US Army Corps of Engineers®
Alaska District

DRAFT Feasibility Report and Environmental Assessment

Homer Navigation Improvements
Homer, Alaska
Appendix D: Cost Engineering

May 2026

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APPENDIX D COST ENGINEERING

This Cost Engineering Appendix describes the basis of the construction cost estimates used in the decision document for Homer Navigation Improvements Feasibility Study. This appendix discusses the cost assumptions, methodology, materials, labor, and equipment utilized in the contract construction cost estimates.

D.1. Features of Work, Cost Breakdown and Acquisition

General Navigation Features: All alternatives could be described as having similar general navigation features (GNF). The major construction features of work in the expected order of construction are:

- Installation of foundations for breakwaters to include geotextile fabric, filter material and Prefabricated Vertical (Wick) Drains
- Construction of layered rock breakwaters
- Dredging of entrance channels and basins; the necessary navigable part of the basin dredging will be funded as a cost shared item (GNF), while the moorage area will be considered local sponsor-funded work features.

Local Service Facilities (LSF): The remaining work to provide a complete and usable harbor for the intended purpose will be considered a non-federal sponsor funded feature of work. This includes installation of floats, gangways, slips, associated dockside electrical power, and a fuel float.

Breakdown of Cost: The total project cost reported in the report is a combination of both GNF and LSF costs. The bulk of the LSF costs were provided by the non-federal sponsor and incorporated into the overall project cost.

Acquisition: The acquisition strategy will be finalized during Pre-Construction Engineering and Design (PED), but for the purpose of this cost estimate it is assumed the GNF will be a separate contract administered by the United States Army Corps of Engineers (USACE) Alaska District. It is not known how the LSF will be procured, contracted and installed.

D.2. Cost Estimate Basis for Alternatives

This section summarizes the development of planning level cost estimates for the final array of action alternatives.

D.2.1. Purpose

This section describes the information and inputs that the alternative estimate development was based upon, design products used, assumed means and methods a reasonable contractor could use to construct the project and, sequencing and scheduling to construct the Homer Navigation Improvements project.

D.2.1.1. Design and Quantities

This estimate is based on quantities and design sketches provided by the designer of record, USACE Hydraulics and Hydrology, which are described in Appendix A.

Breakwater construction quantities for in-place material were provided as an in-place final product. The Current Working Estimates (CWE) applies appropriate production factors a contractor would reasonably consider in order to achieve that in-place quantity. Examples include breakage during handling and delivery, waste, and loss to extraneous factors.

The dredging quantities used for the estimate were also provided by the designer of record and are separated into volumes for both GNF and LSF features.

D.2.1.2. Unit Prices

The unit prices used in Class 4 alternative estimates were, for the most part, determined using historical bid data, cost models used in similar types of project estimates, and current pricing for large cost items such as quarried rock. These unit costs were adjusted to factor in freight and local area mark-ups. The following assumptions were made during the formation of this estimate:

- Breakwater construction: The breakwater will be constructed from marine-based equipment. Geotextile fabric will be installed, filter material placed, then Wick drains will be installed. The layered fill material for the breakwater (A, B, C rock) will then be placed in stages. The contractor will be required to place even lifts on the geotextile/filter/Wick drains area, then observe a mandatory wait period before proceeding to the next lift. These lift thicknesses and wait periods are being formulated and will be included in the Class 4 cost estimate.

- Dredging: The assumed dredging of the basins and entrance channel will be completed via a mechanical method by using a crane on a floating barge using clamshell, placing material in a dump scow, then towing material to an open water disposal site, which is within 2 miles of the project site.

- Schedule: The construction seasons used for formulating the current working estimates vary depending on the size and scope of the alternative and range between 3 and 5 construction seasons. There are no known environmental restrictions for non-working months, and the assumed period that a reasonable contractor could efficiently perform work on this project is between late March and November of a given calendar year. There are weather days to consider that are typical of this region and the overall number of seasons assumed for each alternative takes weather days into consideration. New estimates of construction now show 3 years consisting of 6–8-month construction seasons, with construction complete by the end of calendar year 2033. These assumptions will be revalidated and reconciled prior to the release of the final report.

As this is a Class 4 estimate, the following assumptions were made:

- Includes a 31% contingency – based on an Abbreviated Risk Analysis (ARA) and will change following completion of the Cost and Schedule Risk Analysis (CSRA).
- PED and Supervision, Inspection, and Overhead (SIOH) are allowances.
- The estimated index (date of development) is April 2026. No escalation is included.

D.2.1.3. Contingencies

Project risks include difficulty dredging in shallow water, challenges associated with mechanical dredging of highly variable soils, weather conditions, encountering marine mammals, and sourcing rock for the breakwater. Contingencies represent allowances to cover unknowns, uncertainties, and/or unanticipated conditions that cannot adequately evaluate the data on hand when the cost estimate is prepared. Still, it must be represented by a sufficient cost to cover the identified risks. A cost and schedule risk analysis is being produced for the chosen alternative.

D.2.2. Summary

The four alternatives evaluated were estimated to range in costs from approximately $303 million to $478 million, as seen in Table 1.

Table 1: Alternative Costs Breakdown

Cost Component	Alt 1a	Alt 1b	Alt 2	Alt 3
Mob/Demob - Dredge/Breakwater	$9,825,000	$13,100,000	$13,100,000	$16,375,000
East Breakwater	$212,306,700	$256,447,200	$269,745,700	$326,017,600
West Breakwater	$10,769,100	$53,049,000	$53,051,400	$62,130,300
Prefabricated Vertical (Wick) Drains	$9,443,000	$12,675,700	$13,198,400	$12,569,200
Eelgrass Management	$1,310,000	$1,310,000	$1,310,000	$1,310,000
GNF Dredging	$46,362,200	$37,570,100	$36,466,100	$42,296,000
Construction Management	$6,192,000	$8,256,000	$8,256,000	$10,320,000
PED	$6,996,000	$6,996,000	$6,996,000	$6,996,000
Project First Cost	**$303,204,000**	**$389,404,000**	**$402,124,000**	**$478,014,100**
LSF Dredging	$15,123,900	$41,619,900	$39,583,600	$48,536,200
LSF Structural Features	$8,720,500	$30,561,100	$50,368,600	$76,681,500
Total	**$327,048,400**	**$461,585,000**	**$492,076,200**	**$603,231,800**

4.5. Summary

The alternative CWE's were developed using the design quantities, standard means and method assumptions for similar projects of this type. These estimates are considered Class 4 currently. They will be updated in more detail when the design is developed further.