EVALUATION UNDER

SECTION 404(b)(1) CLEAN WATER ACT 40 CFR PART 230

Saint George Navigation Improvements,

Saint George, Alaska

1.0 PROJECT DESCRIPTION AND BACKGROUND

1.1 Location

Saint George Island is the southernmost and second largest of a group of five historically volcanic islands that compose the Pribilof Archipelago, located approximately 760 miles west of Anchorage, Alaska and 220 miles north by northwest of Unalaska Island in the southern Bering Sea. The nearest inhabitation to Saint George is the city of Saint Paul on Saint Paul Island, approximately 45 miles northwest of Saint George. Saint George's position at the western margin of Alaska's continental shelf puts it near the much deeper waters of the Bering Sea's abyssal plain. The abrupt change in seafloor elevation occurring at the continental slope facilitates natural upwelling processes; as a result, surface waters in the region are some of the most productive on the planet.

The city of Saint George is in the Aleutians West Census Area and had a population of 102 at the time of the 2010 census. The city is located in a small bight on the north shore of Saint George Island. The surrounding topography is relatively steep, rising to 200' within a half-mile of the coast. A mile inland the elevation increases dramatically, going from 400' to 600' above sea level in just about 600 horizontal feet. Saint George Island is treeless, like most of the Aleutian and Pribilof Islands. The vegetation is dominated by plants in the heath family, which are well adapted for the poor acidic soils found in the Pribilof and Aleutian Islands. The Bering Sea controls St. George's climate with its cold waters. The maritime location results in cool weather year-round, and a narrow range of mean temperatures varying from 24 to 52. Average precipitation is 23 inches, with 57 inches of snowfall. Cloudy, foggy weather is common during summer months.

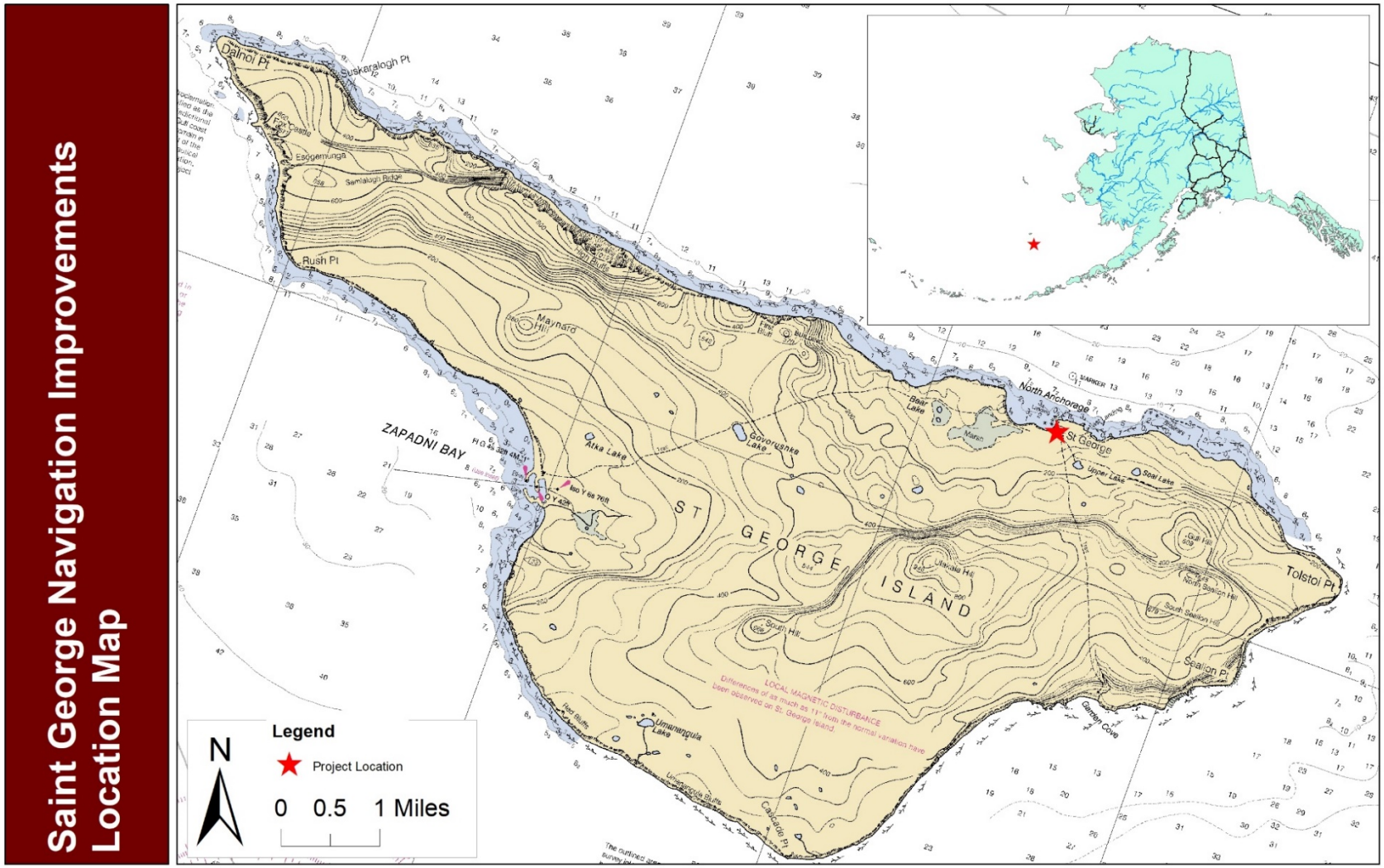

Figure 1. Map depicting the location of the Saint George Navigation Improvement Project in Relation to Saint George Island and the State of Alaska (inset)

1.2 Project Description

The Alaska District proposes to construct a port facility on the north side of Saint George Island. This project would consist of a 450-foot wide by 550-foot-long mooring basin dredged to -20 feet MLLW protected by a 1,731-foot-long north breakwater and a 250-foot-long stub breakwater at the west edge of the basin. Primary armor stone on the north breakwater has a median weight of 10-tons. The basin connects to the Bering Sea with a 250-foot wide navigation channel dredged to -25 feet MLLW. Inner harbor facilities include 2.6 acres of uplands area filled to +10 feet MLLW with a 300-foot-long pile supported dock and a concrete boat launch ramp to -5 feet MLLW for full tide launching access. (Figure 2)

The north breakwater would require approximately 85,000 CY of armor stone, 54,000 CY of B rock, and 80,000 CY of core rock. The stub breakwater would require about 9,000 CY of armor stone, 6,500 CY of B rock, and 5,000 CY of core rock. The basin and navigation channel would require the removal of approximately 430,000 CY of material to reach the proposed maximum pay depths for the project. Uplands construction requires about 45,000 CY of fill. The sediments removed from the mooring basin and navigation channel would be placed in waters of the United States north of the project area to construct a habitat creation reef.

The material source for breakwater construction would be offsite from an established quarry such as Cape Nome or Granite Cove on Kodiak Island. Construction of the North Breakwater is most likely to be performed with land-based equipment. The breakwater core would be constructed to above the tide range to allow the placing equipment to operate from the breakwater core and place B and A rock layers to protect the work in progress. Core rock would likely be transported and staged on the breakwater with off-road dump trucks, then shaped to the design prism by an excavator. Near the west end of the breakwater, an excavator on a barge may be required to form the toe and benches of the breakwater where the seabed is deeper. Uplands would be constructed concurrently with the breakwater to build a staging area for breakwater material.

Dredging could occur concurrently with stone production. Initial observations of the site indicate that blasting is likely to be required for dredging. Dredging may require special scheduling considerations due to the proximity of the fur seal rookery, and the presence of marine mammals near the blasting zone during dredging operations could incur delays. Dredging would produce lower levels of impacts, considering appropriate mitigation measures, than blasting and could likely occur throughout the year. Some dredging before constructing the breakwaters would provide access for construction barges to the breakwater sites. The total estimated duration of construction is three to five years.

The dredged material would be transported about one mile offshore and discharged in waters of the United States to construct a rocky reef intended to enhance blue king crab (BKC) habitat in the area.

Figure 2. Saint George Navigation Improvements Recommended Plan Concept Drawing

1.3 Purpose and Need

The purpose of the project is to increase the safe accessibility of marine navigation to the community of Saint George, Alaska. The need for the project is to reduce hazards to provide safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet, all of which are critical to the long term viability of the mixed subsistence-cash economy of Saint George.

1.4 Authority

This General Investigations Study is conducted under authority granted by Section 4010 of the Water Resources Development Act (WRDA) of 2007, Public Law 110-114, which authorizes a study to determine the feasibility of providing navigation improvements at St. George, Alaska.

Additionally, Section 1322 of the WRDA of 2016, (b)(2) *Expedited Completion of Feasibility Studies*, authorizes the Secretary to move directly into preconstruction engineering and design (PED) if the project is justified. Implementation guidance was published on February 12, 2018.

> *EXPEDITED COMPLETION OF FEASIBILITY STUDIES. The Secretary shall give priority funding and expedite completion of the reports for the following projects, and, if the Secretary determines that the project is justified in the completed report, proceed directly to project preconstruction, engineering, and design in accordance with section 910 Of the Water Resources Development Act of 1986 (33 U.S.C. 2287):*
>
> *(A) The project for navigation, St. George Harbor, Alaska*

The project is utilizing the authority of Section 2006 of WRDA, 2007, Remote and Subsistence Harbors, as modified by Section 2104 of the Water Resources Reform and Development Act of 2014 (WRRDA 2014) and further amended by Section 1105 of WRDA 2016. The authority states that in conducting a study of harbor and navigation improvements, the Secretary may recommend a project without demonstrating that the improvements are justified solely by National Economic Development (NED) benefits if the Secretary determines that the improvements meet specific criteria detailed in the authority. Following are the criteria outlined in the authority along with a description of how this study satisfies them:

1. The community to be served by the improvements is at least 70 miles from the nearest surface accessible commercial port and has no direct rail or highway link to another community served by a surface accessible port or harbor; or the improvements would be located in the State of Hawaii or Alaska, the Commonwealth of Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, the United States Virgin Islands; or American Samoa:

   The project is in Alaska.

2. The harbor is economically critical such that over 80 percent of the goods transported through the harbor would be consumed within the region served by the harbor and

navigation improvement as determined by the Secretary, including consideration of information provided by the non-Federal interest; and

Based upon their weight, commodities transported in the future with-project condition were analyzed to determine that more than 80 percent of the goods transported through the harbor would be consumed within the region. The region served by the navigation improvements was determined to be the island of St. George and the immediately surrounding marine area (about a 25-mile radius).

To provide economic opportunities for the community, consistent with the authority, alternatives supporting fish and crab product exports from the island are considered. However, these exports were projected to weigh less than 20% of the total weight going through the harbor when considering market and institutional factors such as Community Development Quotas (CDQ) and prices. Total imports minus total exports was used in the projection. Imports included the weight of fuel, the weight of freight and construction materials, and the weight of raw fish. Exports included the weight of processed fish products leaving the island. Exports are estimated to make up 14.1% of harbor throughput on average, with a high estimate of 18.7%, and low estimate of 11.3%.

3. The long-term viability of the community in which the project is located, or the long-term viability of a community that is located in the region that is served by the project and that will rely on the project, would be threatened without the harbor and navigation improvement.

   The cultural identity of Alaska Native Tribes is highly dependent upon subsistence activities tied to specific locations and deep historical knowledge of land and subsistence resources. Rural economies in Alaska, including that which exists on St. George, can be characterized as a mixed, subsistence-cash economy in which the subsistence and cash sectors are interdependent and mutually supportive. The ability to successfully participate in subsistence activities is highly dependent on the opportunity to earn some form of monetary income and access the resources needed to engage in subsistence activities. Without a safe and functioning harbor, economic opportunities in the community would continue to be hindered and the costs of basic essential goods required to support a subsistence lifestyle would remain prohibitively high, contributing to continued out-migration from St. George. When subsistence communities are forced to disband due to high costs of essential goods, including fuel, tribal identities and cultural communities are endangered. Reductions in costs of such basic essential goods are essential to community viability. In addition, a safe and functioning harbor would provide opportunities for development of a local economy based upon the marine resources of the region. Such economic opportunities are essential for supporting the mixed, subsistence-cash economies common throughout rural Alaska, combating out-migration, and helping to ensure the viability of the community of St. George.

While determining whether to recommend a project under the criteria above, the Secretary will consider the benefits of the project to the following:

- Public health and safety of the local community and communities that are located in the region to be served by the project and that will rely on the project, including access to facilities designed to protect public health and safety;
- Access to natural resources for subsistence purposes;
- Local and regional economic opportunities;
- Welfare of the local population; and
- Social and cultural value to the local community and communities that are located in the region to be served by the project, and that will rely on the project.

As indicated above, navigation improvements at St. George meet all the above criteria to recommend a project. United States Army Corps of Engineers (USACE) Vertical Team confirmed compliance with the criteria of the authority during an In-Progress Review conducted on January 23, 2018.

1.5 General Description of Dredged or Fill Material

The project components included in this analysis include the 1,731-foot long north breakwater, the 250-foot long stub breakwater, 3.9 acres of fill placed for the creation of uplands, 0.1-acre concrete boat ramp, and placement of dredged material into WOUS for the construction of a rock reef. Portions of the boat ramp (0.08-acres) and north breakwater (0.35-acres) are coincidental to the upland area, so the total area of fill would be slightly less than the sum of the four harbor features.

The north breakwater would include a cumulative volume of 219,000 cubic yards of armor stone, B rock, and core rock and cover approximately 8.3-acres. The stub breakwater would consist of a cumulative volume of 20,500 cubic yards of armor stone, B rock, and cover rock and cover approximately 0.8 acres. The uplands require 45,000 cubic yards of fill and would include a total of 3.9-acres, but only about 3.5-acres would be in addition to the North Breakwater fill. The concrete boat ramp would be mostly contained within the upland fill footprint, but a small portion consisting of 0.02 acres would extend beyond the west margin of the fill. The total volume of fill for all harbor construction features included in this analysis is about 284,500 cubic yards, and the area of fill is about 12.6 acres.

The proposed North Anchorage Harbor entrance channel and maneuvering basin are planned to be dredged to a depth of -25 feet and -20 feet MLLW, respectively. The thickness of sediment and depth to bedrock is unknown within the proposed harbor entrance channel and maneuvering basin. For estimating purposes, USACE anticipates bedrock would be encountered very near the surface, three feet or less, within the south side of the entrance channel and maneuvering basin.

The thickness of surface sediment may gradually get thicker as the entrance channel moves north away for the shoreline. Drilling and controlled blasting of bedrock would be required within the navigation channel, and harbor basin before material can be mechanically dredged by clamshell or long-reach excavator. Dredge cuts in the surface sediment can be assumed to be stable at slopes of 1.5 horizontal to 1 vertical. Dredge cuts in bedrock may be cut at slopes of 0.25 horizontal to 1 vertical.

The habitat creation reef would contain all of the dredged material generated from the transition dredging and subsequent maintenance dredging, approximately 430,000 cubic yards of blasted igneous bedrock. All dredged material that would be placed on the reef is exempt from chemical testing and determined to be suitable for in-water placement. The sediment in the project area is believed to be uncontaminated by anthropogenic pollutants based on the site history and physical characteristics of the material. There are no known sources of contamination present in the project area; i.e., no industrial facilities, refueling stations, antifouling agent operations, pulp mills, or other risk factors have ever been sited near the proposed project location. The material that would be dredged is consolidated olivine that predates the Industrial Revolution and has never been exposed to pollutants. The substrate is not considered to be a carrier of contaminants because of it is predominantly coarse and contains little to no organic material.

1.6 Description of the Proposed Discharge Site

The Alaska District would collect more detailed information regarding the geotechnical and bathymetric conditions of the proposed discharge site during the Preliminary Engineering and Design (PED) phase of the project if the project is selected to advance to that stage. In the absence of detailed information, this analysis will rely on remote sensing and form some assumptions regarding the generic conditions.

Saint George lies within the U.S. Fish and Wildlife Service (USFWS) Alaska Maritime National Wildlife Refuge, and portions of the island are owned and managed by the USFWS. The USFWS manages the land for the conservation, protection, and overall enhancement of the fish, wildlife, plants, and their habitats for the benefit of all Americans. The local Native Corporation own most of the remaining land on Saint George Island.

The North Breakwater, Stub Breakwater, uplands, and boat launch would be constructed in the bight forming the North Anchorage adjacent to the city of Saint George. The North Anchorage bight represents the most enclosed section of coastline on the north shore of Saint George Island, which is likely one of the primary reasons the city was established in that location. The marine sediments in the bight are presumably basaltic bedrock overlain by sands, gravels, shell hash, cobbles, and boulders. The presence of the bight forms an area of relative protection from wave energy, so the sediments in the bight are likely dominated by a smaller grain size than the surrounding, more exposed area by virtue to the reduced energy allowing relatively fine grain material to be deposited. Aerial photography interpretation suggests the presence of the bight may enable the accretion of light-colored sand in the project area (Figure 4).

Bathymetric surveys have not been completed in the project location, but the nautical chart for the area indicates that water depths range from about 6’ to about 22’ in the areas where the

breakwaters would be constructed. The construction of the uplands would in an area that is fouled with boulders and currently inaccessible to navigation. The low intertidal area is dominated by cobble, and there are areas of sand in the back-beach. (Figure 5) Various macrophytes, including dragon kelp, colonize the low intertidal and subtidal zones. There are no known areas of rooted aquatic vegetation.

The presence of the city of Saint George in its current location, even though the existing harbor and airport are on the other side of the island, suggest the proposed project area has unique and desirable attributes, including natural protection from wave energy. If the preceding assumption is accepted, transitive logic demands the acceptance of the rarity of the functions and values of the waters of the United States located in the proposed project area.

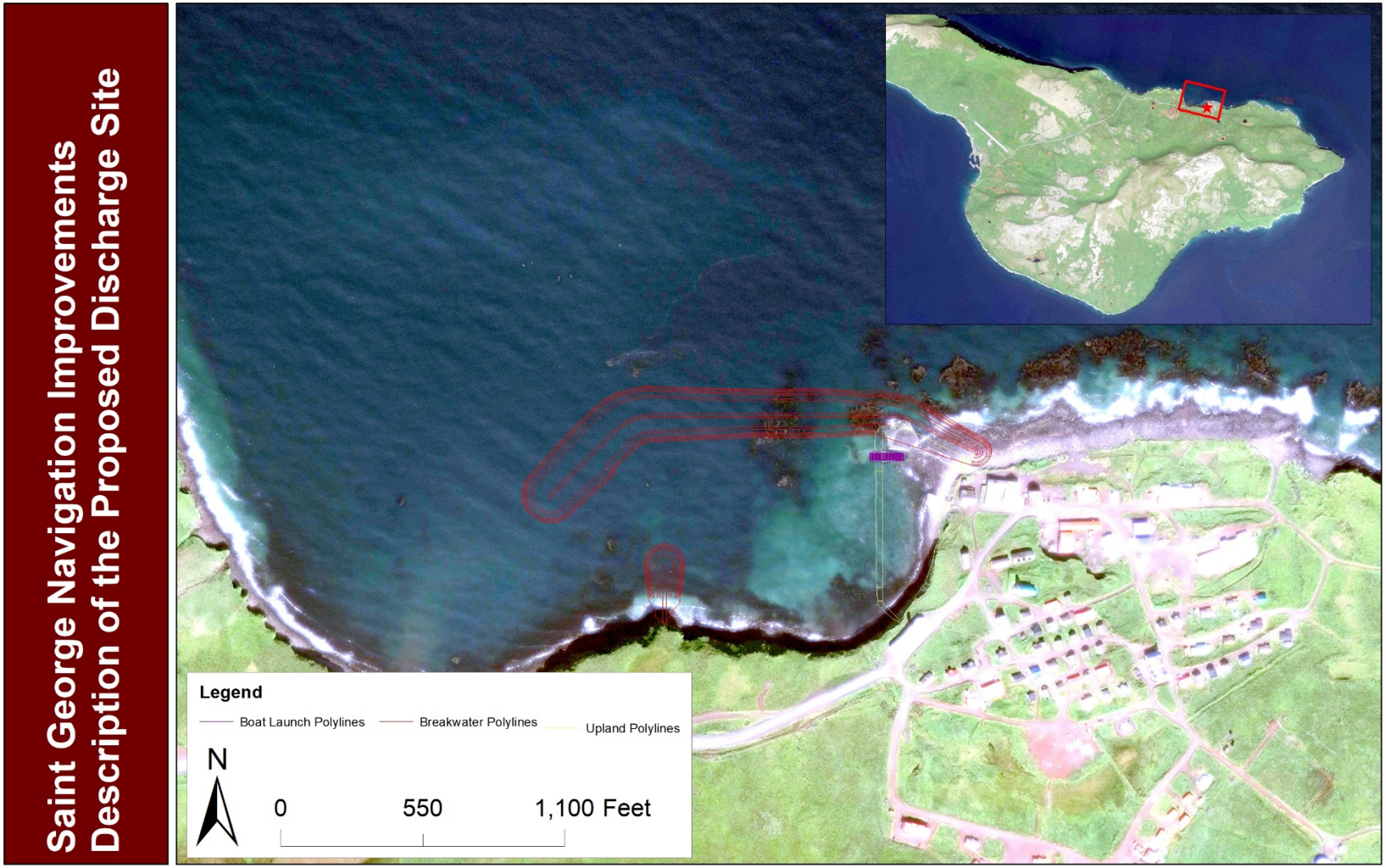

Figure 3. Configuration of the Proposed Discharge with Respect to Natural Features

Figure 4. Coastline in the Proposed Discharge Area

The habitat creation reef would be configured to optimize its utility to the target species, blue king crab (BKC). Habitat association from the Bering Sea-Aleutian Island (BSAI) Fishery Management Plan (FMP) indicate that BKC utilize waters and substrate between 40 meters and 200 meters in depth at various life stages. Considering the depth requirements of the design species, the Alaska District has identified a potential reef construction site close to the proposed harbor site (Figure 5). The center of the zone is approximately 1.25-miles from the project area.

Geotechnical data has not been collected for the dredged material placement area, but the USACE biodiversity survey in June 2019 included a substantial benthic videography component. The nature of the substrate from within the tentatively identified placement area is described as sand in nautical chart 1638. There are areas of gravel and shells identified on the chart outside of the bounds of the placement area. The USACE biodiversity survey corroborated the descriptions from the nautical chart.

Video from the June 2019 camera surveys indicate the majority of the substrate in the placement area is sand. The sand appears to be fairly dark in color and contains light-reflecting particles. Olivine rock is the likely parent material for the dark colored sand observed in the video. This sand was likely produced by the effects of mechanical weathering on the volcanic rock that forms St. George. The surface of the sand is configured in waves and appears to be dominated by fairly large-sized particles. There is no visible plume emanating from the impact of the camera on the seafloor, which indicates that small-sized particles have been washed from the area by ocean currents or hydrodynamic conditions have never allowed the precipitation of small-sized particles.

Areas of variable shell litter density exist throughout the proposed placement area, and there are areas with many sand dollars inside the field of view concurrently. In general, the area surveyed by the USACE benthic video team appears to be a relatively featureless expanse of gradually sloping subaqueous plains.

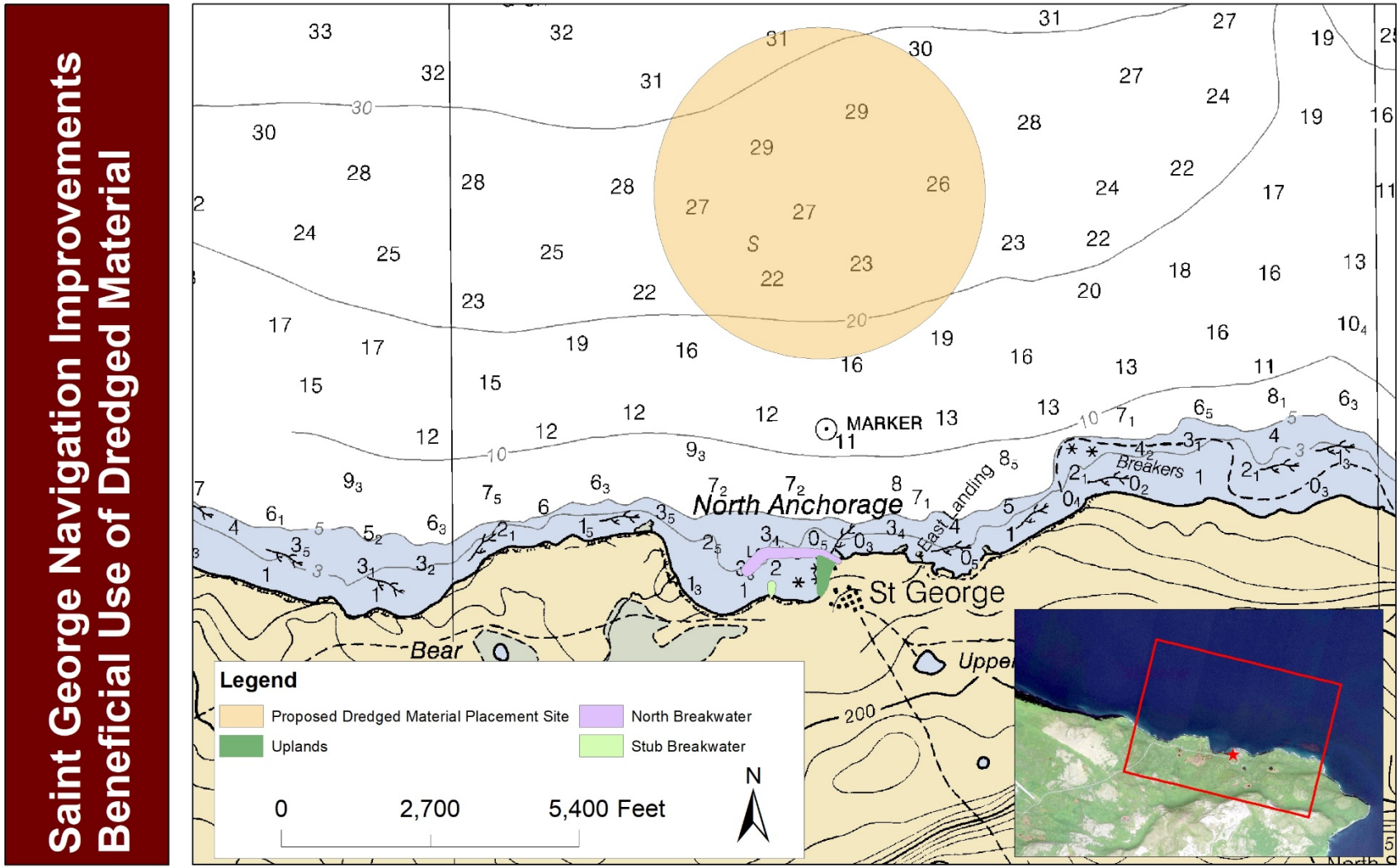

Figure 5. Proposed Habitat Creation Reef Location

1.7 Description of Proposed Discharge Method

Major construction features for the Recommended Plan include rubble mound north and spur breakwaters, dredging, pile-supported docks, and upland fill areas (Figure 6). The material source for breakwater construction would be offsite from an established quarry such as Cape Nome or Granite Cove on Kodiak Island. The material source would most likely be far enough away from the site that rock production would need to significantly lead placement operations to ensure that the construction crew on site has enough material delivered to the site for a full season of work. Stone production in the quarry and delivery to the site would likely be the first project tasks undertaken.

Construction of the North Breakwater is most likely to be performed with land-based equipment. The breakwater core would be constructed above the tide range to allow the placing equipment to drive the breakwater core and place B and A rock layers to protect the work in progress. Core rock would likely be transported and staged on the breakwater with off-road dump trucks, then shaped to the design prism by an excavator. Near the west end of the breakwater, an excavator on a barge may be required to shape the toe and benches of the breakwater where the seabed is deeper. Uplands would be constructed concurrently with the breakwater to build a staging area for breakwater material. The boat ramp would be designed and constructed by the local sponsor, and the Alaska District does not have any specific information regarding the construction methodology or timing of that project feature.

Dredged material would be transported from the harbor location to the discharge site by barge and would dump the material at specified locations to construct the reef in accordance with the detailed plans developed in the PED stage of the project. The design scow has a 3,000 cubic yard capacity. It would likely carry about 2,500 cubic yards per transit to the placement area, requiring approximately 172 transits to the placement area to transport the entire 430,000 cubic yards of dredged material expected to be generated over the course of the construction project.

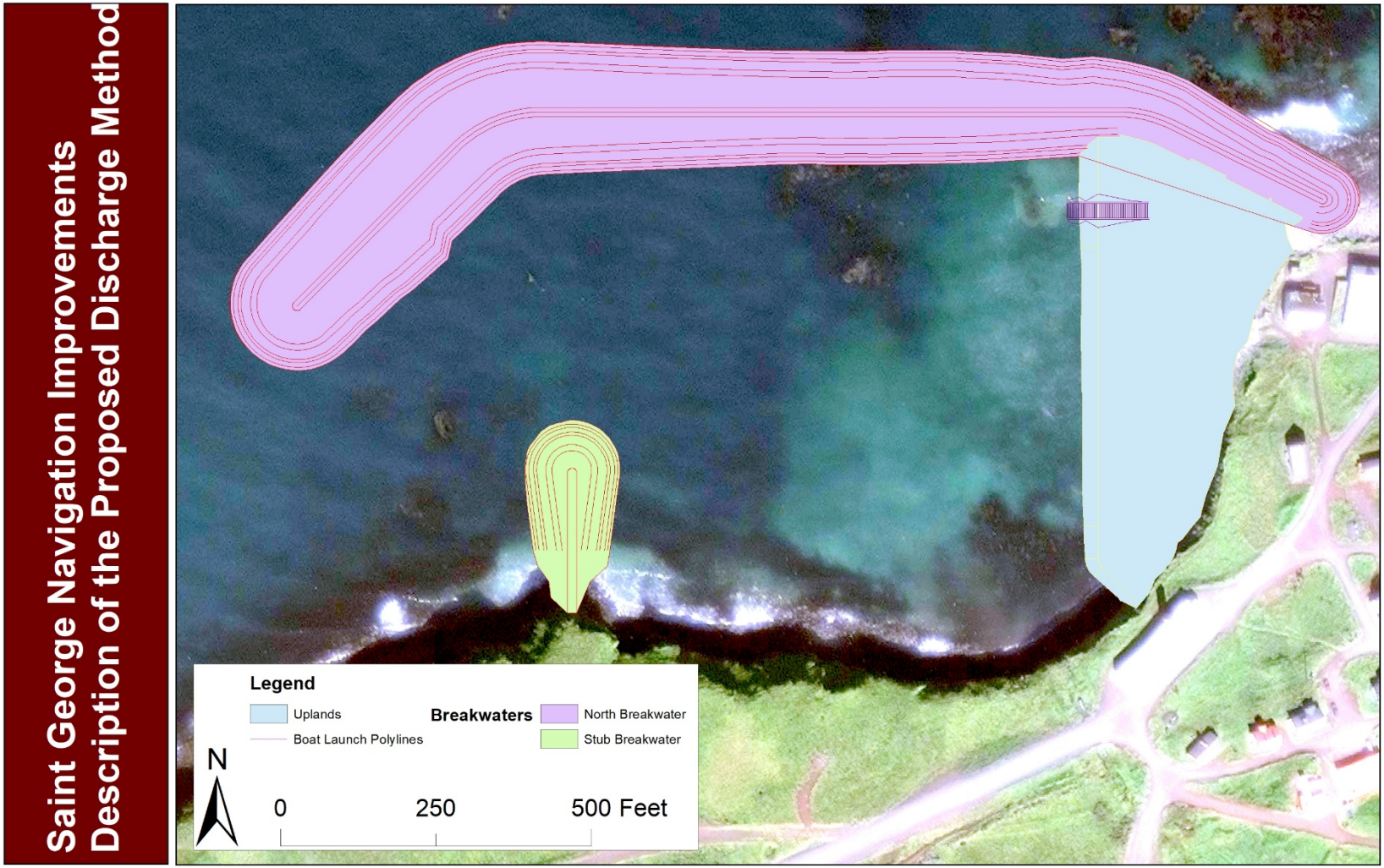

Figure 6. Saint George Navigation Improvements Project Features

2.0 FACTUAL DETERMINATIONS

2.1 Physical Substrate Determination

The Saint George Navigation Improvement project area is dominated by volcanic parent material weathered by glaciation. Soil development is likely retarded by the cool climate and relatively young age of the Pribilof Archipelago; the Pribilof area is thought to have built up during the late Pleistocene era. The area may have achieved relatively high elevation, but subsided though a combination of fissuring, faulting, and lava outpouring to its current elevation. The coastal sediments are likely of terrestrial origin, as there is no other source of sediments in the area.

The coast of Saint George Island is generally quite steep and almost completely ringed by cliffs; there are only a couple areas (including the proposed project area) on the island with shallow coastal gradients. Scattered along the water's edge are many large boulders. These boulders are likely composed of igneous rock generated by the volcanic birth of the island. The boulders create eddies and break up wave energy, allowing suspended sediment to precipitate in the interstitial leeward areas. The submerged areas have a relatively thin covering of boulders, cobbles, and sand over what is assumed to be intact bedrock. Initial site observations indicate blasting would be required to dislodge the rock before dredging.

The placement of fill material for the construction of the North and Stub Breakwaters would not present more than minor alterations to the physical substrate of the proposed project area. The Breakwaters would be armored with 10 ton rock, which would provide substantially similar rugosity and complexity of surficial material as the naturally occurring boulders in the area. The armor rock would provide the same basic physical properties as the naturally occurring rock, so locally occurring macrphytes and invertebrates would readily colonize the newly placed attachment structure.

The construction of the 3.5-acre upland area would result in the permanent loss of 3.5-acres of protected subtidal land, converting it into a commercial/industrial type of terrestrial area. The area that would be converted is apparently quite rare in the vicinity, which includes all of Saint George Island. The loss of this area would be offset by the creation of a new, larger, protected submerged area formed by the construction of the breakwaters. The breakwaters would provide protection to nearly 16-acres of submerged lands. Sediment transport in the area is not well-understood, but the construction of a breakwater extending from the northeast headland could disrupt longshore sediment transport. According to a review of aerial photography, sand may dominate the subtidal surficial sediments in the eastern portion of the project area. If this is true, the dredging would remove the sand and the construction of the breakwater would prevent sand from returning. East-west sediment transport is likely the dominant direction of drift due to the prevailing wave orientation, so sand previously moved into the eastern portion of the project area may be translocated to the region of the bight west of the breakwater.

The placement of approximately 430,000 cubic yards of blasted bedrock for the construction of a reef would represent a significant alteration of the bathymetry off the north coast of Saint George Island. The ocean floor would become more complex and some smooth, sandy bottom habitat

would be permanently lost. This loss would be offset by the creation of rocky reef habitat, which is rare in the immediate area and has been identified by the Bering Sea-Aleutian Island crab Fishery Management Plan (FMP) as a requisite for blue king crab (BKC). Blue king crab are a species of concern in the Bering Sea, and efforts are underway to improve the stock.

BKC are known to require the interface of vertical, rocky areas and flat, sandy, or muddy areas. Large amounts of physical habitat type would be create by the construction of a rocky reef extending away from St. George Island.

2.2 Water Circulation, Fluctuations, and Salinity Determinations

Water velocity would decrease in the area impacted by the construction of the breakwater by the interruption of wave energy. Saint George is very isolated and exposed to hundreds of miles of fetch in all directions, except for the small amount of energy interruption provided by Saint Paul Island. The interruption of wave energy would be the intent of the project to provide safe moorage for vessels. The reduced water velocity inside the harbor could promote the precipitation of small grain sediments, but there is not a source of sediment in the immediate area, so it is unclear how fine material would come to be inside the harbor. There is no indication the changes water circulation patterns would have a measurable impact on dissolved oxygen in the harbor due to the relatively small size and shallow depth of the harbor.

The proposed project would have no effect on salinity or water level fluctuations induced by the tides.

2.3 Suspended Particulate/Turbidity Determination

The construction of a breakwater could temporarily elevate turbidity levels through substrate disturbance from the placement of fill material and armor rock. The sediments in the project area are generally very coarse and not susceptible to suspension. Any sediments that were suspended would settle quickly, and the unimpeded movement of ocean currents would quickly dilute apparent turbidity to below detectable limits.

Dredging and the placement of dredged material would suspend sediment from the excavation and discharge of marine sediments. The discharged dredged material would also suspend sediment from the seafloor in the placement area as the dredged material strikes the seafloor. Turbidity would temporarily increase in the vicinity of the placement area as the sediment is released from the scow; but the depth of the water, energetic nature of the hydrodynamic environment, and substantially similar nature of dredged material and placement area substrate ensure the turbidity impacts to water quality would be temporary and insignificant.

2.4 Contaminant Determinations

The rock and gravel placed for the backfill will be clean material free of contaminants. The finished project will not introduce new contaminants. There is no known source of contamination

at or near the project site that would be mobilized or exacerbated by this project. The dredged material is exempt from chemical analysis based on the site history and physical characteristics. There have been no known industrial-type activities with the potential to contaminate the dredged materials in the project area. The large grain-size, low concentration of organic material, and high energy levels further support the assumption that the material is not a carrier of contaminants.

2.5 Aquatic Ecosystems and Organism Determination

The total area of impacts to aquatic ecosystems is about 12.6-acres. The construction of the two breakwaters would impact about 9.1-acres, effectively converting the naturally occurring rocky sub-tidal habitat to a mix of engineered rocky sub-tidal, intertidal, and supratidal habitat. The rocky sub-tidal habitat that would be lost to the construction of the breakwaters is very abundant in the area, and the conversion of 9.1-acres of rocky sub-tidal to an assemblage of more complex habitat types would not present a significant negative impact within the context of the Saint George Island coast. The breakwaters would have abundant vertical surfaces and hard substrate for the attachment of sessile animals like anemones and macrophyte assemblages. The large rock would create refugia in the interstitial voids for small fish and invertebrates. The construction of the breakwater would represent a permanent conversion of habitat and a temporary decrease in productivity in the area as the existing biota would be displaced or destroyed by the placement of the breakwater material. The area would quickly recover and is expected to come to rest at a higher productivity rate than the pre-project rate due to the additional complexity created by the breakwaters.

The construction of the uplands would result in the permanent loss of about 3.5-acres of relatively low energy sandy and rocky subtidal habitat. This habitat would be replaced by commercial/industrial uplands, likely a gravel parking area. The face seaward face of the uplands would be stabilized by armor rock, creating complex habitat in the same manner as the breakwaters. The construction of the breakwater would also protect approximately 16-acres of subtidal habitat, offsetting the loss of the 3.5-acres of protected subtidal habitat lost to the uplands. The nature of the substrate would be permanently altered; aerial photography indicates the existing substrate in the area that would be impacted by the construction of the uplands is covered in light-colored sand, but the dredging of the harbor would remove that sand and replace it with exposed bedrock. The construction of the breakwaters would prevent the basin from infilling, so the conversion from mixed sandy/rocky substrate to rock would be permanent. It is unknown how much alternate mixed sandy/rocky habitat is available in the vicinity, but the same imagery that supports the assumption the existing substrate contain some sand suggest there are abundant sandy area in along the north shore of Saint George Island. The impact on ecosystems and organisms would be minor.

The discharge of the dredged material would be configured so that new blue king crab habitat is created. Long term impacts associated with dredged material placement would be presented by the creation of a rocky reef extending perpendicular from the coast of St George Island. This reef would significantly alter the nature of the seabed by increasing the complexity of the area.

The District enlisted the USACE Engineering Research and Development Center (ERDC) to model the discharge using Short Term Fate of Dredged Material (STFATE) based on feasibility level information and assumptions. A distinct mound is predicted to be formed. The mound would approximate a truncated rectangular pyramid.

The height of the pyramid would be about 5 feet, and the top area of the pyramid would approximate the area of the hopper of the dump scow, approximately 140 feet long and 35 feet wide. The side slopes of the pyramid would be about 1V:10H. Thus, the base of the pyramid would be a rectangle approximately 240 feet long and 135 feet wide. A few inches of fine rock would likely extend another 30 feet in all directions beyond the toe of the pyramid.

Greater detail regarding the precise configuration of the placement would be developed collaboratively with NMFS HCD and other stakeholders during the PED phase of the project. The District's feasibility level plans for placement include the discharge of dredged material by the scow-load, spaced approximately 100 feet apart. The execution of the plan would produce a reef at least 5 feet tall, extending nearly 3 miles from the nearshore terminus.

Blue king crab require complex habitat for all demersal life stages. Sand, gravel, cobble, and rocks are necessary substrate types for mature, late juvenile, early juvenile, and egg life stages. Blue king crab (BKC) are associated with slumps, rockfalls, debris, channels, ledges, pinnacles, reefs, and vertical walls between 0 and 200 meters deep.

BKC generally spend the 3.5-4 months after hatching as pelagic larva in water between 40-60 meters deep before settling out into complex benthic habitat areas. The larvae are planktonic, as their limited ability to swim is greatly outweighed by the effects of ocean currents on their horizontal movements. There is some evidence BKC larvae intentionally move vertically through the water column on a daily basis. Because BKC larvae are pelagic plankton, the placement of dredged material to create habitat does not consider the larval life stage, and no effort is made to create or enhance larval BKC habitat requirements beyond ensuring the benthic habitat is confined to the epipelagic zone in waters less than 200 meters deep.

2.6 Proposed Disposal Site Determination

The construction of a port would require the dredging of approximately 430,000-cubic yards of rock and other sediments. This material would be used to construct a reef offshore of Saint George Island. The use of the material beneficially is evaluated under the Clean Water Act and would not represent a disposal activity. The entire volume of dredged material would be used beneficially.

2.7 Determination of Cumulative and Secondary Effects on the Aquatic Ecosystem

The completed project will have negligible cumulative effects because there is a low likelihood of additional development projects in the area that would impact rocky intertidal and sub-tidal habitat. The presence of a port would result in additional vessels in the area, and there would be a

corresponding increase in the potential for oil spills and other sources of anthropogenic contamination. The port would translocate the vessel traffic that currently calls on Zapadni Bay to the proposed site near the city of Saint George, but is unlikely to recruit additional vessels. The establishment of an improved port on Saint George Island is expected to enable safer navigation and could reduce the potential for spills caused by the unintentional grounding of vessels from wave action, so there could be a net reduction of spills in the waters off Saint George Island.

3.0 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH RESTRICTIONS ON DISCHARGE

3.2 Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

The proposed activity complies with the requirements outlined in the Environmental Protection Agency's Guidelines for the Specification of Disposal Sites for Dredged or Fill Material. There were no adaptations; however, the evaluation is not considered complete because the project does not comply with the ESA at the time of this analysis.

3.3 Evaluation of availability of practicable alternatives to the proposed discharge site, which would have less adverse impact on the aquatic ecosystem:

The principle discharge to waters of the United States proposed in this project is the placement of fill material for the construction of two breakwaters and uplands for the creation of a harbor near the city of Saint George. The purpose of the project is to increase the safe accessibility of marine navigation to the community of St. George, Alaska. The need for the project is to reduce hazards to better provide safe navigation of subsistence vessels, fuel barges, cargo vessels, and a limited commercial fleet, all of which are critical to the long term viability of the mixed subsistence-cash economy of St. George. The Alaska District's Integrated Feasibility Report and Environmental Assessment evaluates practicable alternatives for meeting the project purpose. The Alaska District considered six alternatives in Zapadni Bay and three alternatives in the North Anchorage, as well as the No Action Alternative. The selection of the recommended plan is the least environmentally damaging practicable alternative.

3.4 Compliance with Applicable State Water Quality Standards

The proposed construction project would not be expected to have an appreciable adverse effect on water supplies, recreation, growth, and propagation of fish, shellfish and other aquatic life, or wildlife. It would not be expected to introduce petroleum hydrocarbons, radioactive materials, residues, or other pollutants into the waters of the United States. The Alaska District will obtain

a Certificate of Reasonable Assurance from the Alaska Department of Environmental Conservation Water Quality Division before contract award.

3.5 Compliance with Applicable Toxic Effluent Standards or Prohibition Under Section 307 of the Clean Water Act

No toxic effluents that would affect water quality are associated with the proposed project. Therefore, the project complies with the toxic effluent standards of Section 307 of the Clean Water Act.

3.6 Compliance with the Endangered Species Act of 1973

Federally-threatened or endangered pinnipeds that are known to occur within and adjacent to the waters of North Anchorage include the threatened bearded seal (*Erignathus barbatus*), threatened ringed seal (*Phoca hispida*) arctic subspecies, and endangered Steller sea lion (*Eumetopias jubatus*) Western Distinct Population Segment (DPS), the latter of whose designated critical habitat includes all of the marine waters surrounding St. George Island.

Federally-endangered cetaceans commonly occur in St. George's offshore waters and include fin whale (*Balenoptera physalus*), humpback whale (*Megaptera novaeangliae*) Mexico DPS and western North Pacific DPS, North Pacific right whale (*Eubalaena japonica*), sperm whale (*Physeter macrocephalus*), and western North Pacific gray whale (*Eschrichtius robustus*).

The Alaska District will prepare a biological assessment to analyze the proposed project's impacts on ESA-listed species during the feasibility phase. The product of the biological assessment will be a determination of effects on ESA-listed species, which will dictate the consultation framework required for compliance with the ESA. At the time of this 404b1 analysis, ESA compliance is incomplete.

3.7 Compliance with specified protection measures for marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972:

Not applicable, no marine sanctuaries are present near the project site.

3.8 Evaluation of Extent of Degradation of the Waters of the United States:

The proposed activity could result in the loss or conversion of about 12.6-acres of coastal marine water of the United States. The remaining coastline of Saint George Island is relatively undeveloped and under little development pressure. There would be no significant adverse impacts on plankton, fish, shellfish, or wildlife within the waters of the United States in the vicinity of Saint George.

3.9 Appropriate and practicable steps taken to minimize potential adverse impacts of the discharge on the aquatic environment:

The Alaska Department of Environmental Conservation (ADEC) Water Quality Certificate of Reasonable Assurance would likely include the following best management practices to reduce the potential for negative impacts on water quality:

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted, so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.

2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and clean up oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Northern Alaska at (907) 451-2121 during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.

The Alaska District will complete formal consultation under Section 7 of the ESA to determine the proposed project's impacts to threatened and endangered species. The ESA consultation will result in mitigation measures to avoid and minimize the proposed project's impacts to threatened and endangered species. Mitigation measures will likely include:

- Marine mammal observers to survey the action area during construction
- Exclusion radii; inside of which marine mammals would trigger a work stoppage
- Environmental windows to schedule work in less-impactful seasons
- Regular reports to the managing agency documenting the occurrence of shut-downs
- Other appropriate measures to be determined during the Section 7 consultation

3.10 Public Interest Determination:

The proposed site of the discharge of fill material is specified as complying, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem, with the requirements of these Guidelines.

FINDING OF COMPLIANCE

For the Construction of Navigation Improvements at Saint George, Alaska

1. No significant adaptations of the guidelines were made relative to this evaluation.

2. The principle discharge to waters of the United States proposed in this project is the construction of two breakwaters and supporting uplands for the proposed Navigation Improvements at Saint George. The harbor and entrance channel would be dredged, and the dredged material would be used for the construction of a rocky reef to enhance blue king crab habitat

3. The planned discharge would not violate any applicable State water quality standards or violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

4. The proposed discharge will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be significantly adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity, stability, recreational, aesthetic, and economic values will not occur.

5. The proposed site of construction and discharge is specified as complying with the 40 CFR 230 Guidelines for the Specification of Disposal Sites for Dredged or Fill Material when considered with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.