US Army Corps of Engineers®
Alaska District

Draft Integrated Disposition Study and Environmental Assessment

Apoon Mouth of The Yukon River Norton Sound, Alaska

June 2021

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Norton Sound, Alaska

Prepared By:

United States Army Corps of Engineers

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EXECUTIVE SUMMARY

The Apoon Mouth of the Yukon River Integrated Disposition Study and Environmental Assessment was prepared under authority granted by Section 216 of the Flood Control Act of 1970 (Public Law 91-611), which authorizes the Secretary of the Army to review operations of completed projects, when found advisable due to changed physical, economic, or environmental conditions. The study's focus is on whether federal interest exists to retain the project for its authorized purpose of commercial navigation and, if not, to determine whether the project should be deauthorized. Disposal will not be necessary, as there are no government-owned property or improvements associated with this project. This study was conducted using only federal funds and there is no non-federal sponsor. Deauthorization, if recommended, would require Congressional action.

The purpose of the Apoon Mouth of the Yukon River project was to facilitate economic activity and the transport of goods into interior Alaska. Dredging through shoals and easing sharp bends in Apoon Pass enabled steamboats carrying supplies transshipped from St. Michael to navigate the Yukon delta. The river channel was completed in 1914. Following the widening of a bend near the Pastolik River's mouth in 1915, no further work has been performed or planned for this project. Transport modernization mostly eliminated the need to navigate up the mouth of the Yukon to supply communities in the interior. Project abandonment was recommended in 1925 in House Document No. 467, 69th Congress, 1st Session.

This project was completed under the Federal Government's powers of navigational servitude, which emanates from the Commerce Clause of the Constitution of the United States, Article I, Section 8, Clause 3. The servitude recognizes the Federal Government's right to use the navigable waters of the United States without compensation for navigation projects. These are non-transferrable rights and are not considered an interest in real property.

After a review of real estate interests and the initial authorizations of this project, the Corps determined that there are no real estate interests that could be transferred from the Federal Government nor are there any constructed facilities associated with this project that could be transferred to another party. There can be no economical or commercial value associated with this project because the Federal Government did not acquire real property interest or construct any physical improvements.

Two alternatives were investigated in this report: The Action Alternative and the No-Action Alternative. The Action Alternative involves a request to Congress for legislation that deauthorizes the Apoon Mouth of the Yukon River project. The Action Alternative is also referred to as the Future With Project (FWP) condition in this document. The No-Action Alternative, also called the Future Without Project (FWOP) condition in this

document, will allow the project to continue as an unmaintained and inactive water resources project.

The Action Alternative was evaluated primarily through a qualitative analysis of regional demographic information, including population and employment/income data.

The FWP condition does have the potential for economic benefits that are not quantifiable as it would remove a potential encumbrance to any potential future development and to private or State investment into navigation systems. At this time there is no proposed development activity at the site, and none anticipated in the immediate future. Given the lack of economic opportunity in the region, any unnecessary impediments to future employment opportunities should be avoided.

Since the FWOP physical condition and FWP physical condition are identical, as the study location has reverted to its natural form and no construction project is being proposed, existing environmental conditions in the project area were documented. The integrated Environmental Assessment (EA) resulted in a Finding Of No Significant Impact (FONSI).

The Action Alternative was chosen as the Tentatively Selected Plan. Considering current economic and social conditions of the project vicinity, deauthorization of the Apoon Mouth of the Yukon River project will likely not result in any negative social or economic impacts. There are no opportunities for this project to serve the authorized purpose or another water resources development purpose due to the change in the region’s economic conditions. Additionally, current environmental conditions indicate no adverse environmental effects or unavoidable adverse impacts associated with either the No-Action Alternative or the TSP. There are no recommended best management practices, avoidance and minimization measures, or compensatory mitigation requirements that would be enacted by the implementation of the TSP.

LIST OF ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ADLWD	Alaska Department of Labor and Workforce Development
ANCSA	Alaska Native Claims Settlement Act
CAA	Clean Air Act
CFR	Code of Federal Regulations
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FWOP	Future Without Project
FWP	Future With Project
ft	Foot/Feet
NED	National Economic Development
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PL	Public Law
TSP	Tentatively Selected Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1 Purpose of Study

This disposition study evaluates the existing Apoon Mouth of the Yukon River navigation project (Apoon Mouth) located in Norton Sound, Alaska, to verify if a federal interest continues to exist for the authorized purpose of commercial navigation, based on an evaluation and comparison of the benefits, costs, and impacts of continued operation, maintenance, repair, replacement, and rehabilitation, or the lack thereof. Disposition Studies are conducted using only federal funds and there is no non-federal sponsor. If a federal interest no longer exists for commercial navigation, the study purpose will include determination to recommend deauthorization of the Apoon Mouth of the Yukon River project. Disposal will not be necessary, as there are no government-owned property or improvements associated with this project.

1.2 Study Authority and Guidance

Section 216 of the Flood Control Act of 1970 (Review of Completed Projects) (P.L. 91-611) authorizes the Secretary of the Army to review operations of completed projects, when found advisable due to changed physical, economic, or environmental conditions. Disposition studies determine whether a project operated and maintained by the United States Army Corps of Engineers (USACE) should be deauthorized and the associated real property and government-owned improvements disposed. Section 216 states:

> *"The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due [to] the significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest.".*

Although a review of the Apoon Mouth project identified no Government property, the study was also conducted originally to support the objectives of the June 10, 2010 Presidential Memorandum 'Disposing of Unneeded Federal Real Estate' and Section 6002 of the Water Resources Reform and Development Act of 2014, which requires the Secretary of the Army to identify property that is excess to project needs and to notify and work with the General Services Administration (GSA) for the disposal of all excess property.

This study is being conducted under planning guidance from a memorandum titled "Interim Guidance on the Conduct of Disposition Studies", dated 22 August 2016, as

well as the draft Real Estate Policy Guidance Letter No. 33 – Interim Guidance on Disposition Studies, dated 28 September 2016.

1.3 Study Location

The study area is in the Alaska Congressional District. The Representative for this District is Don Young (R). The United States Senators from Alaska are Lisa Murkowski (R) and Dan Sullivan (R).

Apoon Mouth is in the Norton Sound inlet of the Bering Sea on the western Coast of Alaska, south of the Seward Peninsula and approximately 450 mile northwest of Anchorage (*Figure 1* and *Figure 2*). The nearest town is Kotlik, located approximately 6.5 miles west of Apoon Mouth.

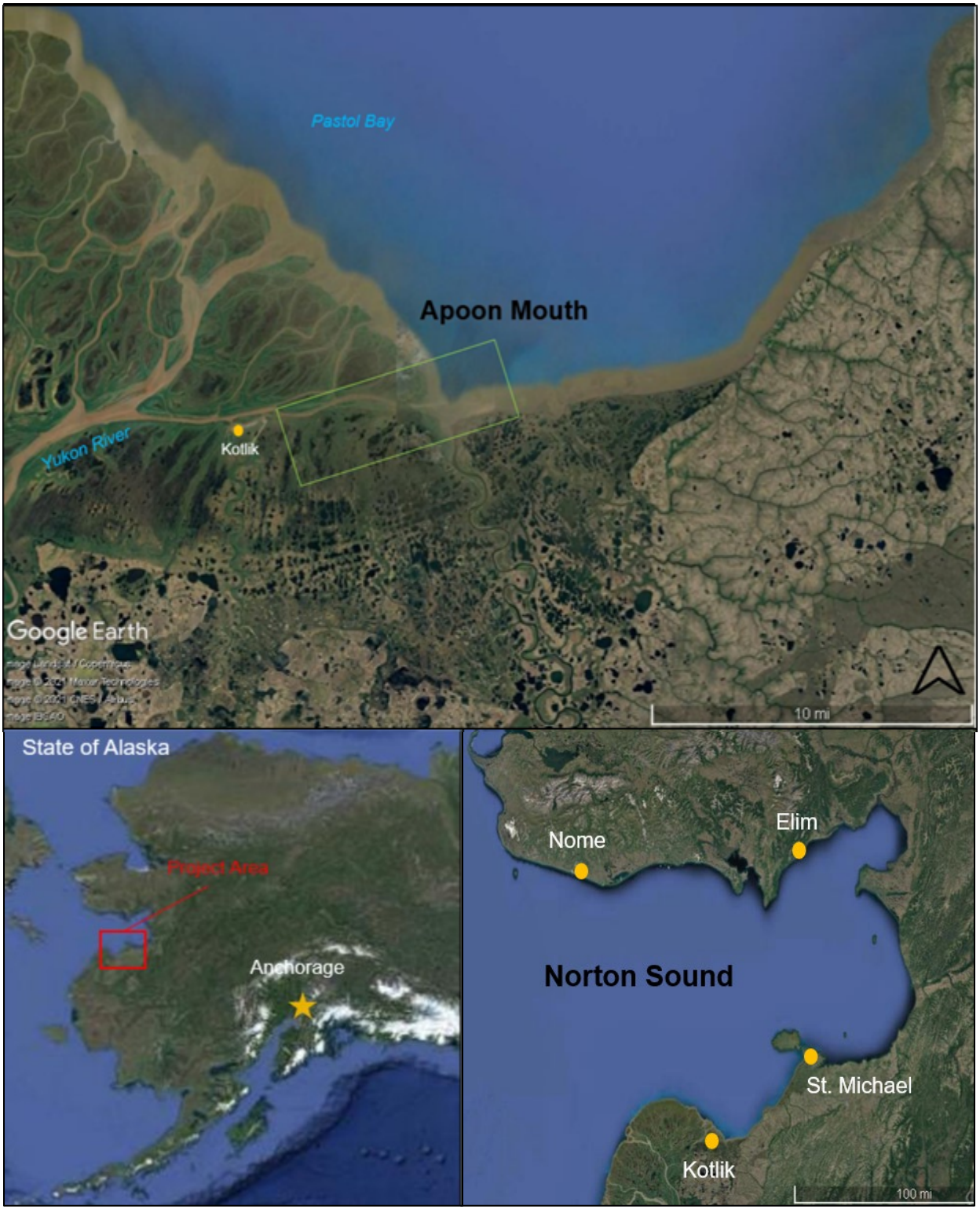

Figure 1: Project Location and Vicinity Map

Figure 2: Aerial photograph of Apoon Mouth (USACE 2014)

1.4 Project Authorization and History

Prior to the construction of the Alaska Railroad, all goods supplied to interior Alaska were transported by steamboats on the Yukon River. Due to the shallow nature of the Yukon River delta, the only known available point where supplies could be transferred from seagoing vessels to river boats was at the village of St. Michael (Siddall, 1959, p. 367), located about 75 nautical miles northeast of the Yukon River delta.

Fueled by the discovery of gold and the continued demand for fur in the 19th and early 20th centuries, economic activity on the Yukon thrived, drawing a large non-native population to the region and securing St. Michael as an important hub for the transport of supplies to the interior (Siddall, 1959, p. 367). To reach St. Michael, river steamers travelled through Apoon Pass, one of the mouths of the Yukon River located approximately 60 miles from St. Michael (Figure 3). A steamboat's journey from St. Michael to Apoon Pass was dangerous - often involving prolonged exposure to wind, tides, sea ice and storms- exacerbated by delays in reaching the protected headwaters of the Yukon due to the delta's shallow depths (Shaw, 2010).

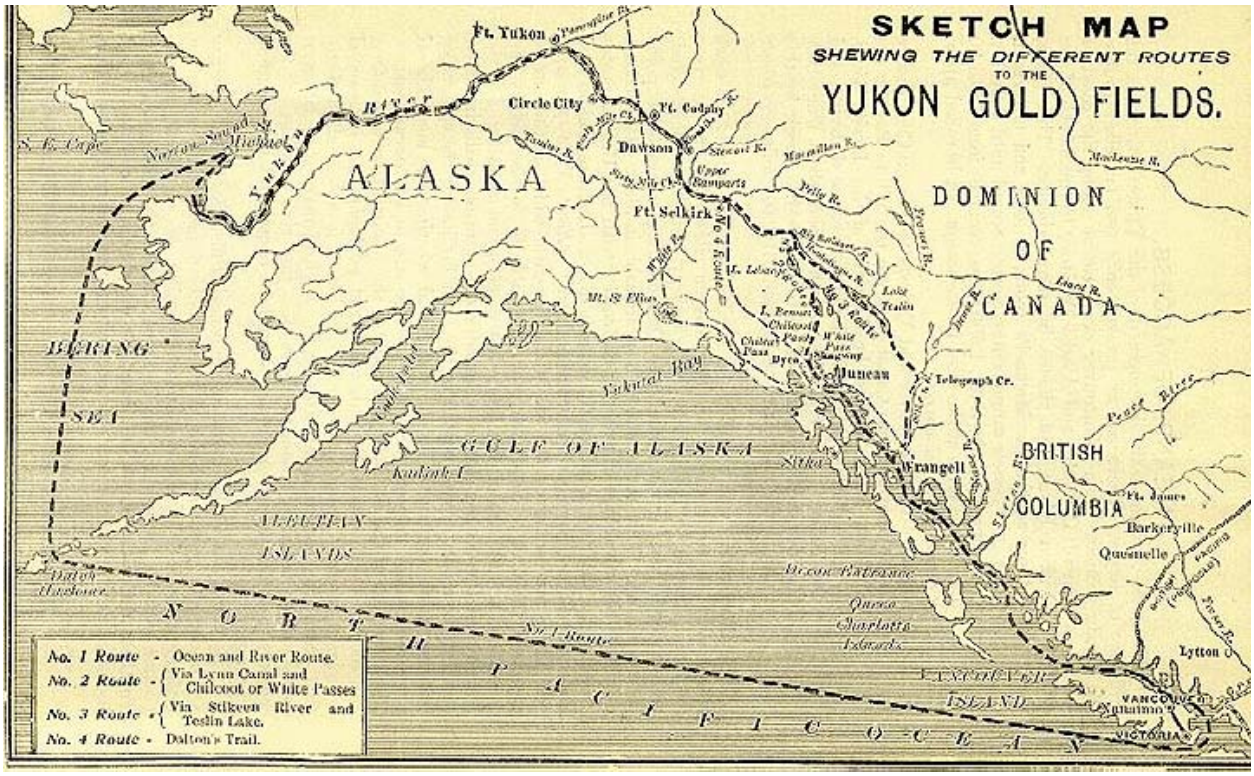

Figure 3: Yukon Gold Fields Route Map depicting the typical route around St. Michael into Apoon Pass (Canada 1897).

As St. Michael grew to accommodate increased activity, the USACE, Seattle District, responsible for engineering projects in Alaska from 1896-1905 and 1909-1921, began a project in 1912 to provide a navigation channel through the tidal flats that constricted passage through the Apoon Pass (Mighetto & Homstad, 1997). The purpose of the Apoon Mouth project was to facilitate economic activity and the transport of goods into interior Alaska by dredging through shoals and easing sharp bends in Apoon Pass so that steam boats carrying supplies transshipped from St. Michael could navigate the Yukon delta to supply communities along the Yukon River and its tributaries (Siddal, 1959, p 365).

The Apoon Mouth of the Yukon River project was authorized by the Rivers and Harbors Act, 25 July 1912 (House Doc. 556, 62nd Congress, 2nd Session) as adopted, and modified by the River and Harbor Act, 8 August 1917 (House Doc. 1932, 64th Congress, 1st Session). It provided for a channel dredged to minus 6 feet (ft) Mean Low Lower Water (MLLW) and 150 ft wide through the bars of Apoon Mouth with suitable widening at the bends, and for a channel 250 to 300 ft wide and not less than 2.5 ft deep through the bar in Pastol Bay (Apoon 1918). The river channel was completed in 1914 (Figure 4). Following the widening of a bend near the mouth of the Pastolik River in 1915 (Figure 5), no further work has been performed or planned for this project.

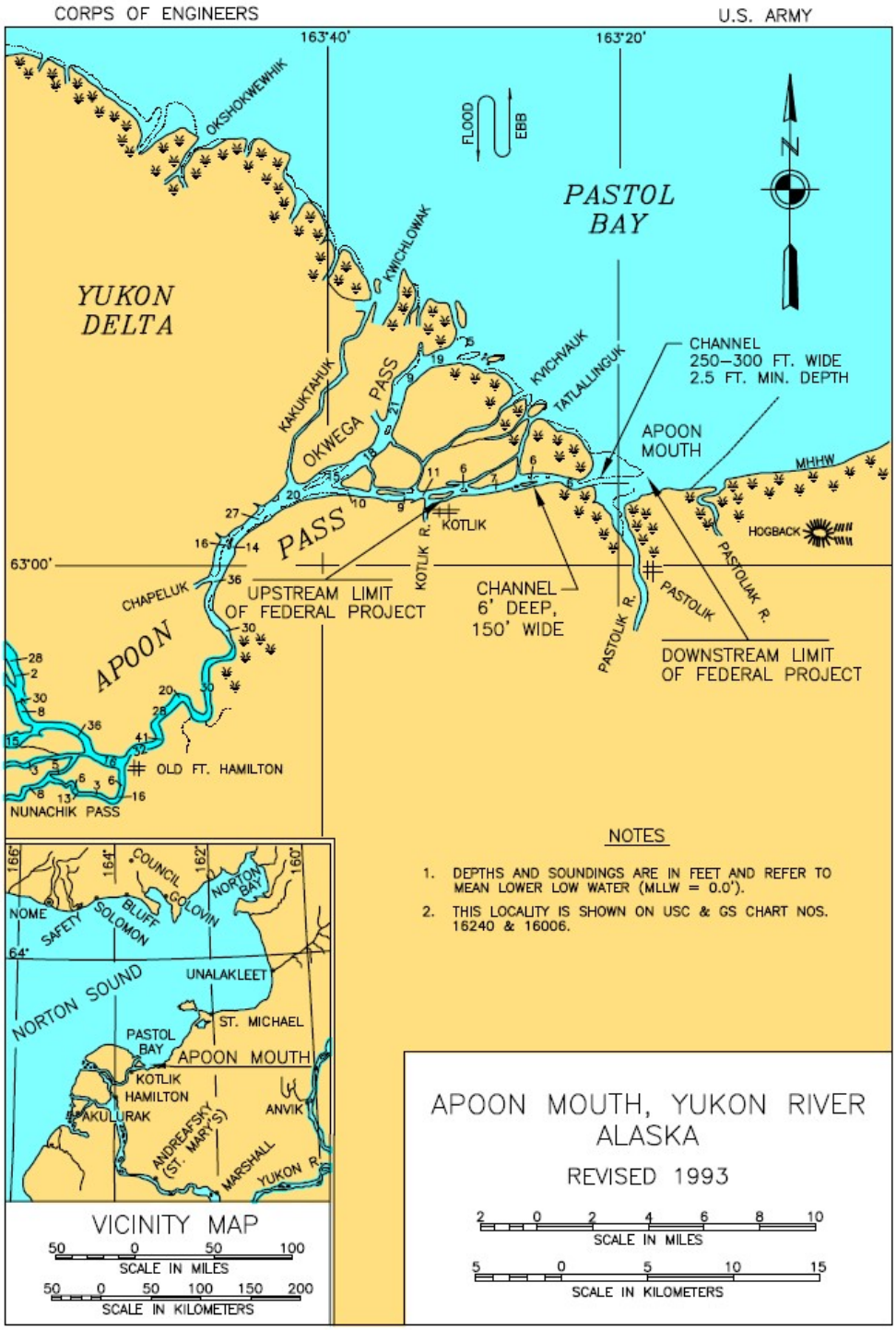

Figure 4: USACE Apoon Mouth of the Yukon River Project Improvements (USACE 2014)

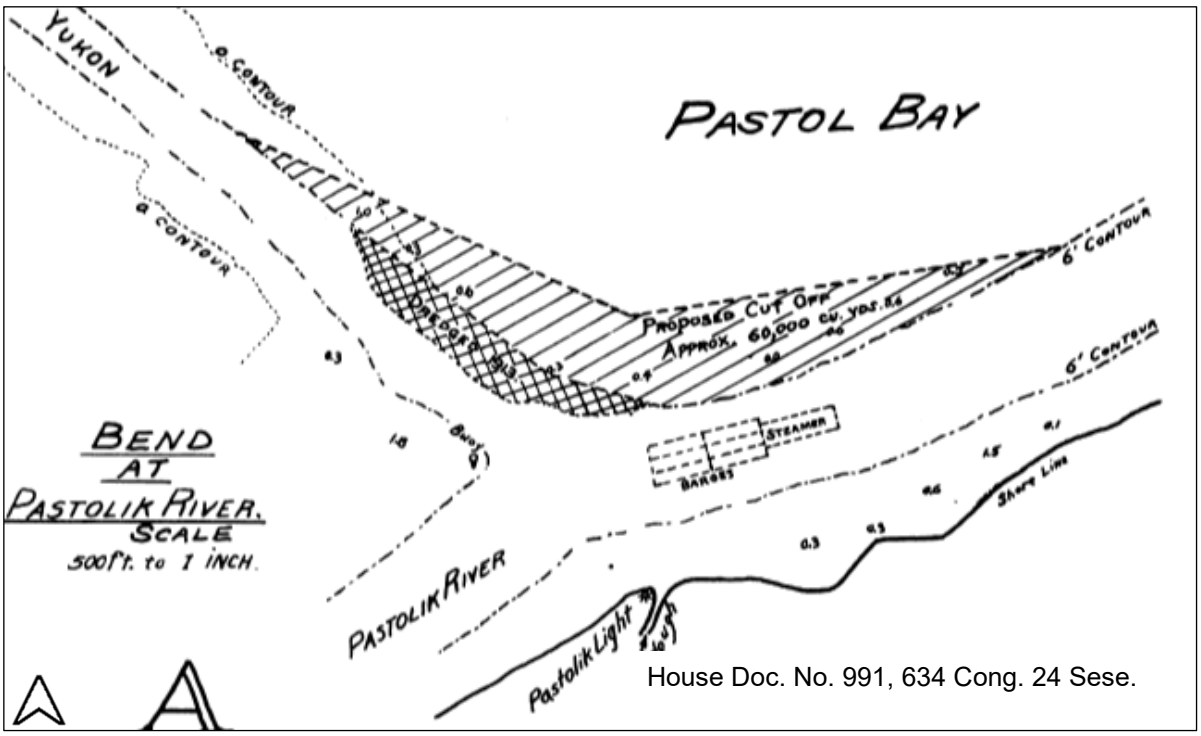

Figure 5: USACE Improvements at Pastol Bay (Apoon 1914)

The 1914 and 1915 improvements were completed under the Federal Government's powers of navigational servitude. Navigational servitude emanates from the Commerce Clause of the Constitution of the United States, Article I, Section 8, Clause 3. The servitude recognizes the Federal Government's right to use or deepen the navigable waters of the United States for navigation projects without compensation.

Neither USACE nor the Department of the Army formally acquired an interest in improvements at Apoon Mouth or Pastol Bay since the waterway was considered the Territory of Alaska and already under federal jurisdiction. The submerged lands have been under the control of the State of Alaska since Statehood, under the Submerged Lands Act (43 U.S.C. §1301 *et seq.*).

In 1921, the USACE reassigned the Alaska civil works projects to the newly created Juneau District (Mighetto & Homstad, 1997). The completion of the Alaska Railroad from Seward to Fairbanks in 1923 provided a safer and more efficient route for passengers and freight to interior Alaska. With further modernization in automotive and airplane transportation, supplies no longer needed to be shipped into the interior via the mouth of the Yukon (Shaw, 2010). Project abandonment was recommended in 1925 in House Document No. 467, 69th Congress, 1st Session.

The current use of Apoon Mouth is limited to seasonal seal and walrus hunting and occasional oil and gas surveys. Transportation needs in the area require deeper

channels and Apoon Mouth is no longer suitable for commercial navigation. Barges deliver bulk fuel and heavy cargo to Kotlik, the nearest community to Apoon Mouth, via deeper southern channels (DCRA 2021).

1.5 Study Lead Federal Agency

The USACE is the lead federal agency on this study.

2. PLAN FORMULATION AND EVALUATION

2.1 Problem Statement

The Apoon Mouth of the Yukon River Project is an unused and unmaintained federally authorized channel, recommended for abandonment by Congress in 1925, that currently presents a potential barrier for future Federal, State, or private improvements in the project area.

- Commercial navigation in the Apoon Mouth of the Yukon River channel is currently nonexistent.
- The channel is unmaintained and has reverted to its natural condition.
- There is no future work planned for this project.

2.2 Problems, Opportunities and Constraints

Opportunities in this study to address problems include the following:

- Deauthorization of the Apoon Mouth project will remove a barrier for future improvements to the project area.

There are no known legal constraints identified thus far. The following data constraint has been identified:

- Historical population data from the 1900s may not be accurate due to the mobile nature of native villages. Communities would often move in response to food availability and may not have been present at the time of census recording.

2.3 Planning Goals and Objectives

The goal of this disposition study is to determine whether the Apoon Mouth project, a water resources development project operated and maintained by the USACE, should be deauthorized. Since there are no associated real property or Government-owned improvements for disposal, the following planning objective was established for this study:

- Determine how the current economic, social, and environmental factors in the project vicinity may impact the future of Apoon Pass, and compare this to the project's authorized purpose

2.4 Public Scoping and Stakeholder Perspectives

There is no opportunity for a stakeholder to take ownership of this project, as it contains no government-owned improvements or real property. Potential project stakeholders identified and notified of this Disposition Study in July of 2020 via email are listed below:

- U.S. Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)
- Alaska Department of Fish and Game (ADFG)
- Alaska Department of Environmental Conservation (ADEC)
- Environmental Protection Agency
- Village of Kotlik
- Native Village of Saint Michael
- Native Village of Hamilton
- Stebbins Community Association
- Village of Bill Moore's Slough
- Kotlik Yupik Corporation
- Saint Michael Native Corporation
- Kongnikilnomuit Yuita Corporation
- Stebbins Native Corporation
- Calista Corporation
- Bering Straits Native Corporation
- City of Kotlik
- City of Saint Michael

3. AFFECTED ENVIRONMENT

3.1 Physical Environment

3.1.1 Climate

Climate information for the Apoon Mouth is inferred from data collected at the long-term monitoring station located at the St. Michael airport, approximately 50 air miles to the northeast. On average, the maritime subarctic summers are cool and short, while winters are long, frigid, and windy. The average high temperature typically occurs in July and is 61 degrees Fahrenheit (°F), the average low temperature occurs in January and is 1°F. Average annual precipitation rates were unavailable for the Apoon Mouth and varied wildly at proximal sites.

3.1.2 Geology/Topography

The underlying bedrock is fine-grained andesitic volcanic rock. The overlying depositional material south of the channel is comprised of old floodplain deposits, mostly silt and sandy silt; the overlying depositional material to the north of the channel is comprised of young floodplain deposits, mostly silt and sandy silt which includes gravel and boulders in and near Nulato Hill (Hoare and Condon 1971).

3.1.3 Bathymetry

While no recent bathymetric data exists for the Apoon Mouth nearshore approach, National Oceanic and Atmospheric Administration's (NOAA) Electronic Navigational Chart indicates that the general area of the authorized project is experiencing increased shoaling (Figure 6).

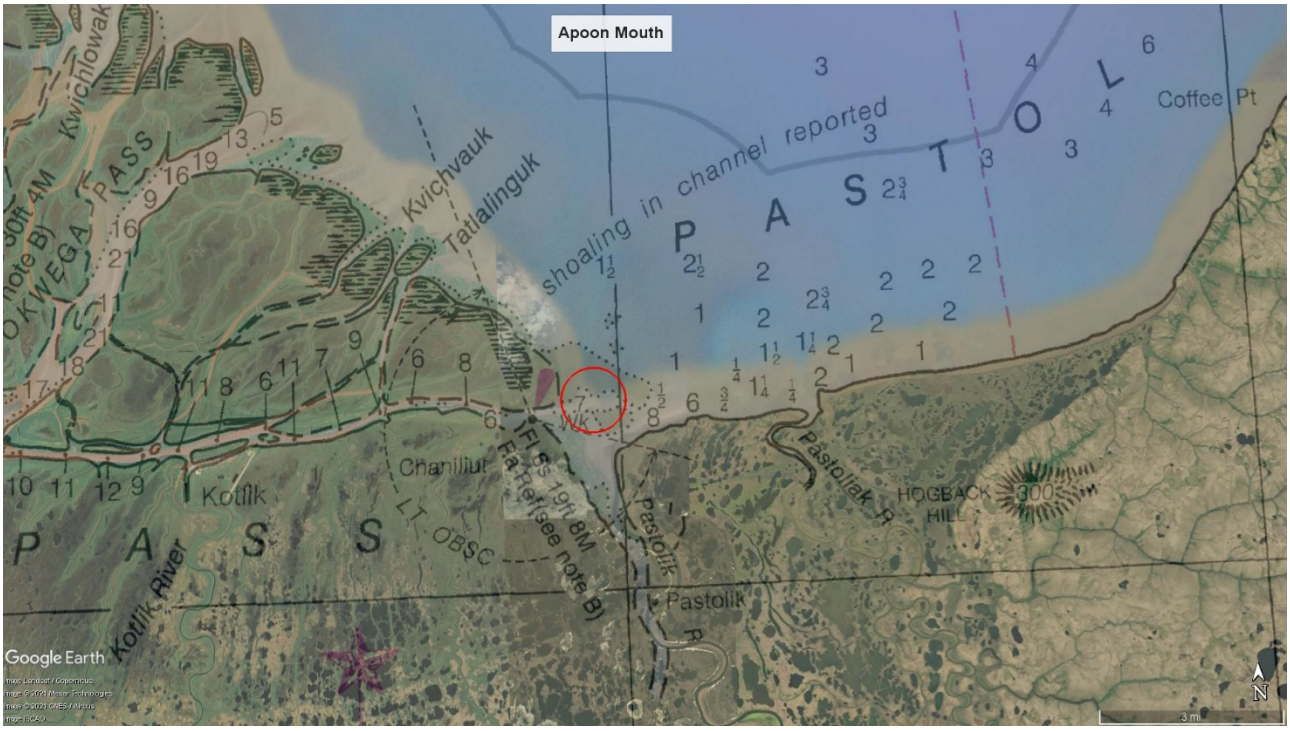

Figure 6. Apoon Channel to Pastol Bay, Soundings in Feet

3.1.4 Ice Conditions

Sea ice conditions at the Apoon Mouth are inferred from long-term sea ice monitoring records taken at St. Michael, approximately 50 air miles to the northeast (see Figure 7). Generally, sea ice begins forming in November and is fully formed by December lasting until April and May when it begins to break up. The ice-free season has been observed as lasting from July through October since 1985 (Figure 7), periods of sea ice presence are depicted in white while periods of open water are depicted in blue.

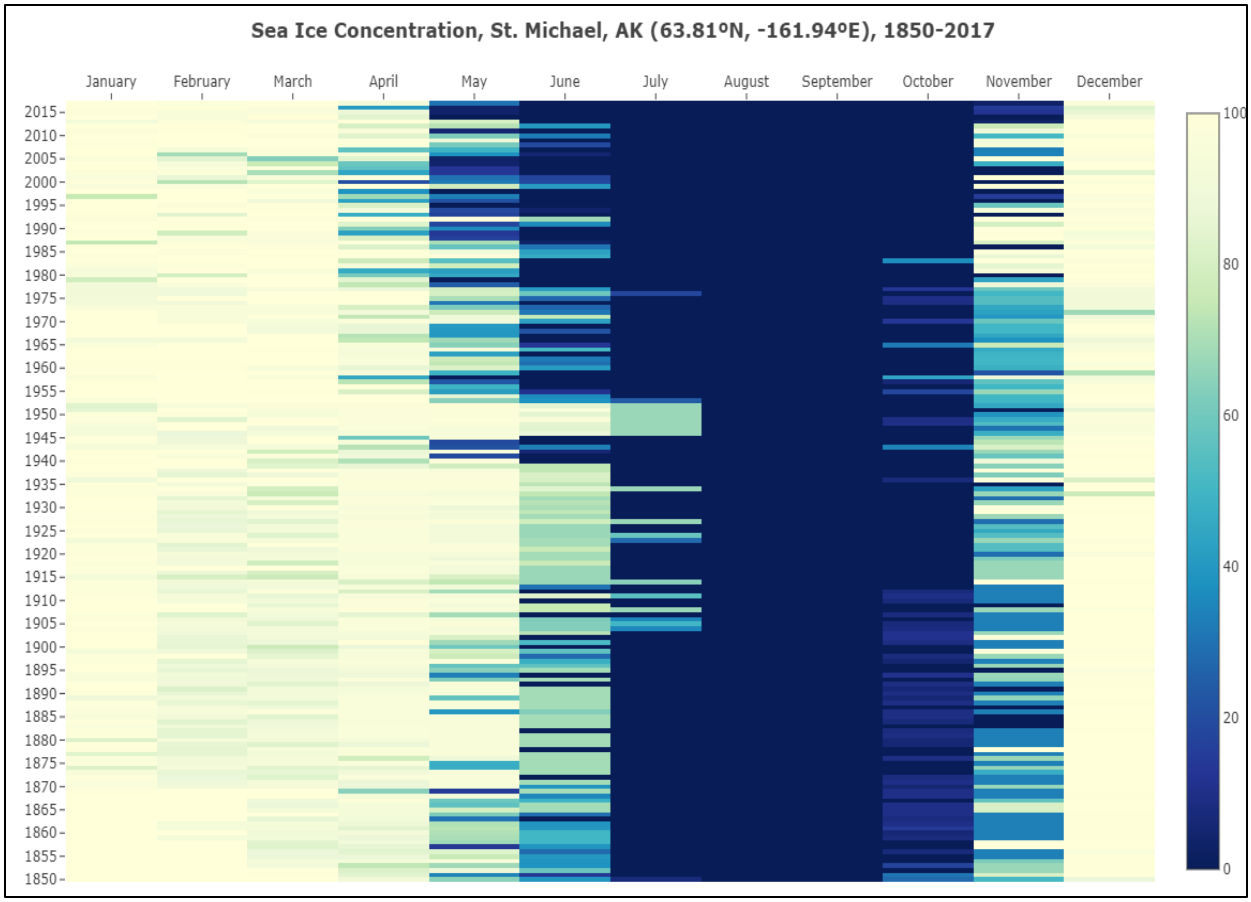

Figure 7. Long-term Sea Ice Records from St. Michael (UAF 2021)

3.1.5 Soils/Sediments

Soils in the coastal plain region of the Apoon Mouth are comprised of unconsolidated alluvial sands and gravels overlain by deltaic silts. Nearshore sediments are predominantly comprised of silt and sandy silt which are continually redistributed by nearshore currents and wave action (Hoare and Condon 1971).

3.1.6 Water Quality

Water quality in the greater Norton Sound is not listed as impaired (ADEC 2021). Ambient turbidity levels are influenced locally by precipitation events and to a greater degree by the outflow of the Yukon River.

3.1.7 Air Quality

The region is not in or near a non-attainment," "maintenance," or Class I area (as defined by the Clean Air Act of 1963 (CAA; PL 88-206)) for any criteria pollutants. Generally, air quality in the region of the Apoon Mouth is expected to be very good because it is in an area of rigorous atmospheric convection and relatively free of anthropogenic influences.

3.1.8 Noise

Ambient noise is likely dominated by natural phenomena: wind, sea ice, and at times, migratory birds and other animals. Other than those noises generated by infrequent subsistence or personal use vehicles (snowmobiles and small boat motors), there are no sources of anthropogenic noise in the Apoon Mouth.

3.1.9 Currents/Tides/Circulation/Surface Water Stream Flow

Offshore currents in Norton Sound are muted by its shallow depth profile (generally less than 70 ft deep) and low average tidal range. Tidal data at the Apoon Mouth is inferred from the nearest tidal data monitoring station at Unalakleet, approximately 100 miles to the northwest. Tides observed at the Unalakleet station, station 9468333, are semi-diurnal, with tidal extremes of 8.69 ft and -2.00 ft, respectively. However, the mean range is 2.12 ft. There are no surface water or streamflow data for the Apoon Channel itself.

3.1.10 Biological Resources

The ADFG considers the entirety of the Yukon-Kuskokwim Delta to be its own distinct ecoregion (ADFG 2006), including the Apoon Mouth (*Figure 8*). More than 20 species of waterfowl and 10 species of shorebird are documented as breeding in this region (ADFG 2006). The coastal regions of the Yukon-Kuskokwim Delta are important feeding areas for a variety of whale and seal species. Similarly, the region's network of streams and waterways support prodigious populations of anadromous and freshwater fishes.

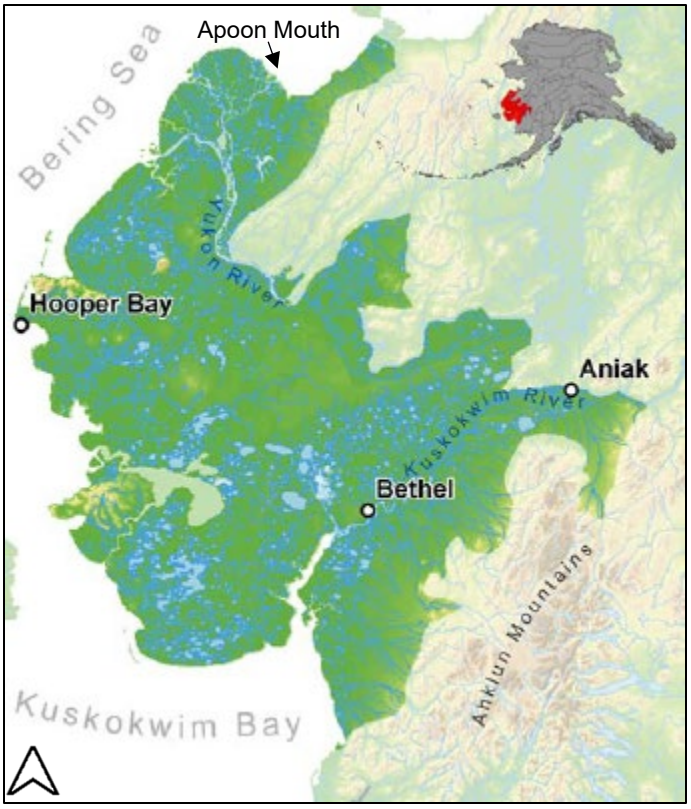

Figure 8. Yukon-Kuskokwim Ecoregion (ADFG 2006)

3.1.11 Terrestrial Habitat

Terrestrial habitat along the coastal plain adjacent to the Apoon Mouth is a mixture of flat marshy lowlands interspersed by meandering streams and small lakes that terminate in highly productive tidally inundated brackish marshes (USFWS 2021, ADFG 2006).

3.1.11.1 Vegetation

The vegetation community of the coastal plain primarily consists of sedge mats, moss, and low growing shrubs (FAA 2008, ADFG 2006).

3.1.12 Birds

Hundreds of thousands of shorebirds utilize the coastal littoral and wetland areas of the Yukon-Kuskokwim ecoregion during the spring and fall migration periods. Known breeding species of shorebird include bristle-thighed curlew, black-bellied plover, bar-tailed godwit, ruddy and black turnstone, red-necked phalarope, long-billed dowitcher, red knot, semipalmated and western sandpiper, and dunlin (ADFG 2006).

Similarly, the Yukon-Kuskokwim ecoregion is important for many species of waterfowl either for nesting or for foraging during migration periods. Species known to nest in the ecoregion include black brant, emperor geese, tundra swans, long-tailed ducks, scaup,

common eider, spectacled eider, northern pintail, green-winged teal, and northern shovelers (ADFG 2006). The coastal areas of the Yukon-Kuskokwim ecoregion are the unquestionably the most productive goose nesting habitat in North America (USFWS 2021).

Nineteen species of raptor have been recorded in the region, including golden eagles, bald eagles, and peregrine falcons (USFWS 2021).

The Yukon-Kuskokwim ecoregion is also replete with migratory songbirds, including chickadees, nuthatches, various sparrows, warblers, thrushes, woodpeckers, corvids, waxwings, and finches among others.

3.1.13 Terrestrial Mammals

Terrestrial mammals observed in the Yukon-Kuskokwim ecoregion include river otters, brown bears, moose, wolves, shrews, hares, marmots, squirrels, muskrats, voles, lemmings, red fox, weasels, bats, and polar bears (ADFG 2006, FAA 2008, USFWS 2021).

3.1.14 Freshwater Fish

Freshwater fishes of the Yukon-Kuskokwim ecoregion include northern pike, arctic grayling, whitefish, rainbow trout, blackfish, and stickleback (ADFG 2006). Freshwater streams and waterways in the Yukon-Kuskokwim ecoregion provide important habitat for many anadromous fish species, including all five Pacific salmonids.

3.1.15 Marine Habitat

3.1.15.1 Vegetation

There is insufficient information to accurately characterize marine or brackish submerged aquatic vegetation communities in the region of the Apoon Mouth. However, physical characteristics of the nearshore zone’s silty sediments and the annual sea ice scouring of the nearshore zone may preclude perennial vegetation establishment above the depth of disturbance.

3.1.16 Marine Fish

The marine waters of the Yukon-Kuskokwim ecoregion display a great diversity of marine fishes, including but not limited to saffron cod, pacific cod, Arctic cod, starry flounder, various poachers and sculpins, salmonids, pacific herring, halibut, pricklebacks, greenling, yellowfin sole, and Arctic flounder.

3.1.17 Marine Mammals

Norton Sound is replete with a great diversity of marine mammals. Ice seals (ringed, ribbon, spotted, and bearded seals), eared seals (northern fur seal and Steller sea lion)

baleen whales (bowhead, gray, humpback, and minke), toothed whales (orca, beluga, and harbor porpoise), Pacific walrus, and polar bear. Generally, marine mammals that are observed in Norton Sound exhibit a marked seasonal presence or absence that is correlated with the presence of the sea ice. Seals and beluga whales are typically frequently observed foraging several miles inland in some of Norton Sound's larger tributaries.

3.1.18 Marine Invertebrates and Associated Habitat

The nearshore, intertidal, and anadromous habitat elements of the Yukon-Kuskokwim ecoregion exhibit a great diversity of invertebrate taxa, including but not limited to mollusks, crustaceans, amphipods, decapods, and insects (Thorsteinson et al. 1989). Overall, the importance of the invertebrate community as a prey base is inferred by the ecoregion's overall species richness and diversity.

3.1.19 Federal and State Threatened and Endangered Species

The waters of Norton Sound encompass the ranges of several federally threatened or endangered marine mammals.

- Bearded seal (Threatened).
- Ringed seal (Threatened).
- Steller sea lion Western Distinct Population Segment (DPS) (Endangered).
- Fin Whale (Endangered).
- Humpback whale Western North Pacific DPS (Endangered), Mexico DPS (Threatened).
- North Pacific right whale (Endangered).

Federally threatened or endangered terrestrial species that that are known to be present in the Yukon-Kuskokwim ecoregion include:

- Spectacled eider (Threatened).
- Polar bear (Threatened).

3.1.20 Special Aquatic Sites

Almost the entirety of the Yukon-Kuskokwim ecoregion is encompassed by the Yukon Delta National Wildlife Refuge and is almost entirely composed of wetlands margined by intertidal mudflats. There is insufficient information available concerning the presence or absence of coral reefs, vegetated shallows, or freshwater riffle complexes in the greater Yukon-Kuskokwim ecoregion to inform the existing conditions of this document.

3.1.21 Essential Fish Habitat

Essential Fish Habitat (EFH) is defined by the Magnuson-Stevens Fishery Conservation and Management Act as those waters and substrates necessary to fish for spawning,

breeding, feeding, or growth to maturity The entirety of Norton Sound is designated as EFH under the Bering Sea/Aleutian Islands Groundfish Fisheries Management Plan and the Fishery Management Plan for the Salmon Fisheries in the Exclusive Economic Zone (EEZ) off Alaska. Additionally, there are no habitat areas of particular concern in the region of Norton Sound that encompass the Apoon Mouth. However, most tributaries to Norton Sound also serve as important habitat for various anadromous fish species and their specific life history stages.

3.2 Cultural Resources

The Apoon Mouth area is within the traditional lands of the Yupik Native Alaskans, who have inhabited the coastal and river systems throughout the Yukon-Kuskoskwim River areas. Somewhere between 1 to 2 miles from the Apoon Mouth is a now abandoned village site. Many names have been associated with the community, including “Chineleat,” “Chaniliut,” and “Nachliwagimiut.” The Alaska Historical Resources Survey database has this location as two separate sites, Nakhliwak (SMI-00001) and Chaniliut (SMI-00004), however it is likely one location recorded at two different dates. This is the only known site recorded near the Apoon Mouth, and a review of the National Oceanic and Atmospheric Administration (NOAA)’s online database, the Wrecks and Obstructions Database, has no known shipwrecks reported within Pastol Bay.

Under the current environmental conditions, it is likely that the Nakhliwak (SMI-00001) and the Chaniliut (SMI-00004) village sites may be damaged due to coastal erosion and/or natural river meandering of the Apoon Mouth. These natural events are currently unverified, however communities throughout the region have reported such issues with modern, archaeological, and historic sites. For this study, the two alternatives will have no impacts to the known sites in the area. The USACE archaeologists have determined under that National Historic Preservation Act of 1966, as amended, that the Action Alternative has the same effect as the No-Action Alternative. Because of this, both Alternatives result in a determination of No Potential to Cause Effects [CFR 36 § 800.3(a)(1)], and the USACE archaeologists have concluded that the area requires no further examination.

3.3 Population and Demographics

Apoon Mouth is located in the Kusilvak Census area (formerly known as Wade Hampton Census Area) in southwestern Alaska. The area is part of the Calista Native Corporation Alaska Native Claims Settlement Act (ANCSA) region.

The Kusilvak Census Area dates to 1913; boundaries prior to 1920 are inconsistent and population prior to that time cannot be determined with any degree of certainty. Historical population data from 1920 through 2000 is shown in Table 1. The estimated annual population of the Kusilvak Census Area from 2010 through 2020 is displayed in Table 2.

Table 1. Historical Population by Census of Kusilvak Census Area (formerly the Wade Hampton Census Area), 1920-2010 (ADLWD 2020)

Year	Population
1920	3,934
1930	2,206
1940	2,441
1950	2,443
1960	3,128
1970	3,917
1980	4,665
1990	5,791
2000	7,028

Table 2. Population of Kusilvak Census Area, 2010-2020 (ADLWD 2020)

Year	Population
2010	7,459
2011	7,675
2012	7,675
2013	7,952
2014	8,087
2015	8,204
2016	8,210
2017	8,230
2018	8,320
2019	8,199
2020	8,088

Population of the Kusilvak Census area is divided into multiple individual communities, shown in Figure 9. Populations within these communities range from a low of 117 individuals to a high near 1,200.

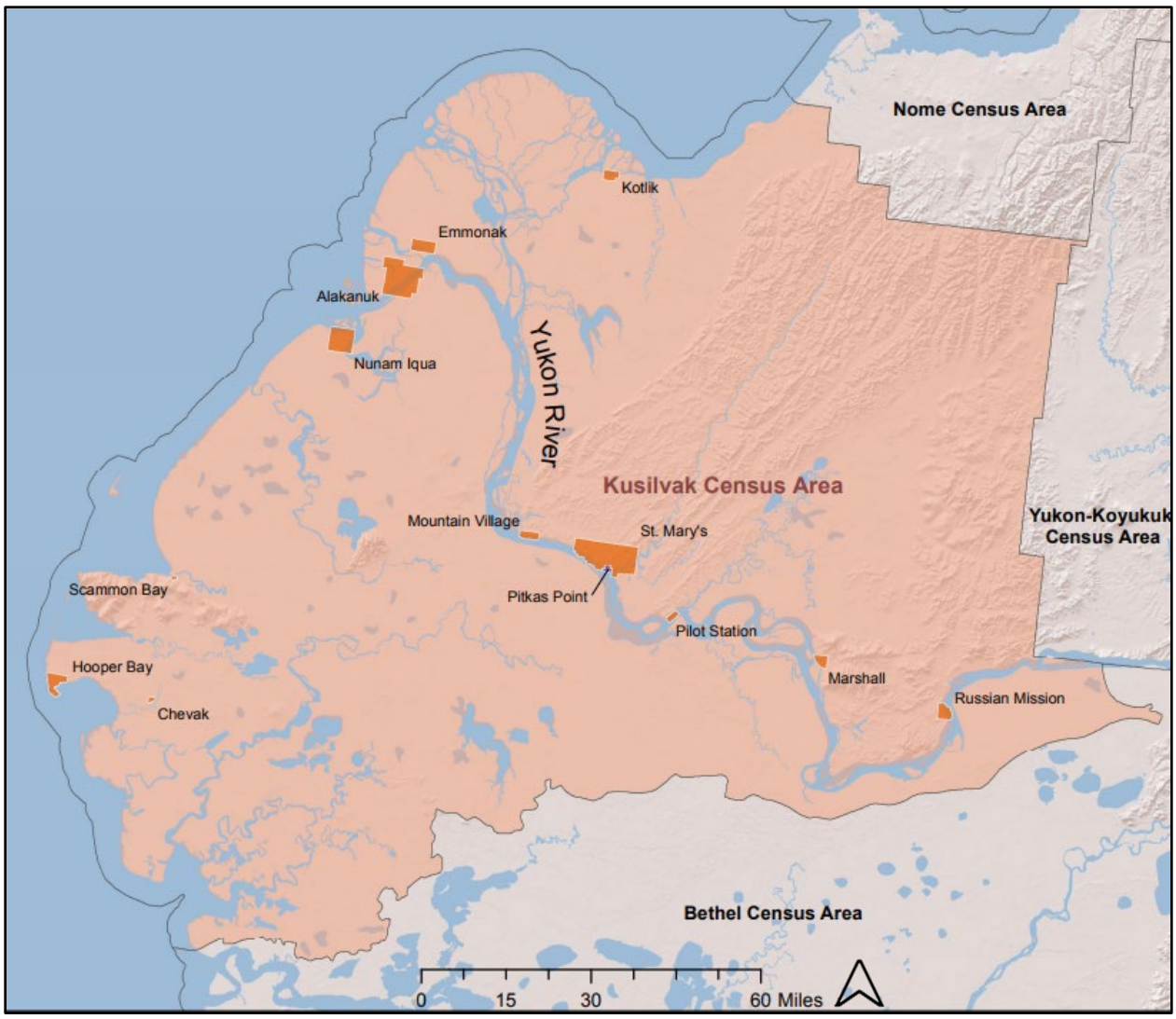

Figure 9. Kusilvak Census Area (ADLWD 2020)

Table 3. Populations of Communities within Kusilvak Census Area, 2020 estimate (ADLWD 2020)

Community	Population
Alakanuk	747
Chevak	994
Emmonak	858
Hooper Bay	1,193
Kotlik	633
Marshall	447
Mountain Village	753
Nunam Iqua	222

Pilot Station	604
Pitkas Point	117
Russian Mission	330
St. Mary's	569
Scammon Bay	595
Other	26

The population is 95 percent Alaska Native, with a median age of 21.9 years. The population is 52.9 percent male, and 47.1 percent female. There is no community located at Apoon Mouth and no road access. The nearest community is Kotlik.

3.3.1 Employment and Income

Given that there is no infrastructure or community located at Apoon Mouth, there are no employment and income statistics at the community level. The annual unemployment rate for the Kusilvak Census Area is consistently higher than the State of Alaska, with an unemployment rate in 2020 of 19.4 percent and 7.8 percent, respectively.

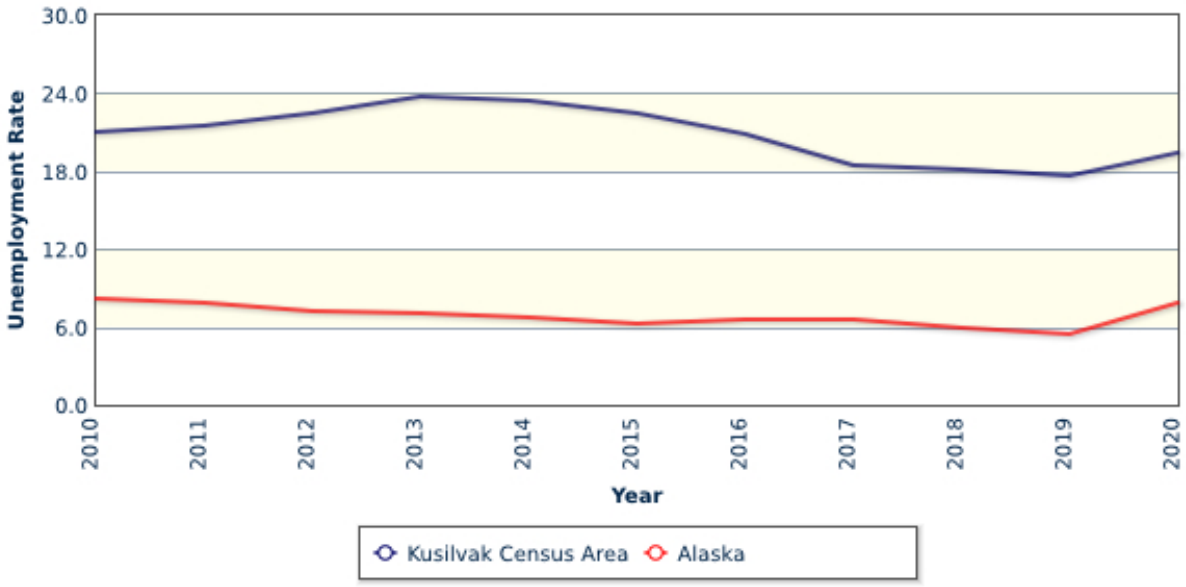

Figure 10. Annual Unemployment Rates for Kusilvak Census Area and Alaska, 2010-2020 (ADLWD 2020)

According to the American Community Survey 5-year estimates, the median household income (in 2019 dollars) was $36,754 for the 2015-2019 period, while per capita income was $13,762 with 26.8 percent persons in poverty. Those compare to the statewide figures of $77,640 median household income, $36,787 per capita income, and 10.1

percent persons in poverty. Employment and income statistics of the Kusilvak Census Area highlights the increased economic hardship often experienced by communities in remote regions of Alaska.

3.3.2 Existing Infrastructure and Facilities

The Rivers and Harbors Act, 25 July 1912 (House Doc. 556, 62nd Congress,2nd Session) as adopted, and modified by the River and Harbor Act, 8 August 1917 (House Doc. 1932, 64th Congress, 1st Session) provided for a channel dredged to - 6 ft MLLW and 150 ft wide through the bars of Apoon Mouth with suitable widening at the bends, and for a channel 250 to 300 ft wide and not less than 2-1/2 ft deep through the bar in Pastol Bay. Work on the original project was completed in 1913, with a bend near the mouth of the Pastolik River widened in 1915. This project was primarily used by boats supplying communities along the Yukon River and its tributaries. Most traffic was rerouted following completion of the Alaska Railroad in 1923, and the project was recommended for abandonment in House Document No. 467, 69th Congress, 1st Session in 1925.

According to the Report of the Secretary of the Army on Civil Works Activities for FY 2008, the Apoon Mouth project cost for construction is listed as $128,896, with total past maintenance of $2,981. Total costs to date are listed as $131,877. A document entitled “A history of the U.S. Army Engineer District in Alaska, 1867-1992” from the USACE library provides further historical information confirming that in 1923 when the Alaska Railroad completed its track from Seward to Fairbanks, the Corps terminated its dredging at the Apoon mouth due to a cessation of nearly all Yukon River traffic. No modern costs for the project have been incurred, and none are expected (Mighetto & Homstad 1997).

At the present time, modern transport supplies the areas upriver to the village of Marshall, 153 miles above Apoon Mouth. There is no existing infrastructure or facilities at Apoon Mouth. The project location is the mouth of the river which has reverted to its natural condition.

3.3.3 Cultural and Subsistence Activities

The harvest and processing of wild resources for food, raw materials, and other traditional uses have been a central part of the customs and traditions of many cultural groups in Alaska, including those in the Kusilvak Census Area. The Alaska legislature passed the state’s first subsistence statute in 1978 and established subsistence as the priority use of Alaska’s fish and wildlife. The law defined subsistence as “customary and traditional uses” of fish and wildlife and highlighted the unique importance of wild resources, and the continuing role of subsistence activities in sustaining the long-established ways of life in Alaska.

The communities in the Kusilvak Census Area substantially depend on wild foods for nutrition and other customary and traditional uses. Hunting, fishing, and plant gathering are critical activities to the people of the region to participate in the subsistence lifestyle that is typically required to survive in remote regions of Alaska. The cash/commercial sector is also critical to the subsistence lifestyle in that it generates income from jobs or other sources that are used to invest in equipment and fuel to harvest wild foods. Costs for these resources are high in remote Alaska communities. Individuals and family groups depend on this mixed, subsistence-cash/commercial economy in these rural communities. Distances and the level of effort required to reach subsistence sites can vary depending upon climate conditions, seasonality, and the resource being targeted, and resulting harvest levels are also variable. While subsistence foods are preferred on both a cultural and nutritional basis, community members rely on a combination of packaged and subsistence foods for their survival.

As shown in Table 4, per capita harvest of subsistence resources for the Kusilvak Census Area is significantly higher than statewide (333.9 pounds and 61.6 pounds per capita, respectively). When the per capita harvest of the Kusilvak Census Area and the harvest for urban Alaska (18.6 pounds per capita) are compared, the differences are even more pronounced.

Table 4. Estimated Harvests of Wild Resources for Home Use in Alaska by Census Area and Category, 2017 (ADFG 2019)

	Per capita harvest, pounds usable weight							
	Salmon	**Other fish**	**Shellfish**	**Land mammals**	**Marine mammals**	**Birds and eggs**	**Wild plants**	**All resources**
Kusilvak Census Area	125.1	68.8	0.2	75.5	39.5	14.9	9.9	333.9
State of Alaska	22.8	12.4	1.6	15.0	6.7	1.3	1.9	61.6

4. FORMULATION OF ALTERNATIVE PLANS

4.1 Future Without Project Condition/ No-Action Alternative

For this study the Future Without Project condition (FWOP) is considered the No-Action alternative. Per the Interim Guidance on the Conduct of Disposition Studies, the No-Action alternative is defined as including “the existing and future without-project operations, maintenance, repair, rehabilitation, and replacement of the existing project, including consideration of its current status and any changes in status over the period of analysis.”

Under the No-Action alternative, Apoon Mouth of the Yukon River remains a federally authorized project and any necessary operations or maintenance remains the responsibility of the Alaska District.

4.1.1 Physical Environment

Under the No-Action alternative, Apoon Mouth would remain in federal ownership with no change in the physical environment. There would be no effects to any aspects of the physical environment.

4.1.2 Economic/Political Conditions

As previously noted in Table 2, the 2020 estimated population of the Kusivak Census Area was 8,088 persons. This population is expected to be stable with continued moderate growth through the forecasted period of 2025-2045 (ADLWD 2020) (Table 5) and is not affected by the FWOP.

Table 5. Population Forecast of Kusilvak Census Area, 2025-2045 (ADLWD 2020)

Year	Projected Population
2025	8,676
2030	9,181
2035	9,721
2040	10,344
2045	11,105

4.2 Alternatives Description

The FWOP condition and Future With Project (FWP) physical condition are identical, as the study location has reverted to its natural form and no construction project is being proposed.

The alternatives evaluated included the No-Action and Action alternatives summarized below.

- No-Action Alternative (FWOP): Allow project to continue as an unmaintained water resources project.
- Action Alternative (FWP): Request to Congress for legislation that deauthorizes the Apoon Mouth of the Yukon River project.

4.3 Evaluation of Benefits and Costs

4.3.1 With-Project Benefits

The FWOP condition and FWP physical condition are identical, as the study location has reverted to its natural form and no construction project is being proposed. However, the FWP condition (disposition) does have the potential for economic benefits that are not quantifiable as the FWP condition would remove a potential encumbrance to future development. At this time there is no proposed activity at the site, and none anticipated in the immediate future. However, the arctic and sub-arctic regions are undergoing change in response to climate shifts. While future development at this site is unlikely, if a non-federal entity sought development in the area, they would be required to seek authorization from the Corps for improvements at the Apoon Mouth and Pastol Bay that could affect the existing channel. Therefore, the FWP condition proposes to remove a potential federal impediment to private or State investment into navigation systems. Given the lack of economic opportunity in the region, any unnecessary impediments to future employment opportunities should be avoided.

4.3.2 Net Benefits of Alternative Plans

Given that no construction project is being proposed by the FWP scenario, and therefore no associated costs, any FWP benefits are also the Net Benefits. See Section 4.3.1 above for a discussion of potential FWP benefits.

4.4 Safety Evaluation for Alternatives

There are no safety concerns or impacts for the No-Action or Action alternatives, as there is no physical action associated with either alternative and the FWOP and FWP physical conditions are identical.

4.5 Summary of Accounts and Comparison of Alternatives

The No-Action and Action alternatives are physically identical. There are no quantifiable National Economic Development (NED) benefits and no changes to environmental quality as the project location has returned to its natural condition and no changes are being proposed. As previously noted, there is the potential for non-quantifiable benefits associated with removing barriers to future permitting at the site by disposition of the existing federal project (the FWP condition.).

Table 6. Four Accounts Evaluation Summary

Alternative	NED	EQ	RED	OSE

No-Action	$0	Neutral	Neutral	Neutral
FWP	$0	Neutral	Neutral	Neutral

4.6 Key Considerations in Alternatives Evaluation

- There is no existing infrastructure or facilities at Apoon. The location is the mouth of the river which has reverted to its natural condition.
- For this project, channels were dredged under the Federal Government's powers of navigational servitude. There were no other improvements associated with the project. The Federal Government's powers of navigational servitude do not result in any interest in real property.
- There are no opportunities for this project to serve the authorized purpose or another water resources development purpose due to the change in the region's transportation infrastructure and economy.

5. TENTATIVELY SELECTED PLAN

5.1 Description of Tentatively Selected Plan

The Action Alternative is the Tentatively Selected Plan (TSP). Considering the economic, environmental, and social conditions of the project vicinity, deauthorization of the Apoon Mouth project will likely not result in any negative impacts.

5.2 Economic Effects of Tentatively Selected Plan

For this study the FWOP and FWP physical condition are identical, as the study location has reverted to its natural form and no construction is proposed as part of the FWP scenario. Given that the FWP and FWOP physical conditions are identical, a discussion of economic effects of the TSP is the same as the discussion of FWP benefits. Under the TSP, there would also be no effects to the physical environment at the Apoon Mouth. See Section 5.3.1 for a discussion of potential TSP benefits.

5.3 Real Estate Considerations

As discussed in Section 4.0, the original project was completed under the Federal Government's powers of navigational servitude; these are non-transferrable rights that do not extend beyond the high water mark and are not considered an interest in real property. Additionally, there are no real estate interests or constructed facilities associated with this project that could be transferred to another party. The TSP removes

a potential barrier for future improvements to the channel and will have no effect on the management status of the lands surrounding the project area.

5.4 Risk and Uncertainty

The only source of risk identified for this study is the future use of Apoon Channel. While the future use of the Apoon Channel is uncertain, it is unlikely that the channel will be used for its authorized purpose due to the channel returning to natural conditions and modernization of transportation utilized to deliver supplies to the interior via the mouth of the Yukon. Current uses of Apoon Channel are limited to seasonal seal and walrus hunting as well as oil and gas surveys.

6. ENVIRONMENTAL EFFECTS OF TENTATIVELY SELECTED PLAN

The environmental effects of the No-Action Alternative exactly mirror those of implementing the TSP, the deauthorization of the original project. In the 100+ years since its channel maintenance actions were concluded, no further maintenance actions have occurred at the Apoon Mouth. As such, environmental conditions at the site likely resemble their pre-project conditions. USACE has determined that implementation of the tentatively selected plan would have no effect upon federally threatened or endangered species or their respective designated critical habitats. Effects to specific resource categories as a result of the implementation of either the TSP or the No-Action Alternative are presented in Table 7.

Table 7. Effects of the TSP compared with the No-Action alternative

Resource Category	No-Action Alternative	TSP (Disposition)
Climate	No Effect	No Effect
Geology	No Effect	No Effect
Bathymetry	No Effect	No Effect
Ice Conditions	No Effect	No Effect
Soils/Sediments	No Effect	No Effect
Water Quality	No Effect	No Effect
Air Quality	No Effect	No Effect
Noise	No Effect	No Effect
Currents/Tides	No Effect	No Effect
Terrestrial Habitat	No Effect	No Effect
Vegetation	No Effect	No Effect
Birds	No Effect	No Effect
Terrestrial Mammals	No Effect	No Effect
Freshwater Fish	No Effect	No Effect
Marine Habitat	No Effect	No Effect
Marine Vegetation	No Effect	No Effect
Marine Fish	No Effect	No Effect
Marine Mammals	No Effect	No Effect
Marine Invertebrates	No Effect	No Effect
Threatened and Endangered Species	No Effect	No Effect
Special Aquatic Sites	No Effect	No Effect
Essential Fish Habitat	No Effect	No Effect
Cultural Resources	No Effect	No Effect

6.1 Environmental Justice and protection of Children

There are no environmental justice or protection of children concerns associated with the implementation of the TSP.

6.2 Floodplain Management

Executive Order (EO) 11988, Floodplain Management requires federal agencies to evaluate and minimize to the extent possible, impacts and modifications to the floodplain. The TSP does not conflict with applicable state and local standards concerning floodplain protection, nor would it have any impacts to the 100-year floodplain.

6.3 Unavoidable Adverse Impacts

There are no unavoidable adverse impacts associated with the implementation of the TSP.

6.4 Summary of Mitigation Measures

There are no mitigation measures associated with the implementation of the TSP.

7. REQUIREMENTS FOR IMPLEMENTATION

7.1 Deauthorization

Federal interest in retaining this project as authorized no longer exists because the project is not maintained and is no longer used for commercial navigation. Congressional deauthorization of commercial navigation is the necessary first and only action for implementation.

7.2 Recommendations

In view of the conclusions set forth, and after considering the expected social, economic and environmental impacts, it is recommended that Apoon Mouth of the Yukon River be deauthorized for commercial navigation.

8. REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2021. 2018 Alaska DEC Impaired Waters. https://www.arcgis.com/home/item.html?id=5987f5c7a33846b19b9097dddcf8332a Accessed April 2021.

Alaska Department of Fish and Game (ADFG). 2019. *Estimated Harvests of Wild Resources for Home Use in Alaska by Census Area and Category*. Division of Subsistence. https://www.adfg.alaska.gov/static-sub/CSIS/PDFs/Estimated%20Harvests%20by%20Region%20and%20Census%20Area.pdf**.**

Alaska Department of Fish and Game (ADFG). 2006. Our Wealth Maintained: A Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources. A Comprehensive Wildlife Conservation Strategy Emphasizing Alaska's Nongame Species.

Alaska Department of Labor and Workforce Development (ADLWD). 2020. *Alaska Local and Regional Information – Kusilvak Census Area*. Research and Analysis Section. http://live.laborstats.alaska.gov/alari/details.cfm?yr=2020.

Alaska Division of Community and Regional Affairs (DCRA). 2021. DCRA Information Portal, Kotlik, Alaska Alaska RiskMAP Program https://www.arcgis.com/apps/MapSeries/index.html?appid=9b0d3ec442b844b3b278287bd98049c4.

Apoon, Mouth of the Yukon River, Alaska (Apoon). 1918. H.R Doc No 556 62nd Congress, 2nd Session. Letter from the Secretary of War.

Apoon Mouth of the Yukon River, Alaska (Apoon). 1914. H.R. Doc No 991 63rd Cong, 2nd Session. Letter from the Secretary of War.

Canada, High Commissioner (Canada). 1897. From The Yukon District of Canada. Printed by McCorquodale and Co., (p. 12). London. (University of Washington Library)

Federal Aviation Administration (FAA). 2008. Environmental Assessment and Finding Of No Significant Impact, St. Michael, Alaska DOT&PF Project No. 62652.

Hoare, J. M. and Condon, W.H. 1971. Geologic Map of the St. Michael Quadrangle, Alaska. Department of the Interior, United States Geological Survey.

Mighetto, L & Homstad, C. 1997. *Engineering in the far north: A history of the U.S. Army Engineer District in Alaska, 1867-1992*. U.S. Army Corps of Engineers.

National Oceanic and Atmospheric Administration (NOAA). 2021. Alaska Shore Zone Project. https://alaskafisheries.noaa.gov/mapping/sz_js/index.html?tab=sz&layout=h2

Shaw, R. D. 2010. The Two Forts at St. Michael, Alaska: Looking Back. Brochure prepared for the Native Village of Saint Michael.

Siddall, W. R. 1959. The Yukon Waterway in the Development of Interior Alaska. *Pacific Historical Review* (Vol. 28, No. 4, pp. 361-376). University of California Press.

Thorsteinson, L.K., Becker, P. R., and Hale, D. A. 1989. The Yukon Delta: A Synthesis of Information. Special Report prepared by the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

University of Alaska Fairbanks (UAF). 2021. *Historical Sea Ice Atlas for Alaska and the Arctic: 1850 to the present*. http://www.snap.uaf.edu/tools/sea-ice-atlas

U.S. Army Corps of Engineers (USACE). 2014. Condition of improvements: Apoon Mouth of the Yukon River.

U.S. Fish and Wildlife Service. (USFWS). 2021. Yukon Delta National Wildlife Refuge information page https://www.fws.gov/refuge/Yukon_Delta/about.html.