

**CONTINUING AUTHORITIES PROGRAM
SECTION 107 PROJECT PRELIMINARY FACT SHEET
NANWALEK, ALASKA**

1. Project. Navigation Improvements - Nanwalek, Alaska.

2. Location of Project/Congressional District. Nanwalek is located at the southern end of the Kenai Peninsula, 24 air miles southwest of Homer, Alaska. The study area is in the Alaska Congressional District, which has the following congressional delegation:

Senator Mark Begich (D);
Senator Lisa Murkowski (R);
Representative Don Young (R).

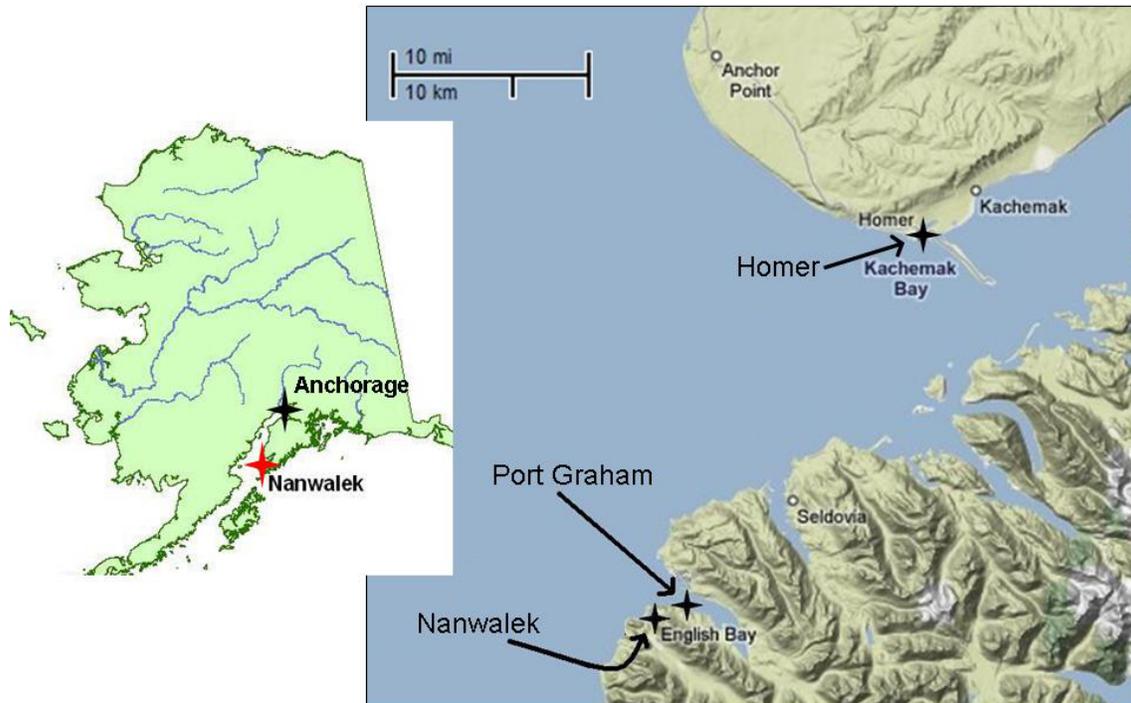


Figure 1. Location Map

3. Study Authority. This study is being performed under Section 107 of the River and Harbor Act of 1960 (PL 90-483), as amended for navigation and in accordance with current policies and procedures governing projects of the same type, which are specifically authorized by Congress.

4. Study Purpose. The purpose of this study is to determine the Federal interest in navigation improvements at Nanwalek and to identify a non-federal sponsor to share in the costs.

5. Discussion of Prior Studies, Reports and Existing Water Projects.

a. Prior Reports.

- Nanwalek Design and Development Group. “Village of Nanwalek Safe Harbor Study”. October 1997. This report studied the construction of a multi-season, multi-purpose harbor at Nanwalek that would provide protection and allow for moorage of community boats and an off-loading site for barges.
- Village of Nanwalek. “Village of Nanwalek Development Projects 2009-2012”. April 2009. This report detailed various construction projects that are being planned or implemented including marine, air, and land transportation infrastructure. In addition to a limited discussion of a harbor project, a rock quarry site was detailed and preliminary testing for suitability for use as armor rock, rip-rap, asphalt aggregate, concrete, and base/surface course was conducted.
- Denali Commission. “Nanwalek Harbor Study”. Ongoing. This ongoing study by the Corps for the Denali Commission is evaluating alternatives for a safe harbor at Nanwalek.

b. Existing Projects. N/A.

6. Plan Formulation.

a. Identified Problems. Nanwalek lacks protected moorage and barge landing facilities. As a result, residents incur additional expense due to damage to and loss of boats and an inflated cost of goods due to barge landing delays and the need to fly in goods. Residents must expend effort during storms attempting to protect boats and/or remove them from the water.

Existing Conditions. Most boats are stored in Nanwalek year-round. During the summer months, boats tie off on the beach in front of the community until tidal conditions allow them to motor into English Bay River Lagoon located behind the airstrip (Figure 2). Boats are stored in the lagoon during the summer unless the tides do not allow for entrance/exit. Boats left on the beach are subject to damage from storms which occur approximately six times per year. Storms create wave conditions that are dangerous to boats attempting to land on the beach. In these conditions, boats left on the beach could flip over from broad side waves, have their mooring lines snap and drift out to sea, or have their anchors lifted out of the sand due to the high waves. During the winter months, most boats are stored on trailers in residents’ yards and some smaller skiffs are left on the beach at the lagoon. Damage to boats occurs when they are removed from the water during storm conditions or for the winter. Fiberglass boats risk being damaged as they are dragged along the beach. Aluminum boats can be dragged onto the beach with less damage than fiberglass, but even these hulls are subject to damage. Due to these conditions Nanwalek residents must repair their boats’ hulls and motors approximately once per year.

Household goods and fuel barges from Homer offload on the beach only during calm weather conditions. A fuel truck is driven off the barge then towed up the beach face using a road grader. Due to the narrowness of the beach the grader must back onto the airstrip to pull the truck up far enough to reach an even and packed surface to drive on. During this unloading, spotters are required to watch for incoming aircraft and alert the grader operator to move from the airstrip.

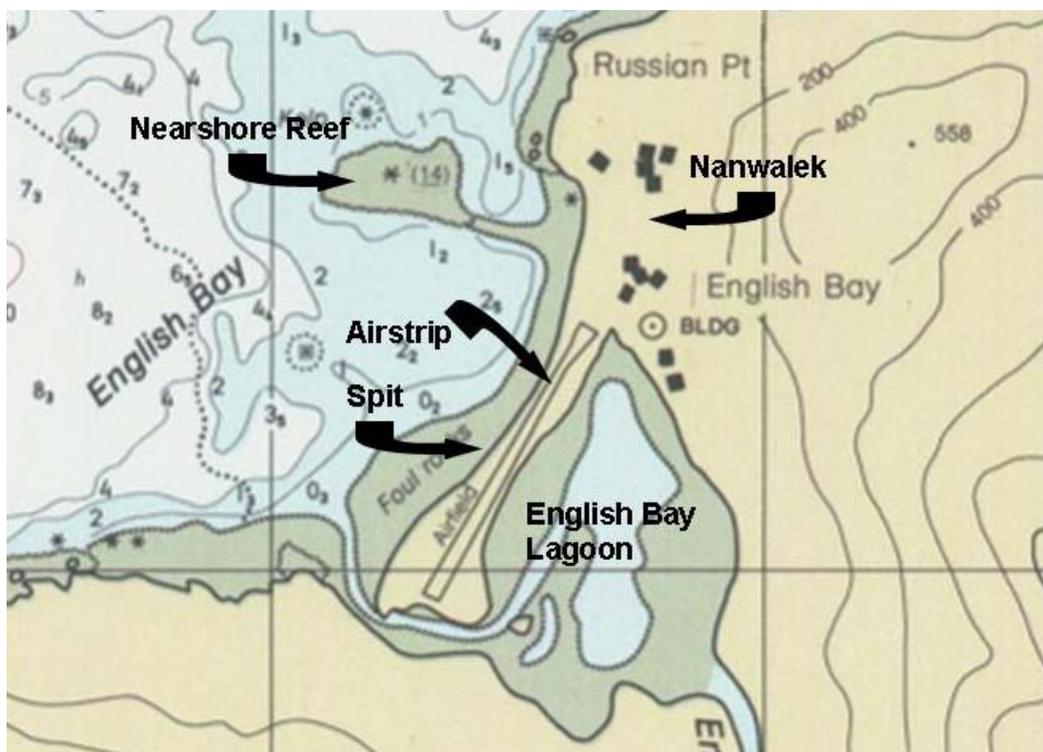


Figure 2. Vicinity Map

Expected Future Conditions. The residents of Nanwalek will continue to sustain damage to boats and loss of boats and incur the burden of boats breaking free of their moorings. They will continue to expend effort during storms attempting to protect boats and remove them from the water. Delivery of barged goods and fuels will continue to be subject to delays due to severe weather.

Planning Objectives and Planning Constraints. The objective of this study is to evaluate the viability of constructing navigation improvements which address the problems and opportunities at Nanwalek. The project should minimize adverse impacts to the environment and community.

Problems and Opportunities. Like most rural Alaskan communities, Nanwalek is dependent upon safe and reliable access to the water. Problems associated with the lack of protected moorage include fuel and freight barge delays, boat losses and damages, and reduced subsistence activities. Opportunities exist to increase the efficiency of barge deliveries, reduce delays, avoid damages, and increase subsistence harvests.

b. Alternative Plans. Three harbor alternatives were developed to address the needs of Nanwalek residents and barge operators. Of these alternatives, two address harbor development at Nanwalek and the third considers harbor development at Port Graham. This latter alternative would include construction of a gravel road to link Nanwalek and Port Graham. These alternatives are discussed in more detail below.

Alternative 1 - English Bay Lagoon Harbor. This alternative is a small boat harbor in English Bay Lagoon (Figure 3) and includes a dredged anchorage basin and entrance channel flanked by

two rubblemound jetties. The jetties are required to prevent shoaling and reduce the wave climate within the dredged entrance channel. The basin would not have mooring floats. The crest elevation would not be higher than approximately 30 feet mean lower low water (MLLW) to avoid creating an obstruction to the airport. This height would allow some overtopping, leading to increased wave action in the entrance channel. Barge traffic would not be able to enter the lagoon due to the narrow channel width. The harbor would increase ground traffic near the site and may constitute a safety hazard for air traffic. English Bay River Lagoon is a sensitive fish habitat. An environmental investigation of the lagoon has not been conducted and may reveal issues that affect the design of this alternative.

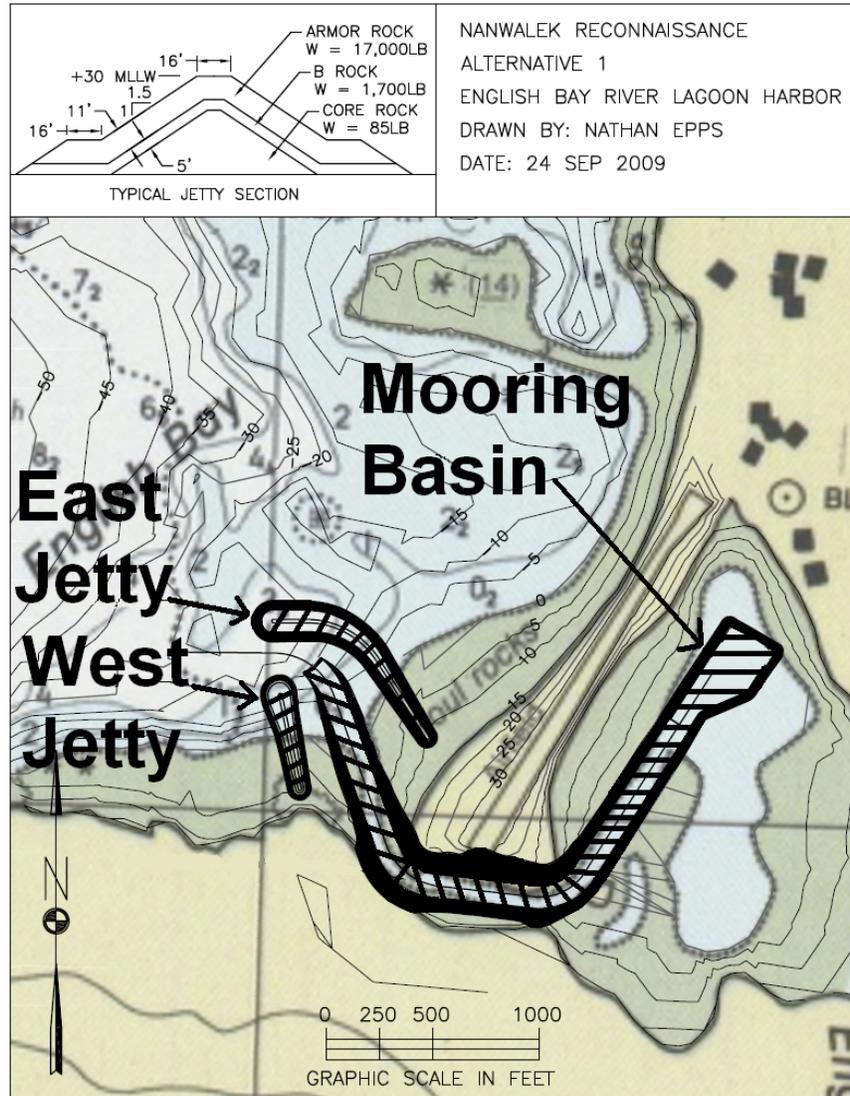


Figure 3. Alternative 1 – English Bay Lagoon Harbor
(Present Value Construction Cost and Benefit, \$48,000,000 and \$188,000)

Alternative 2 - Cook Inlet Site. This alternative is a small boat harbor located along the Cook Inlet side of the Nanwalek airstrip (Figure 4). This alternative includes a dredged anchorage basin and entrance channel, a jetty, and a breakwater. Minimal dredging will be needed. The basin would not have mooring floats. The crest elevation would not be higher than approximately 30 feet MLLW to avoid creating an obstruction to the airport. The jetty would experience wave overtopping. The jetty is located in a more energetic wave climate and requires larger armor material compared to Alternative 1. Barge traffic would be able to enter the basin and offload on the beach. The harbor would increase ground traffic near the site and may constitute a safety hazard for air traffic. The village's sewer outfall is located along the beach in the vicinity of this alternative. The Alaska Native Tribal Health Consortium is planning to relocate the line out of this immediate area. The relocation cost is excluded from this alternative.

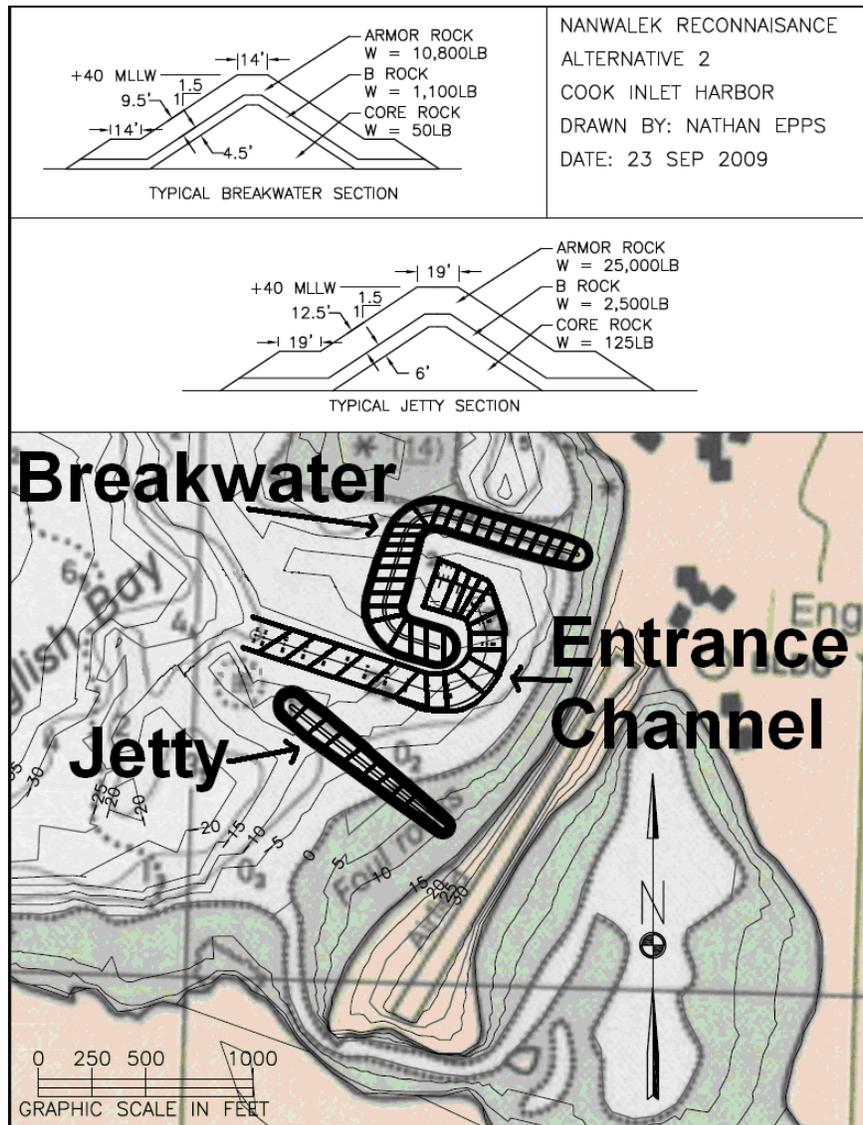


Figure 4. Alternative 2 – Cook Inlet Harbor
(Present Value Construction Cost and Benefit, \$76,000,000 and \$950,000)

Alternative 3 - Port Graham Harbor with Intertie Road. This alternative is a harbor (Figure 6) at Port Graham with access to Nanwalek provided by a new gravel road. The Alaska Department of Transportation and Public Facilities (ADOT&PF) is investigating the construction of a shared airport for the communities, which includes an intertie road. The road is approximately three miles long and follows an existing trail shown in Figure 5. Harbor alternatives for Port Graham are from the 2009 Port Graham Reconnaissance Report. These harbor alternatives included various configurations of a breakwater and mooring basin.

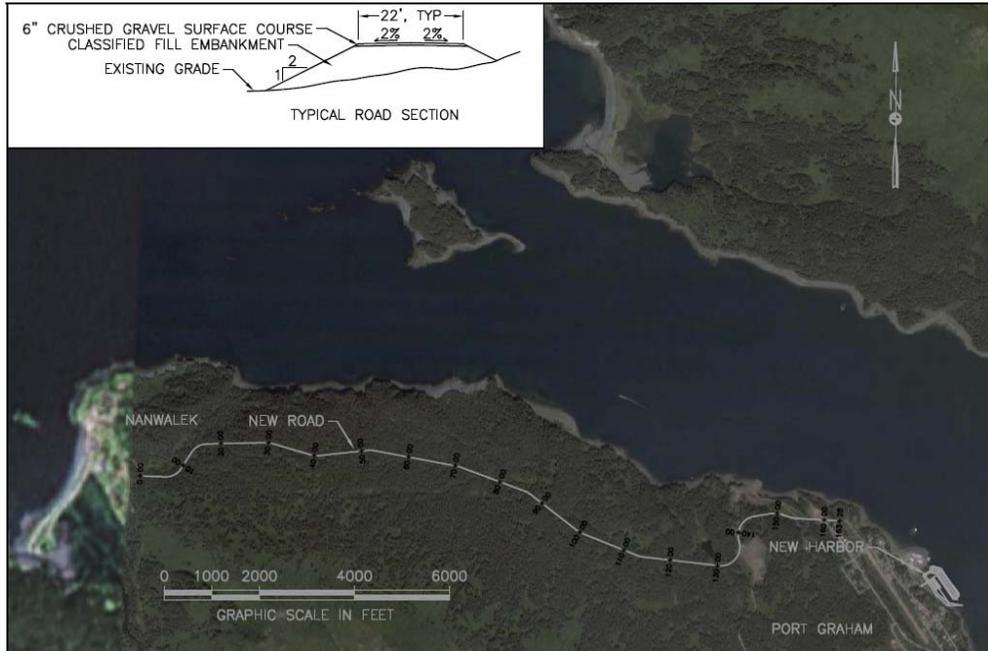


Figure 5. Port Graham Intertie Road.



Figure 6. Alternative 3 – Port Graham Harbor
(Present Value Cost and Benefit, \$28,000,000 and \$403,000)

c. Preliminary Evaluation of Alternatives

(1) Likely Benefits of Projects. Benefits that may accrue with a harbor project at Nanwalek include avoided dry storage, savings from avoided travel, fuel delivery savings, and reduced boat damages. In addition to the benefits listed in Table 1 there are potential non-monetary benefits such as avoided sewer outfall damages, avoided runway interference, and avoided tidal subsistence contamination.

Alternative 1 would benefit local boat owners because they would no longer have to store boats on the beach and no longer have to wait for appropriate tidal conditions to enter the lagoon. The harbor would provide year-round protected moorage and reduce boat damage because boats could be left in the water during the winter in all but extreme weather conditions. Barge landings would continue to occur at the beach and would not benefit from this alternative.

For Alternative 2, the same benefits would occur for smaller boats as with Alternative 1. However, barge offloading could occur within the harbor and allow barge operators to make more efficient deliveries.

Alternative 3 would benefit for Nanwalek residents who chose to moor their boats at Port Graham. However, some boat owners stated they would continue to keep their boats in Nanwalek regardless of a harbor being constructed at Port Graham. Fuel and cargo delivery would be benefit from offloading at the more naturally protected shoreline of Port Graham. However, there would be an added cost to transport fuel and cargo between the two communities.

Table 1. Total Economic Benefits (rounded)

Benefit Category	Alternative 1	Alternative 2	Alternative 3
	Nanwalek English Bay Lagoon Harbor	Nanwalek Cook Inlet Harbor	Port Graham Harbor and Intertie Road
Avoided Dry Storage	\$ 18,000	\$ 18,000	-
Travel Cost Savings	53,000	53,000	53,000
Fuel Delivery Savings	-	1,836,000	918,000
Reduced Boat Damage	384,000	384,000	-
Total Potential Benefits	\$ 455,000	\$ 2,291,000	\$ 971,000
Present Value of Benefits	\$ 188,000	\$ 950,000	\$ 403,000

Note: Benefits are based on a 50-year period of analysis and the Federal Fiscal Year 2010 discount rate of 4 3/8 percent. Totals rounded to 000's.

(2) Project Costs. Material, dredging, and mobilization/demobilization costs were taken from the 2009 Port Graham Section 107 Reconnaissance Study. Transport and placing unit costs were taken from 2009 estimates for harbor construction at Homer, Alaska. Figures for Alternative 3 in Table 2 are based on the median cost alternative proposed by the Port Graham study. Road costs used a unit price of \$3,000,000 per mile based on preliminary information from an ADOT&PF study. That study investigates the construction of an airport for Nanwalek and Port Graham with a road that would connect the two villages. The road may be constructed as part of the new airport at which point its cost would be eliminated from this alternative.

Table 2. Cost Estimates (rounded)

Cost Category	Alternative 1	Alternative 2	Alternative 3
	Nanwalek English Bay Lagoon Harbor	Nanwalek Cook Inlet Harbor	Port Graham Harbor and Intertie Road
Mob and Demob	750,000	750,000	750,000
Armor Material	33,000,000	69,700,000	14,000,000
Material Transport	12,200,000	800,000	2,000,000
Material Placement	1,300,000	3,500,000	1,400,000
Dredging	700,000	1,200,000	900,000
Intertie Road	-	-	9,000,000
Total	\$ 48,000,000	\$ 76,000,000	\$ 28,000,000

Note: Transport and Placing Costs were taken from 2009 Homer harbor cost estimates. Road Cost taken from AK DOT&PF study.

(3) Environmental Considerations. The community’s existing sewer outfall line crosses into the channel which the barge must use to deliver to the beach. The outfall line was damaged three years ago by the barge’s anchoring system during delivery. This caused potentially unsafe conditions as untreated sewage waste is transferred through the outfall line directly into English Bay. Occasionally the line fills with sand or rock and new holes have to be ground into the line to release the material. These repairs are completed by Alaska Native Tribal Health Consortium (ANTHC). ANTHC is planning to move the outfall line to provide safer conditions.

The beach adjacent to the barge landing site is a tidal subsistence area. This area is subject to damage from boat and barge landings, as well as potential contamination from fuel spills or sewer outfall damages. The English Bay Lagoon is an important subsistence area as salmon travel through the lagoon and up the river to spawn.

7. Federal Interest. A comparison of construction cost and economic benefit is shown in Table 3. For all alternatives the construction cost greatly exceeds the economic benefit. Therefore, there is no Federal interest in further study of navigation improvements for Nanwalek.

Table 3. Comparison of Project Cost and Economic Benefit (rounded)

	Alternative 1	Alternative 2	Alternative 3
	Nanwalek English Bay Lagoon Harbor	Nanwalek Cook Inlet Harbor	Port Graham Harbor and Intertie Road
Present Value Cost	\$ 48,000,000	\$ 76,000,000	\$ 28,000,000
Present Value Economic Benefit	\$ 188,000	\$ 950,000	\$ 403,000

8. Study Phase Schedule. N/A

9. Recommendations. Because the costs of all harbor alternatives exceed the potential economic benefits, further study to determine the feasibility of providing navigation improvements for Nanwalek, Alaska is not recommended at this time. The recommendations contained herein reflect the policies governing formulation of individual projects and the information available at this time. They do not necessarily reflect program and budget priorities inherent in the local and State programs, or the formulation of a national Civil Works water resources program.

10. Views of the Sponsor. The sponsor concurs with the findings of this report.

11. Views of Other Resource Agencies. Because of the funding and time constraints of the reconnaissance phase, only limited and informal coordination has been conducted with other resource agencies.

12. Project Area Map. See Figure 1.

13. Supplemental Information. N/A

14. Feasibility Phase Cost Estimate. N/A