seal, harbor porpoise, short-tailed albatross	High
Eagle Nest within 1 mile (USFWS Nest Atlas)	0	Manageable
Migratory Bird Species of Concern	28	Manageable
Cultural Resources	Additional Analysis Required	High
Tribal Consultation	Required	High
Farmlands	None	Manageable
Coastal Use Approvals	MOA and MSB	Manageable
Active DEC Contaminated Sites	2 (Hazard IDs 639, 1804) Additional Analysis Required	Manageable
ADNR Potentially Hazardous Sites within ½ mile	0	Manageable
Wetlands	Yes	Manageable
Floodplains	Yes	Manageable
Wild and Scenic Rivers	No	Manageable
Land Ownership	Other Leaseholders	High
Viewshed Considerations	MOA and MSB codes/ Landowner restrictions	Manageable
Noise	Anchorage and MSB noise codes	Manageable

Table 3: Permitting Table

Permit / Approval	Regulatory Authority	Permit Requirements
Local		
Building and Land Use Permits (including fire, electrical, plumbing and mechanical permits)	MOA/MSB	Required for new buildings or structures outside the Building Safety Service Area (BSSA).
Flood Hazard Permit	MOA/MSB	Required if works are within a floodplain to ensure compliance with floodplain management regulations.
Coastal Management Plan Compliance	MOA/MSB	Required compliance with adapted plans.
State		
Fish Habitat Permit (Title 16)	ADF&G	Current design anticipates no crossing of fish streams. If design changes, this permit is required for project activities occurring below ordinary high water of a fish bearing stream. Measures to maintain fish passage, and avoid and minimize impacts to fish and their habitats would be implemented in consultation with ADF&G.
NHPA, Section 106 Review (36 CFR 800)	SHPO, Tribes and Consulting Parties	Section 106 compliance is required as part of NEPA and provides for the identification and protection of cultural and historic resources.
APDES Construction General Permit (CGP)	ADEC	For projects with disturbance of over one acre. A SWPPP and notice of intent to seek coverage under the CGP would be required prior to construction.
Section 401 Certification - Certificate of Reasonable Assurance	ADEC	Would be issued prior to the USACE 404 permit and would notify compliance with state water quality administrative code.
Water Use Permit/ Water Rights	ADNR	Required when a specific amount of water from a specific water source is to be diverted, impounded, or withdrawn for a specific use.
Federal		
NEPA	TBD (Likely USACE)	NEPA requires federal agencies to consider the environmental effects of proposed actions to inform agency decision making. Analyses and documentation prepared to comply with NEPA may include a Categorical Exclusion, Environmental Assessment, or an Environmental Impact Statement.
Magnuson-Stevens Fishery Conservation and Management Act EFH consultation and assessment	NMFS/NOAA	Required if project may impact EFH

Permit / Approval	Regulatory Authority	Permit Requirements
ESA - Section 7 or Section 10 Federal Endangered Species Consultation	USFWS	Required if ESA-listed species and/or habitat is present within the project area.
MMPA	NMFS/NOAA	Required if protected species and/or habitat is present within the project area
BGEPA Take Permits	USFWS	Required if project has potential to impact eagles.
MBTA Compliance	USFWS	Avoid direct “take” of raptors and other birds protected by the MBTA during vegetation clearing.
Government to Government Consultation	Lead Federal Agency	Consultation with Alaska Tribes potentially required.
CWA Section 404 and Section 10 Permit	USACE	Required if federal jurisdictional wetlands or other waters (i.e., “Waters of the U.S.”) are impacted and regulates physical discharges of dredge or fill material into these waters.

14 Next Steps

The next steps in consideration of the feasibility of the project is evaluating the proposed project versus the potential permitting for impacts.

The next steps for mitigating the risk of environmental topics would include:

- Develop a project description and alignment.
  - » In particular, detail the types and quantities of activities that may result in take to beluga whales and/or potential impacts to cultural resources.
- Conduct a detailed desktop analysis, with appropriate fieldwork to support
  - » Marine mammal take analysis
  - » Cultural Resource analysis
  - » Contaminated Sites Analysis
  - » Wetlands Delineation
  - » Floodplain Analysis
  - » Landownership and Right of Way Analysis
  - » Visual Analysis
  - » Noise Analysis

The appropriate level of NEPA analysis is based on the level of impact to the environment. Projects without a significant impact can undergo a Categorical Exclusion. Projects with an unknown level of impacts can undergo an Environmental Assessment. Projects with a significant impact can undergo an Environmental Impact Statement.

Given the previous level of public controversy, it is currently expected that this proposed project would require an Environmental Impact Statement. As the project advances in design, stakeholder outreach, and environmental impact analysis, the appropriate level of NEPA analysis will be better defined.

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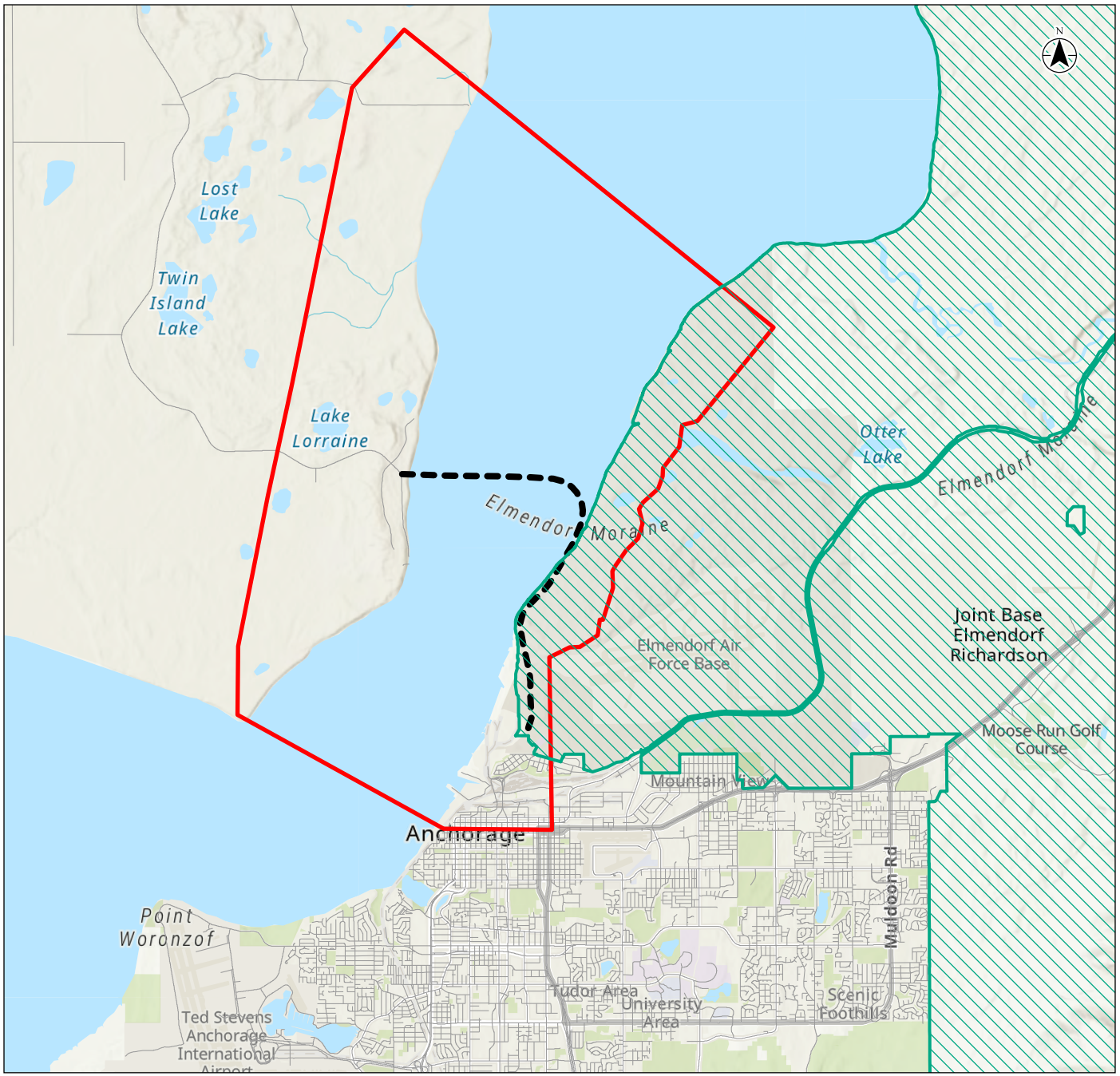
Appendix A: Figures



Study Area
Military
Preliminary Proposed Knik Crossing
Road Centerlines

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

1. Coordinate System: NAD 1983 2011 StatePlane Alaska 4 FIPS 5004 Feet
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Project Location	2073250004
Knik Arm	Prepared by CP on 2025-04-02
	Technical Review by RC on 2025-04-05
	Independent Review by SK on 2025-04-05

Client/Project

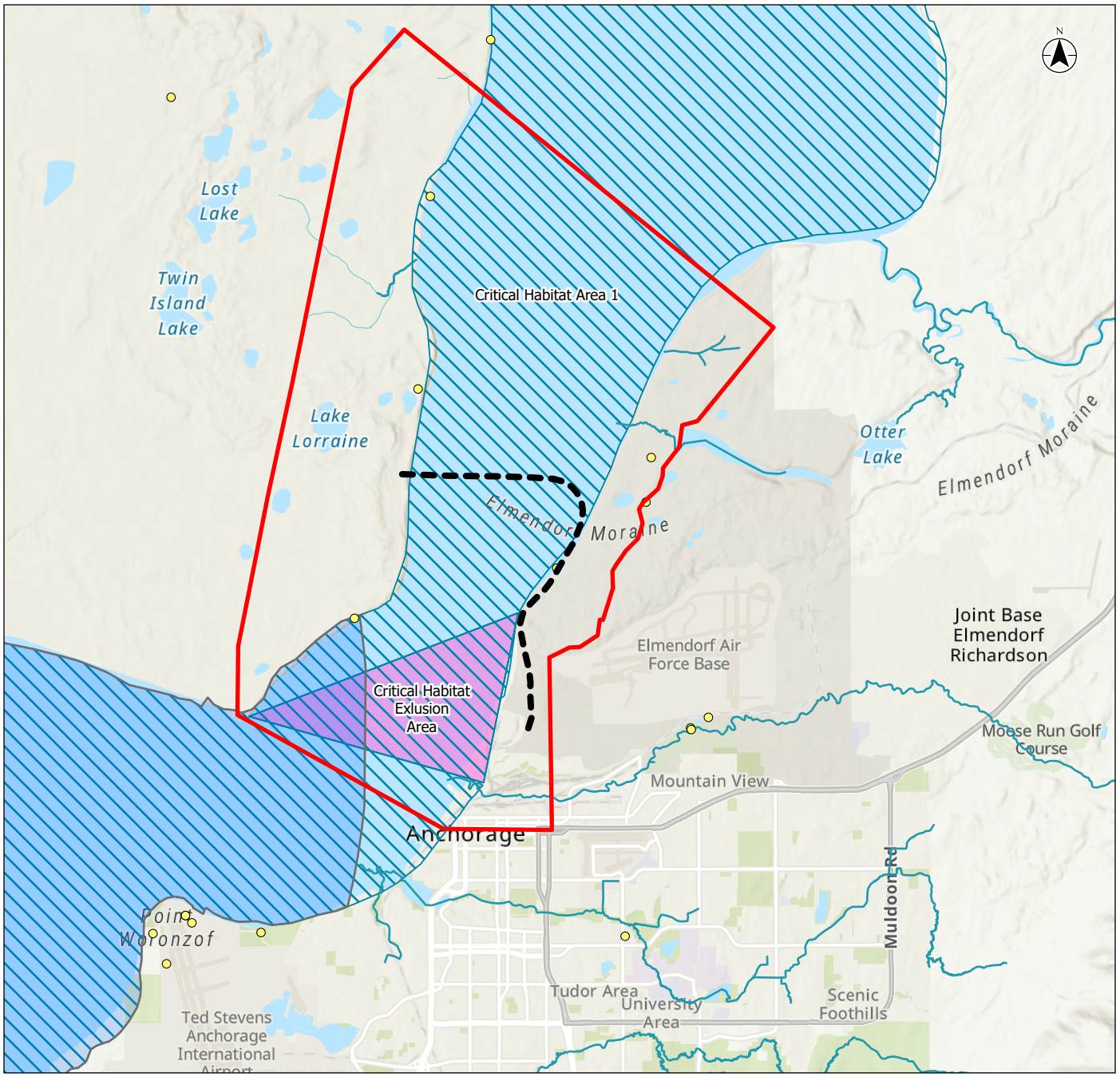
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.

1

Title

Project Location & Vicinity Map



Study Area

Preliminary Proposed Knik Crossing

Eagle Nests

ADF&G Anadromous Stream

Susitna Delta Exclusion Zone

Beluga Whale Critical Habitat

Critical Habitat Exclusion Area

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

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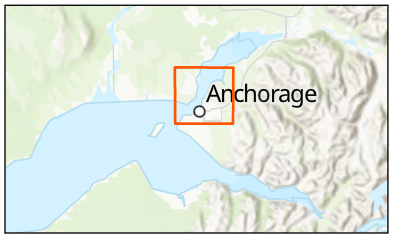


Project Location
Knik Arm

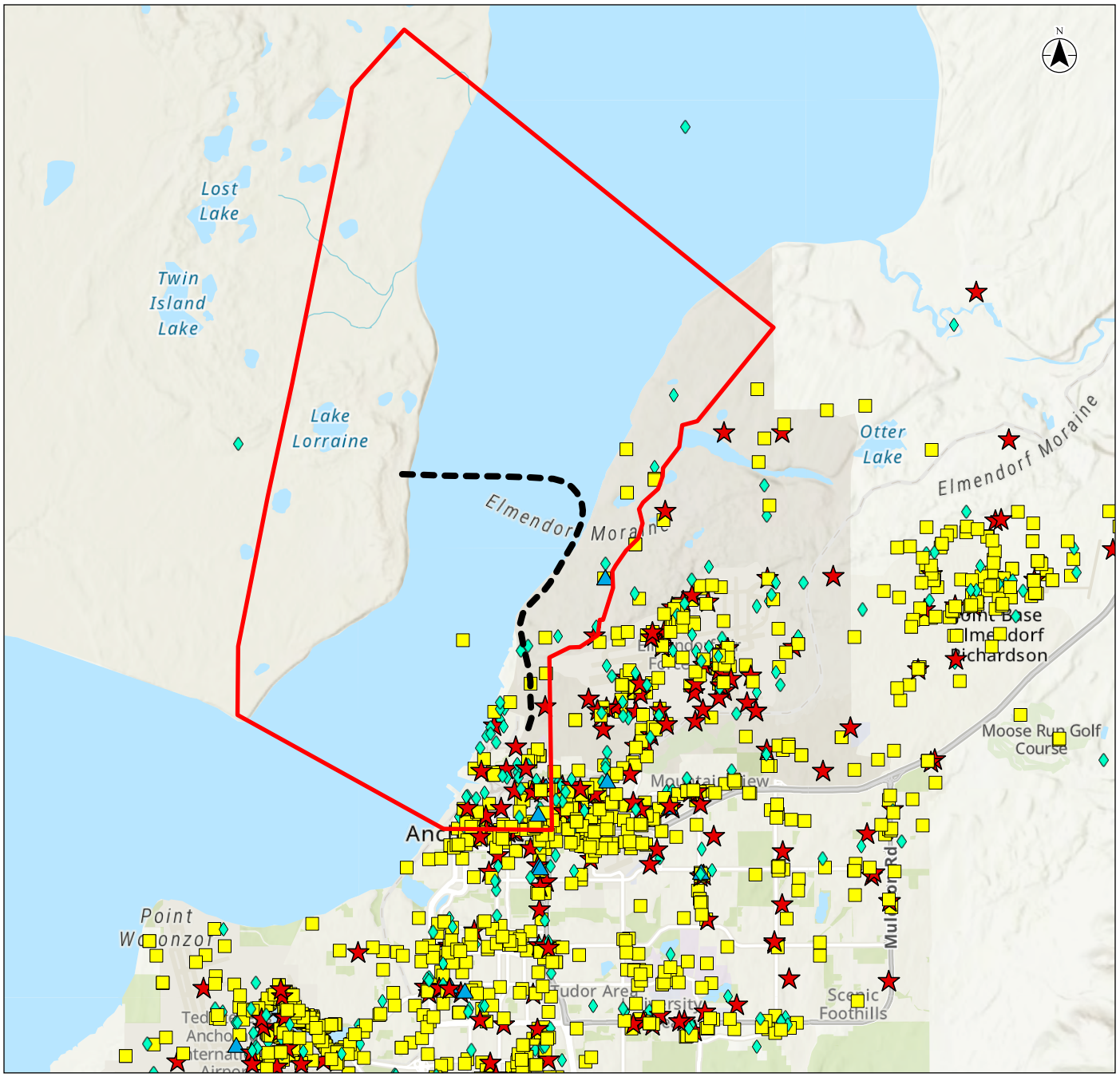
2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
2

Title
Protected Habitat

I:\2073\2500\4\gis\gis\pro_apxx\2073250004_Knik Arm Tunnel Feasibility Study\2073250004_Knik Arm Tunnel Feasibility Study.aprx Revised: 2025-04-17 By: cpannone



Study Area

Preliminary Proposed Knik Crossing

Contaminated Sites

- Active
- Cleanup Complete
- Cleanup Complete - Institutional Controls
- Informational

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

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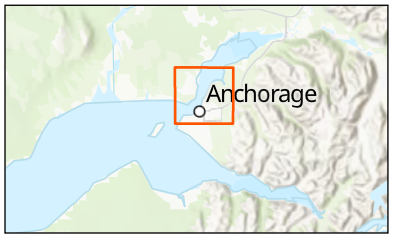


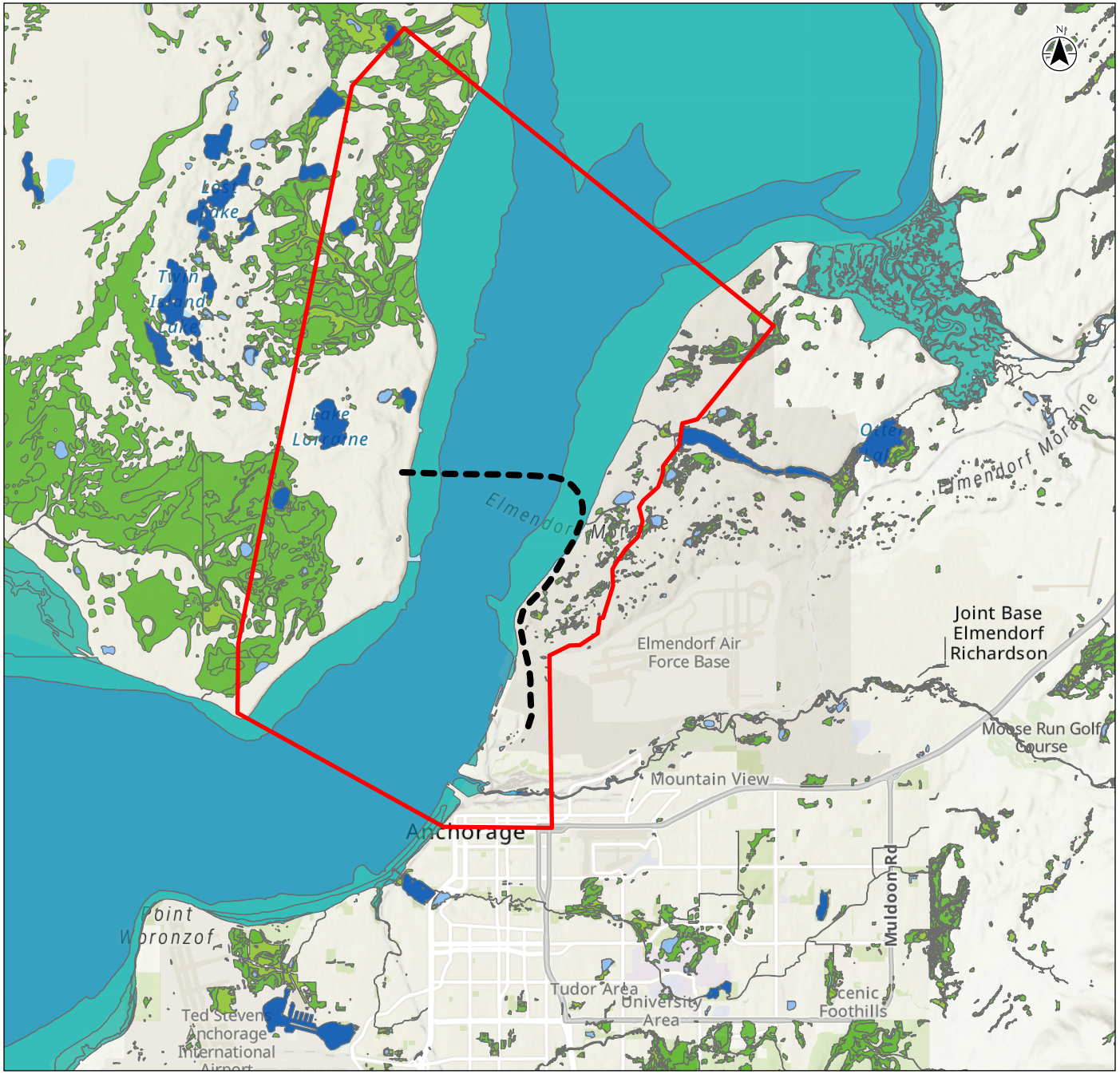
Project Location
Knik Arm

2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
3

Title
Contaminated Sites



Study Area

Preliminary Proposed Knik Crossing

NWI AK Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

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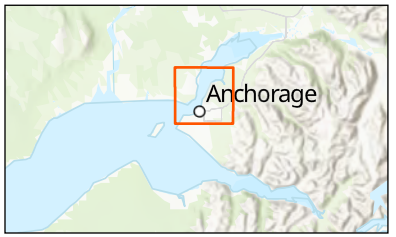


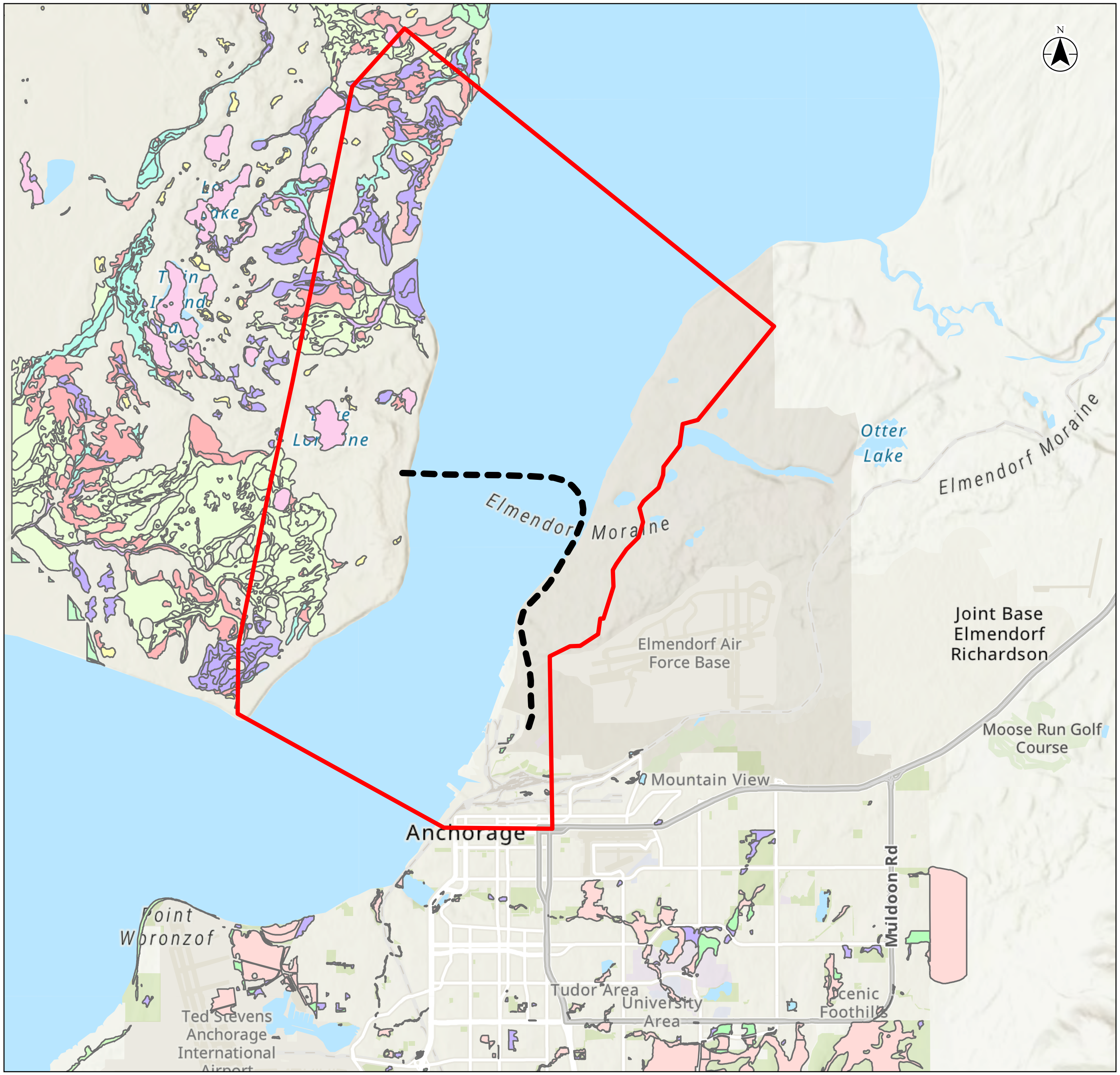
Project Location
Knik Arm

2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
4

Title
NWI Wetlands



- Study Area
- Preliminary Proposed Knik Crossing

MSB Wetlands Atlas

- Depression
- Discharge Slope
- Drainageway
- Kettle
- Lake
- Lakebed
- Riverine
- Tidal
- Wetland / Upland Complex

Municipality of Anchorage Wetlands Atlas

- Intertidal
- A - High Value
- B - Medium Value
- C - Low Value
- D - Undesignated
- P - Potential

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

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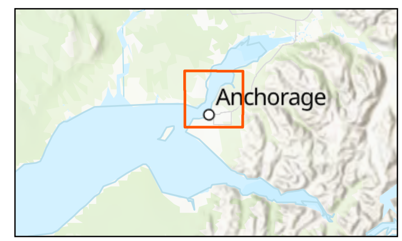


Project Location
Knik Arm

2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

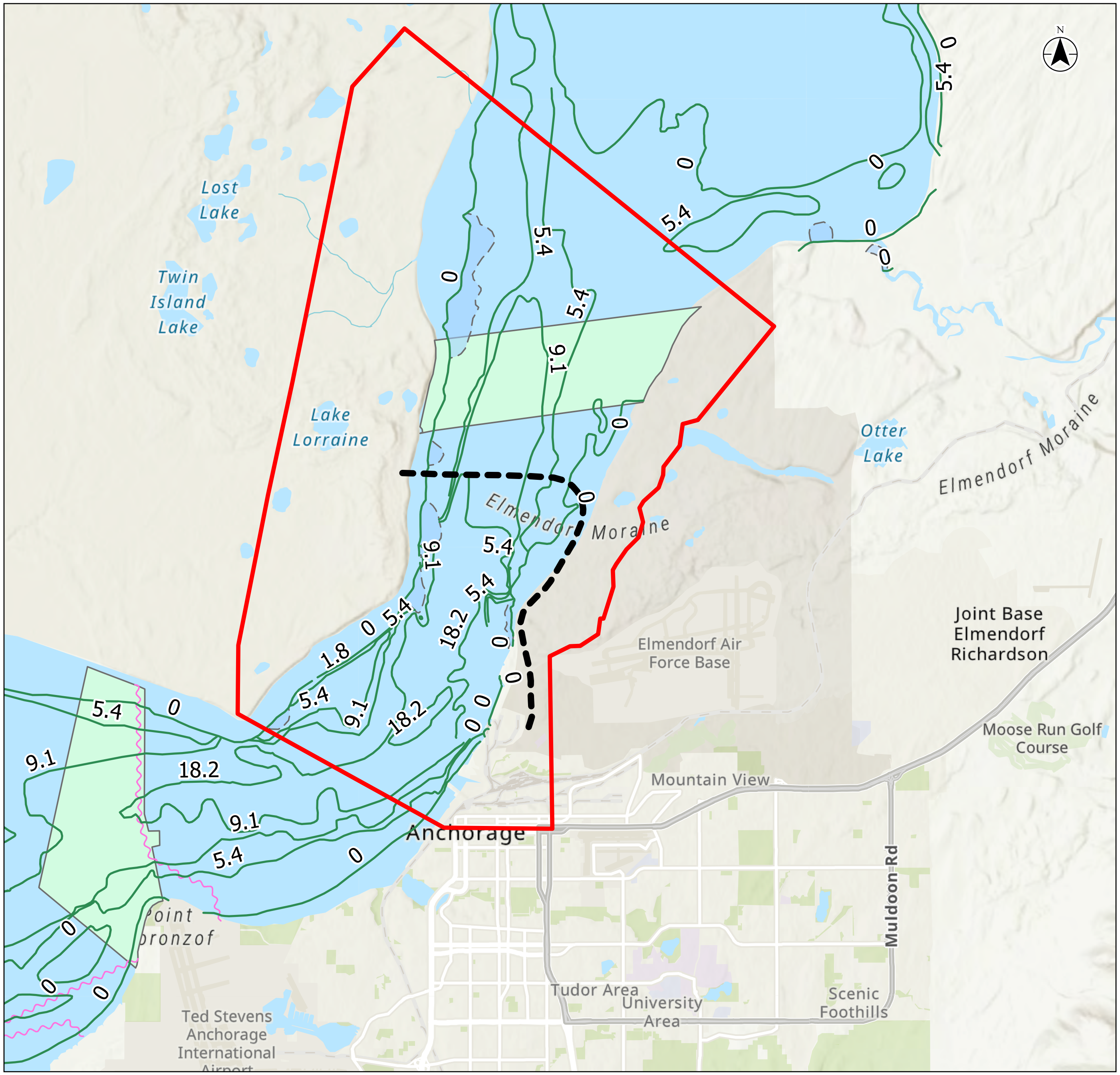
Client/Project

State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
5

Title
Local Wetlands Atlas

U:\2073250004\gis\gis\pro_aprx\2073250004_Knik Arm Tunnel Feasibility Study\2073250004_Knik Arm Tunnel Feasibility Study.aprx Revised: 2025-04-17 By: cpannone



- Study Area
- Preliminary Proposed Knik Crossing
- Coastal Cable Submarine Line
- Coastal Obstruction Area
- Coastal Pipline Area
- Coastal Cable Area
- Coastal Depth (fathoms at MLLW)

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

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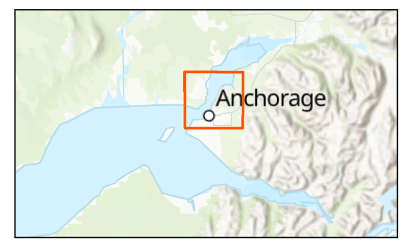


Project Location
Knik Arm

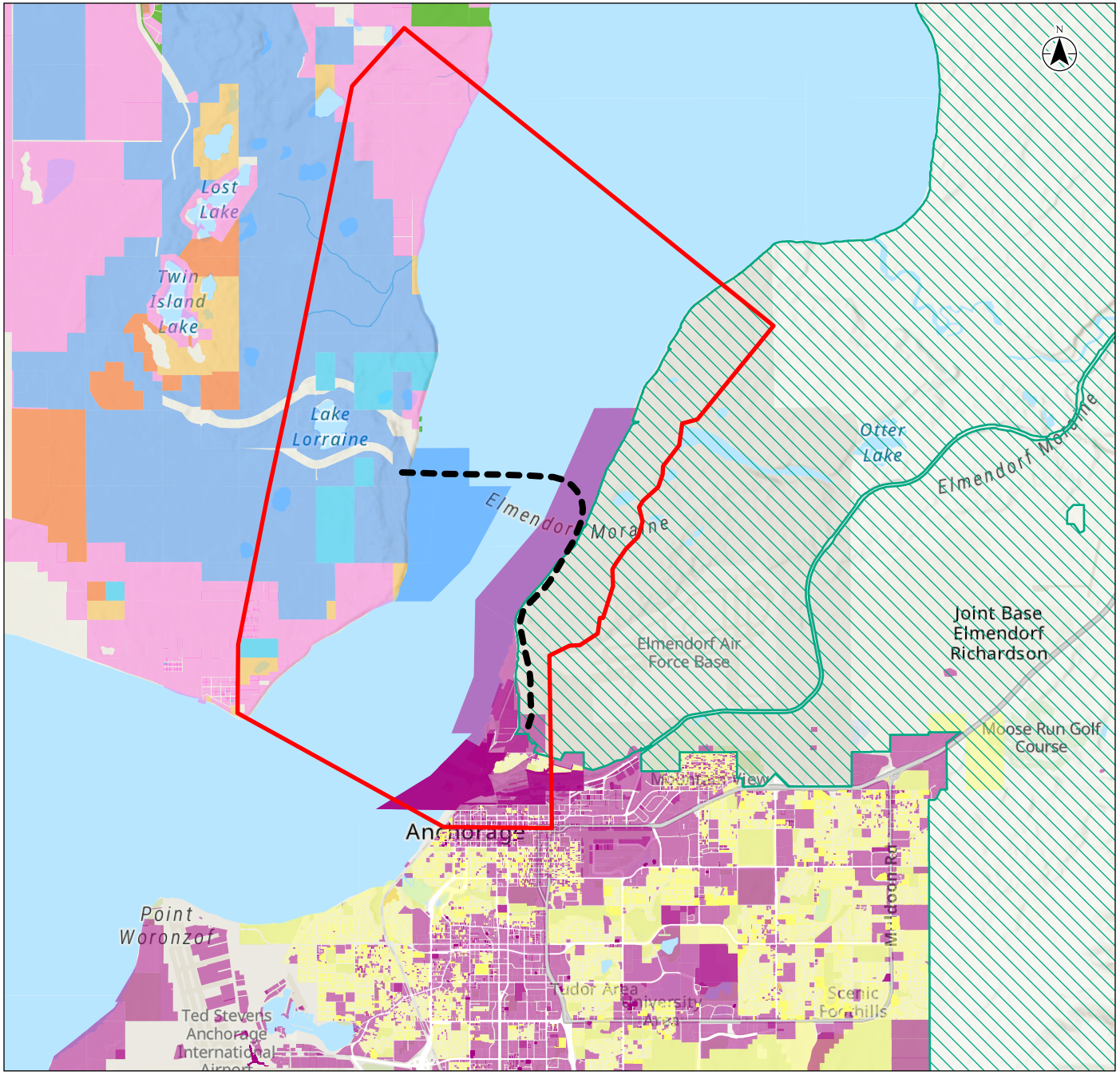
2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
6

Title
NOAA Coastal Map

U:\2073250004\gis\gis\pro_aprx\2073250004_Knik Arm Tunnel Feasibility Study\2073250004_Knik Arm Tunnel Feasibility Study.aprx Revised: 2025-04-17 By: cpannone



Study Area
Preliminary Proposed Knik Crossing
Military
Borough
Cooperative
Commercial
Federal
Mental Health
Private
Public University
Residential
State

0 1 2 Miles
1:126,720 (At Original document size of 8.5x11)

Notes
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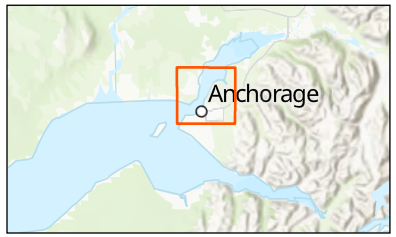


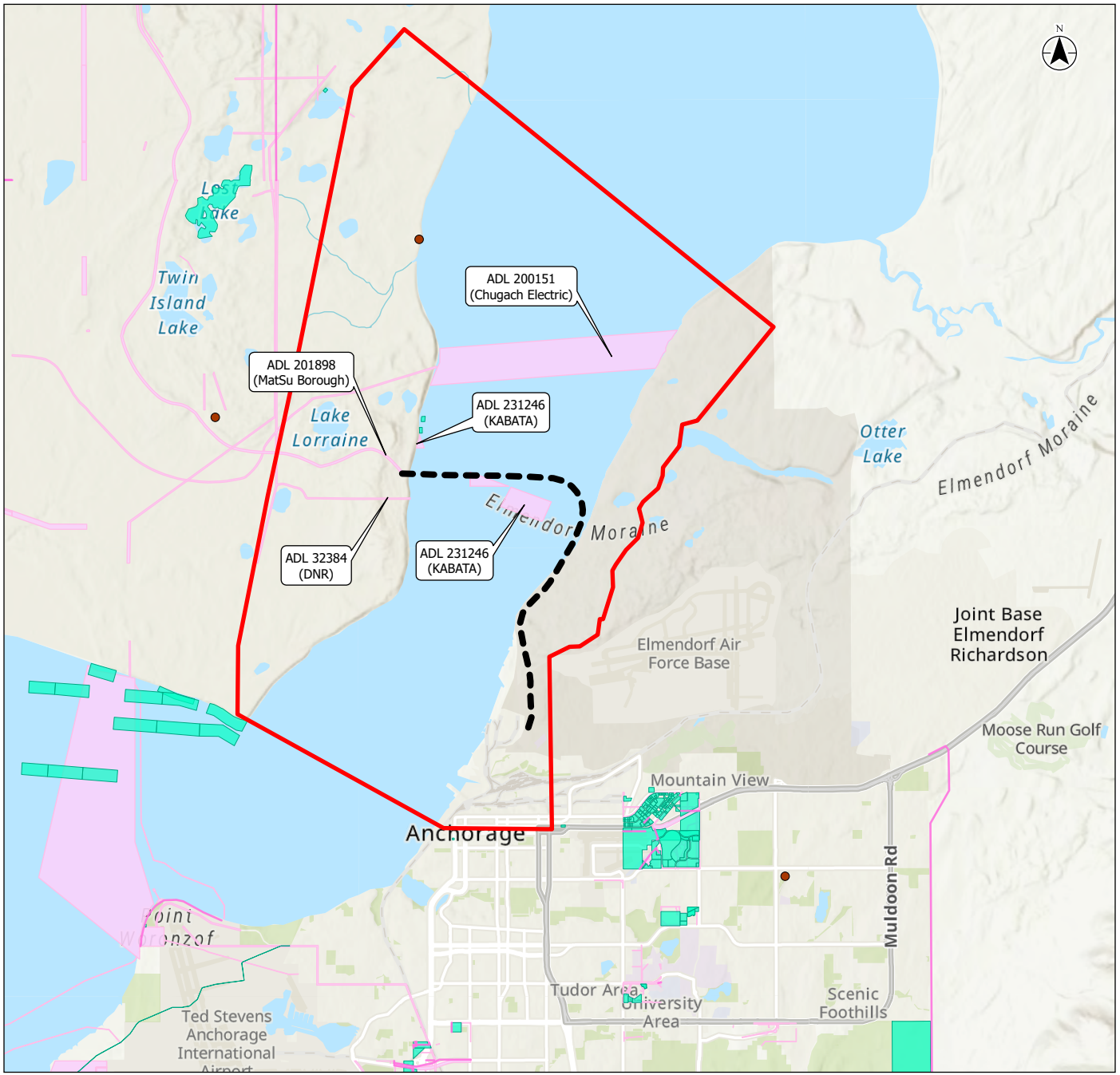
Project Location
Knik Arm

2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
7

Title
Land Status



- Study Area
- Preliminary Proposed Knik Crossing
- DNR Land Permit/Lease
- DNR Easement
- DNR Land Permit/Lease
- DNR Easement
- Oil and Gas Wells

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes
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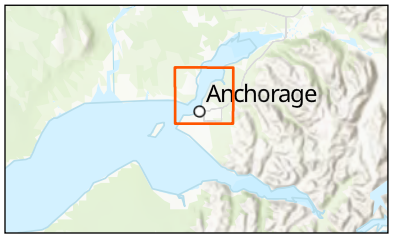


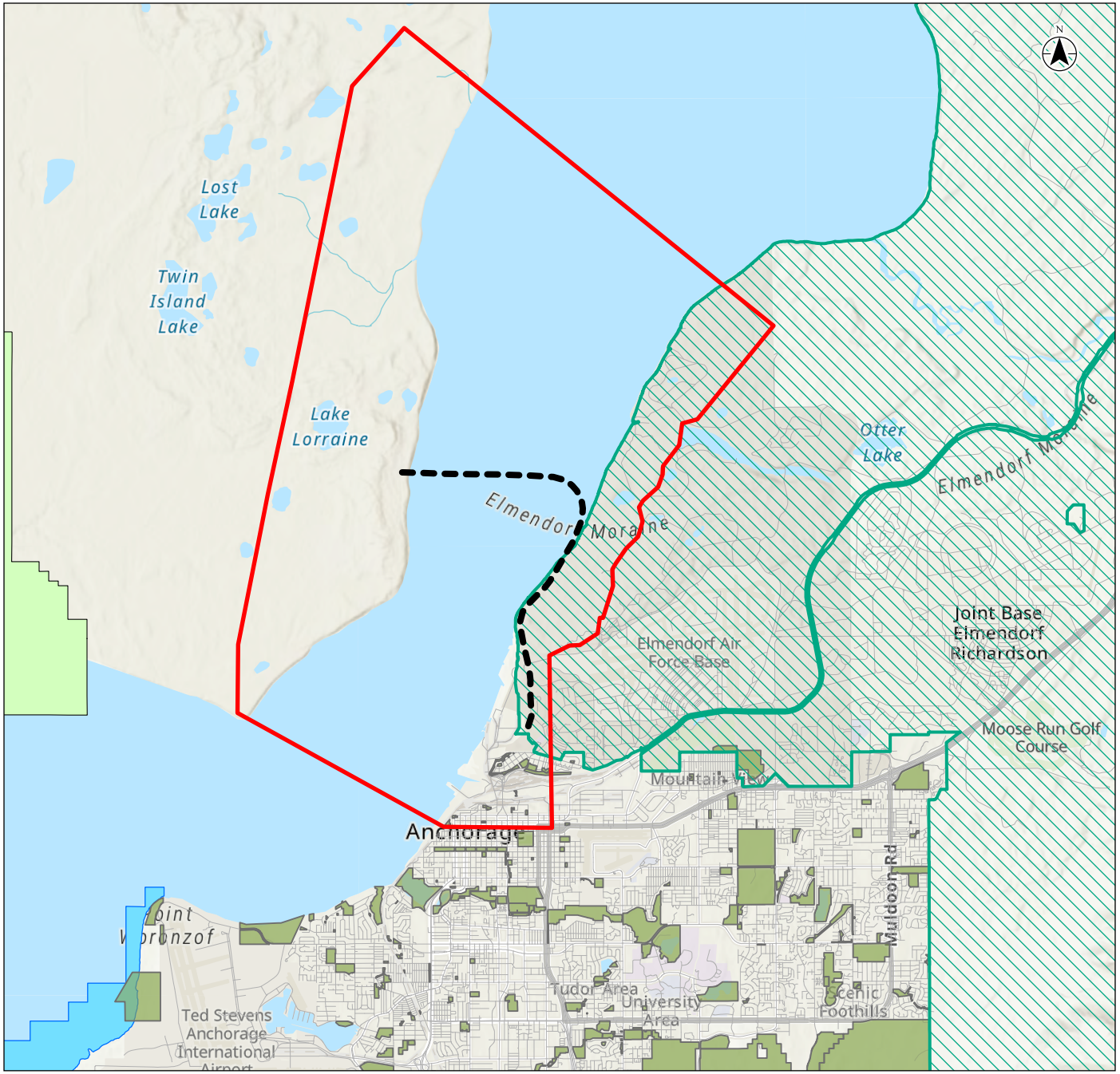
Project Location
Knik Arm

2073250004
Prepared by CP on 2025-04-02
TR by RC on 2025-04-05
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
8

Title
DNR Permit Easement



Study Area
Preliminary Proposed Knik Crossing
Military
Park Land
Susitna Flats State Game Refuge
Anchorage Coastal Wildlife Refuge

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes
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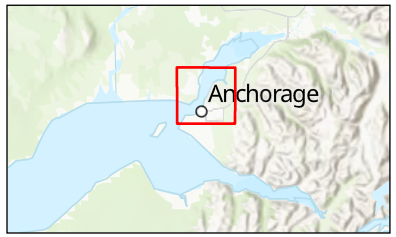

Project Location
Knik Arm

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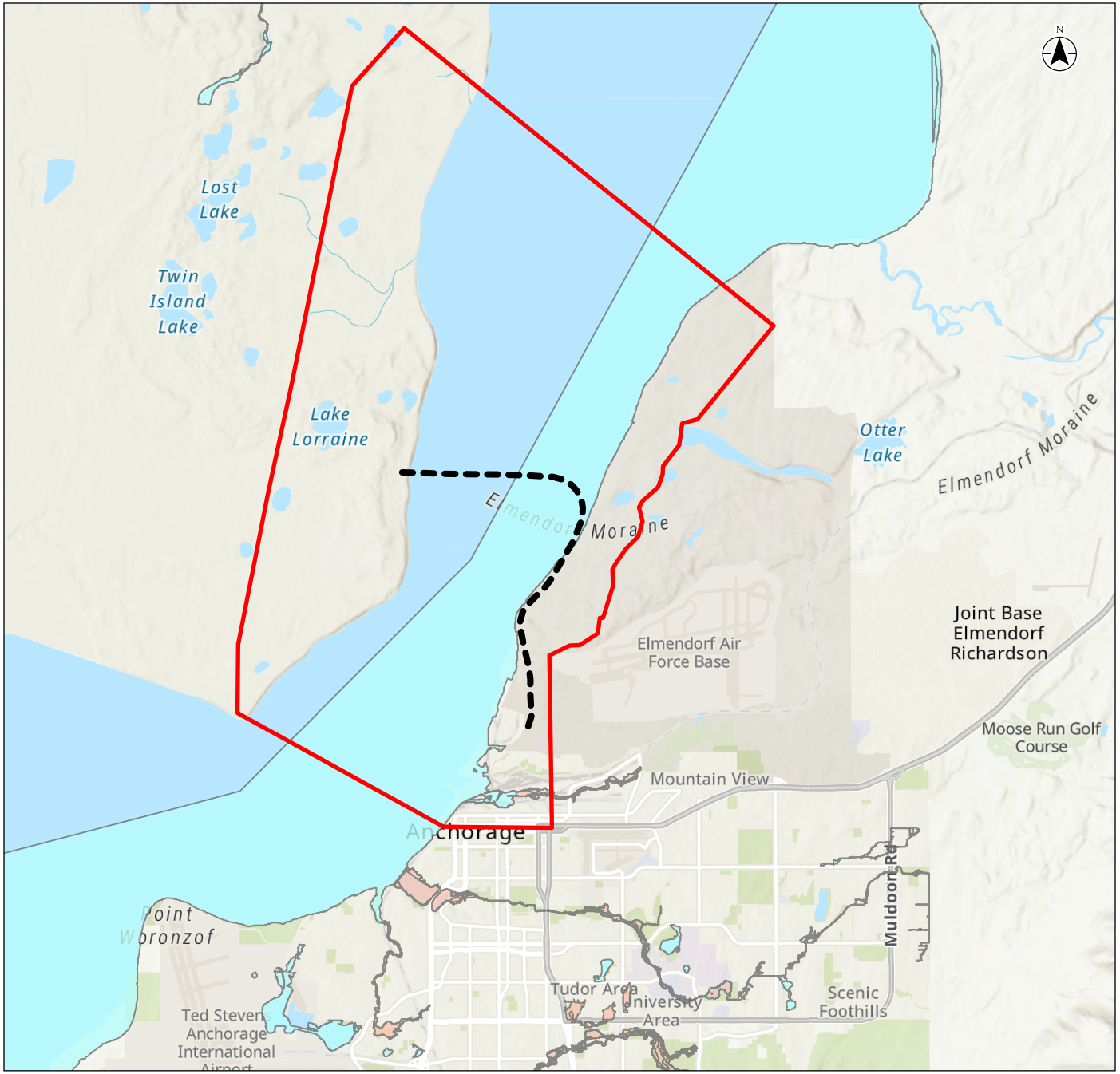
IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
9

Title
Protected Lands



Study Area

Preliminary Proposed Knik Crossing

Flood Zone

- A
- AE
- AH
- X

0 1 2 Miles

1:126,720 (At Original document size of 8.5x11)

Notes

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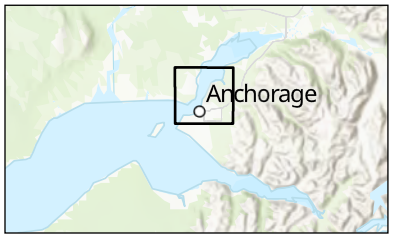

Project Location
Knik Arm

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IR by SK on 2025-04-05

Client/Project
State of Alaska, Department of Transportation & Public Facilities
Knik Arm Tunnel Feasibility Study

Figure No.
10

Title
FEMA Flood Mapping

Stantec

Stantec is a global leader in engineering, permitting, and environmental consulting. Our local subject matter experts drive us to think beyond what's previously been done on critical issues like infrastructure development and permitting strategy.