# Kotzebue Harbor Feasibility Study

# Navigation Improvements at Cape Blossom

# Kotzebue, Alaska

## Appendix A: 404(b)(1) CWA

US Army Corps
of Engineers
Alaska District

**EVALUATION UNDER**
**SECTION 404(b)(1) CLEAN WATER ACT 40 CFR PART 230**
**Navigation Improvements at Cape Blossom**
**Kotzebue, Alaska**

## I. Project Description

The proposed project would construct an approximately 129-acre port facility at Cape Blossom, 12 miles south of Kotzebue, Alaska. The port facility at Cape Blossom would improve navigation efficiency to the region by reducing or eliminating high costs associated with lightering fuel and cargo to Kotzebue. Furthermore, a new port facility would extend the available shipping season to Kotzebue and the region by providing more reliable moorage and loading conditions. Port construction includes the dredging of a channel from minus (-) 26 ft Mean Lower Low Water (MLLW) extending north 4,700 ft to a dock face and marine header located at - 12 ft MLLW approximately 1,600 ft from the shoreline. A trestle structure would extend from the uplands to the dock face and marine header.

Proposed construction design includes the dredging of approximately 707,000 cubic yards (CY). The dredge prism will be approximately 4,700 ft in length and 570 ft in width, and be of varying depth from minus 26 ft MLLW to minus 12 ft MLLW. Dredged material will be disposed of approximately 1/4 to 3/4 miles to the west, within the depth of closure, between the 10 ft and 20 ft isobaths covering an approximate area of 68 acres. The dock structure will be 400 ft in length and 40 ft in width with a total surface area of 16,000 $ft^2$ with 5 cellular support structures, each 40 ft in diameter. The trestle connecting the dock to the shore will be 1,600 ft in length, 30 ft in width, and supported by 17 cellular support structures, each 40 ft in diameter. Maintenance dredging would be required at years 5, 15, 25, and 45, totaling 300,000 CY of material, the placement site for material would not change.

The proposed project description and considered alternatives are described in detail within the accompanying integrated Feasibility Report/Environmental Assessment (FR/EA).

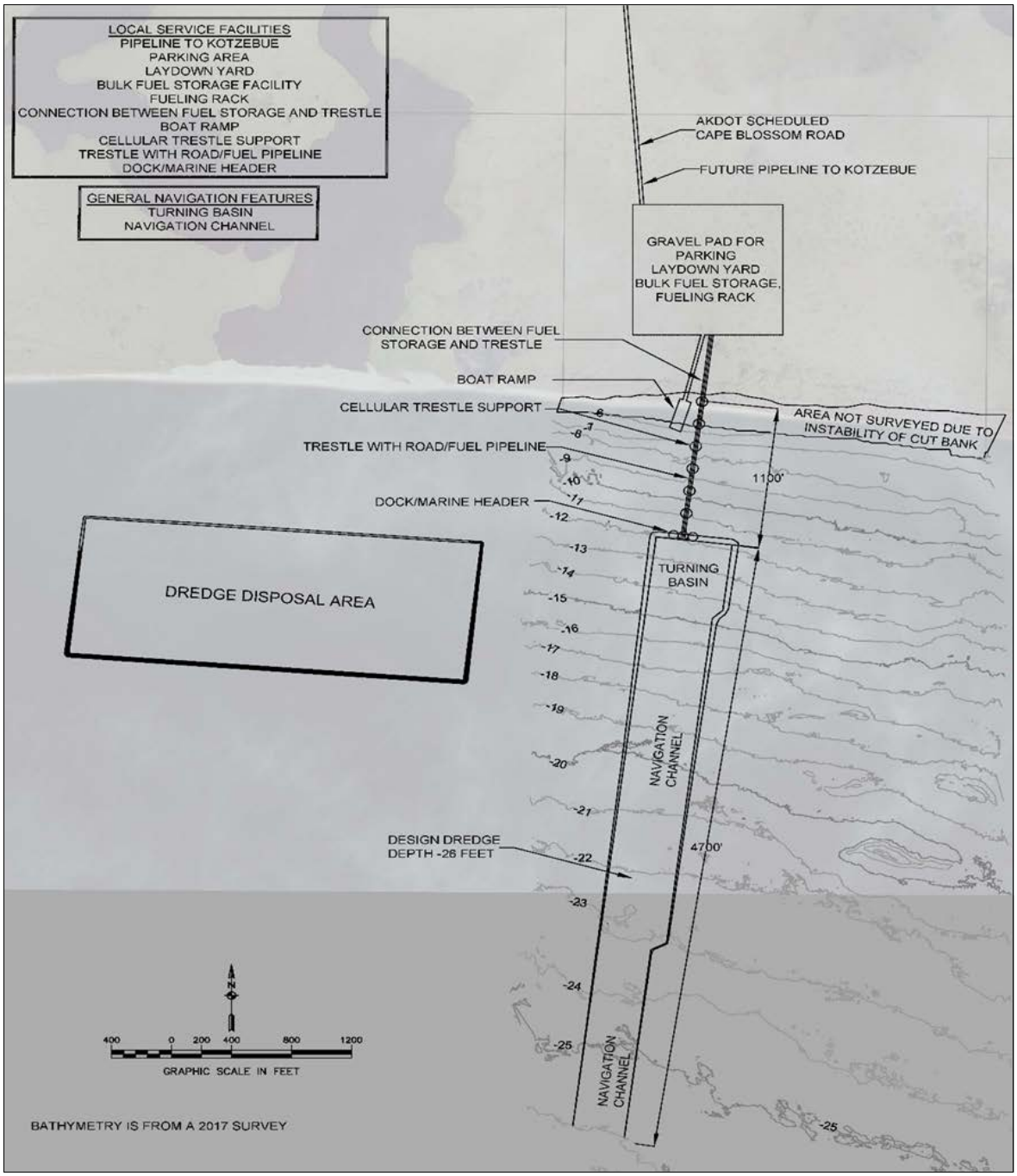

Figure 1. General Project Overlay, Cape Blossom.

## II. Factual Determinations

### A. Physical Substrate Determinations

A 2017 geophysical investigation indicated that the sea floor within the project area consists of loose to soft silt and fines underlain by loose to medium dense sand, silt, and gravel. A 2010 subsurface material investigation drilled 25 solid and hollow-stem auger

test holes to 22 to 34 feet in the immediate vicinity of the existing proposed project site. Subsurface sediments were generally characterized as being comprised of a 1-3 ft upper layer of sand with some pea gravel and coarse sand over silt and fine sand to the depths drilled. Similarly, the results of the 2010 subsurface investigation indicate that substrates located within the identified dredge material placement area are most similar to the substrates of the proposed dredge prism.

### B. Water Circulation, Fluctuations, and Salinity Determinations

The project area within Kotzebue Sound is an area of small semi-diurnal tides with the difference between MLLW and MHHW being only 0.71 ft (based upon data from the published benchmark data from Kotzebue Station 9490424). USACE directly measured local current climate characteristics in the adjacent nearshore waters off Cape Blossom via Acoustic Doppler Wave and Current profiler (AWAC), deployed from September 14 to October 20, 2016. The profiler was deployed in close proximity to the envisioned channel location at a depth of approximately - 30 ft. For the measurement period, the current direction fluctuated between east and west. From a regional perspective, salinity values are seasonally variable, generally increasing with depth; sea ice melt and reformation are the primary drivers of this phenomenon.

USACE's project has been specifically designed to accommodate the perpendicular, longshore migration of fishes and marine mammals known to occur within the region, and as such, nearshore water circulation characteristics and salinity values at Cape Blossom are not reasonably expected to be affected by its implementation.

### C. Suspended Particulate/Turbidity Determinations

Wave action at Cape Blossom is relatively gentle under normal conditions, yet can undermine coastal bluff faces when storm conditions generate larger waves. Nearshore waters off of Cape Blossom regularly experience suspended silty and organic matter due to the decomposed peat, soil, and vegetation calving from the coastal bluffs due to wave action and erosion. Additionally, sediments in the local, nearshore area are dislodged and brought into suspension through physical interactions during sea ice formation and breakup. It is expected that during dredging and placement activities, the nearshore currents would liberate particulate sediments and finer silts. Finer sediments would suspend for a period of time in the water column and will be directed by the prevailing current before they fell out of suspension. Coarser sands and gravels are expected to fall out of suspension quickly.

Although USACE's actions will contribute to the natural turbidity processes of the waters off Cape Blossom, effects are expected to be temporary and limited to those areas in proximity to active dredging and placement activities. Once in-water project-related actions have ceased, turbidity levels would be expected to return to preconstruction levels.

### D. Contaminant Determinations

USACE's project, as proposed is not associated with any known contaminant materials. Alaska's Department of Environmental Conservation (ADEC) lists no active contaminated sites within approximately 12 miles of the proposed Cape Blossom project site. Multiple shore-based cleanup completed, or cleanup complete institutionally-controlled contaminated sites occur approximately 10 miles from the proposed project site. No National Priority List (NPL) sites are listed in the area by U.S. Environmental Protection Agency (EPA). USACE SimSuite, an in-house regulatory tracking system, does not indicate any regulatory actions or projects in the immediate area. USACE SimSuite does however portray two historically permitted projects detailing upland disposal of Swan Lake dredge material: POA-2012-00891 and POA-2012-00892, approximately 12 or more miles away from the Cape Blossom area.

Utilizing the aforementioned tools, marine sediments at USACE's project location, as proposed, are free of anthropogenic influence, and are not expected to differ in background constituent elements between material excavation and placement sites. Therefore, USACE concludes that the sediments comprising the dredge prism are suitable for unconfined open water disposal.

### E. Aquatic Ecosystems and Organism Determinations

The proposed work would destroy or displace benthic and infaunal organisms within and immediately adjacent to the dredge prism and material placement sites. At the both the dredge prism and disposal sites, non-motile and slow moving organisms (crabs, shrimp, echinoderms, and other invertebrates) could be crushed by excavation actions or smothered by the dredged material itself. Most groundfish and other highly motile organisms would be expected to avoid the area until turbidity levels returned to near normal conditions. Benthic infaunal organisms, crustaceans, groundfish, and other marine life forms would be expected to rapidly colonize the newly exposed sediments at both the dredged and placement sites once work had been completed. Furthermore, other organisms may be attracted to the hard surface vertical structures of the project's proposed dock face and trestle supports. USACE has collected field data in 2016 in order to characterize species diversity and richness in the immediate vicinity of the proposed project that support the effects analysis contained within this document and is discussed in further detail in the attached FR/EA.

### F. Proposed Disposal Site Determinations

Because sediments associated with this project, as proposed, are free of anthropogenic contamination, and most closely resemble those of the immediately adjacent areas, the proposed action would comply with applicable water quality standards and would have no appreciable detrimental effects on municipal and private water supplies, recreational or commercial fisheries, water related recreation, Essential Fish Habitat, marine mammals, or aesthetics.

### G. Determination of Cumulative and Secondary Effects on the Aquatic Ecosystem

USACE's project, as proposed, seeks to emplace permanent structures into the waters of Kotzebue Sound. These structures themselves over time may affect fish and invertebrate concentrations in a highly localized area; concentrations of both could increase or decrease depending upon the affinity of organisms for the structures.

A slight, yet unknown increase in the amount of barge/boat traffic utilizing the waters of Kotzebue Sound would likely occur as a result of USACE's project implementation. Increased vessel activity is generally synonymous with its inherent potential for the incidental release of persistent environmental contaminants such as paints, fuels, oils, and discarded debris. Cumulatively, these inadvertent releases could incrementally degrade local water quality.

Increased access to the fisheries of Kotzebue Sound (including subsistence marine mammal harvests) may result as a secondary effect of USACE's project implementation, in which case, ADFG and NMFS would consider this circumstance while setting local quotas and regulations.

Increased vessel traffic may disrupt the natural behavior of marine mammals that utilize the waters near Cape Blossom during the summer and fall. The formation of winter sea ice would preclude such disruption.

No similar large navigation improvement projects are scheduled, being investigated, or under development for this particular region for the foreseeable future.

## III. Findings of Compliance or Non-Compliance with the Restrictions on Discharge

### A. Adaptation of the Section 404 (b)(1) Guidelines to this Evaluation

The proposed project complies with the requirements set forth in the Environmental Protection Agency's Guidelines for Specification of Disposal Sites for Dredged or Fill Material.

### B. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem

A number of alternative sites and designs were rejected early in the planning process as being impracticable and/or not fulfilling the project purpose and need, they included open ocean disposal and beach nourishment in areas of accelerated bluff erosion. One alternative considered a rubble mound causeway that would have interrupted nearshore sediment migration and would have acted as a barrier to fish and marine mammal migration. The alternative discussion is contained in the FR/EA. The action, as proposed, is the least damaging practicable alternative after taking into consideration cost, existing

technology, maintaining the localized coastal sediment budget, and logistics in light of the overall project purpose.

### C. Compliance with Applicable State Water Quality Standards

The proposed 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 Cape Blossom. A temporary increase in turbidity would result from in-water activities. The project would comply with State water quality standards. Adherence to water quality standards would be monitored.

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

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

### E. Compliance with Endangered Species Act of 1973

USACE has been coordinating with, and shall engage NMFS in formal consultation following its application for Incidental Harassment Authorization under the Marine Mammal Protection Act. Dredging and placement activities associated with the project have the potential to disrupt natural behavior patterns of marine mammals.

### F. Evaluation of Extent of Degradation of the Waters of the United States

There are no municipal or private water supplies in the area that could be negatively affected by the proposed project. Commercial interests would benefit from port improvements. There would be no significant adverse impacts to plankton, fish, shellfish, wildlife, and/or special aquatic sites.