US Army Corps
of Engineers ®
Alaska District

General Reevaluation Report
Environmental Assessment
and Finding of No Significant Impact

Saint Paul Small Boat Harbor
Saint Paul, Alaska

February 2006

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
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GENERAL REEVALUATION REPORT
SAINT PAUL SMALL BOAT HARBOR
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EXECUTIVE SUMMARY

This report reevaluates the authorized federal project at Saint Paul, Alaska. The authorized project was a result of the findings from the Feasibility Report of navigation improvements at Saint Paul, dated August 1996. WRDA 1999 authorized the modification of the authorized project to include a small boat harbor. This General Reevaluation Report (GRR) was prepared to serve as a decision document to support amendment of the existing project cooperation agreement and to demonstrate that with the addition of the small boat harbor, the authorized projects remains technically sound, and economically and environmentally acceptable.

Initial harbor construction at Saint Paul was completed in 1990. The design vessel length was 100 feet in length with an unladen draft of 12 feet. The Corps of Engineers and the city of Saint Paul completed a feasibility study of needed harbor improvements in 1996. The recommended plan provided an entrance channel depth of –30 feet MLLW, a maneuvering basin at –29 feet MLLW, a spending beach on the lee side of the detached breakwater, three offshore reefs parallel to the main breakwater, each 1,300 feet long with a crest elevation of –12 feet MLLW, and a environmental restoration measure to restore water circulation and biological productivity to Salt Lagoon. This plan was authorized by Section 101(b)(3) of the Water Resources Development Act (WRDA) of 1996, and is currently under construction.

The small boat harbor recommended herein would reduce local problems including: inadequate moorage, harbor congestion, vessel launch and retrieval delays, and safety hazards. The plan would also reduce operating costs of commercial fishing, existing damages to vessels, existing delays associated with use of the deep draft harbor, existing dock maintenance costs, vessel repair costs and improve the subsistence fishery and the safety of vessels operating in the harbor.

The recommended plan is located at the South Village Cove and is designed to accommodate a 60-vessel fleet, with a footprint of approximately 12 acres. General navigation features include an entrance channel at –16 feet MLLW, a maneuvering basin at –12 feet MLLW, a rubblemound breakwater, erosion protection, and a circulation berm. Local service facilities (LSF) include a mooring basin and floats, docks, boat launch ramp, boat lift trailer, and walkway ramps.

The national economic development (NED) plan is the recommended plan. The features of the recommended plan that contribute to the Nation have a construction cost of $11,742,000 (October 2005 price level), excluding $12,000 for navigation aids. This provided an annual NED investment cost of $849,000 including an annual operation and maintenance cost of $159,000. Average annual NED benefits are $2,082,000. The project's benefit to cost ratio is 2.5 with annual net benefits of $1,233,000. The fully funded cost of the recommended plan escalated to the mid-point of construction is estimated as $13,261,000.

As local sponsor, the city of Saint Paul would be required to pay the non-Federal share of the cost of construction of the general navigation features as specified by Section 101 of the Water Resources Development Act of 1986. This amount is estimated at $698,000. The city must also pay the entire cost of the LSF, which is estimated at $8,227,000. The non-Federal share of all costs of the project is $8,929,000. The Federal share of the project is $2,825,000,

which includes $12,000 for navigational aids. The U.S. Coast Guard would provide these navigation aids.

The recommended plan is compatible with the existing project. The overall project with the added small boat harbor remains economically justified, technically feasible, and environmentally acceptable.

PERTINENT DATA

Recommended Plan

Dredging	Area (ac)	Bottom Elevation (ft)	Dredging Vol. (yd^3)	**Breakwater**	
Maneuvering Basin	1.1	-12 MLLW	22,000	Length, total	445 ft
Mooring Area	3.3	-12 MLLW	41,000	Crest elevation	10 ft, MLLW
Entrance Channel A	2.3	-16 MLLW	48,000	Crest width	10 ft
Entrance Channel B	1.4	-12 MLLW	29,000	Reconfigure splitter breakwater	
Tidal Pool	2.5	0 MLLW	16,000	Length, total	150 ft
TOTAl	8.1		156,000	Crest elevation	10 ft, MLLW
				Crest width	8 ft

Project Costs and Benefits

October 2005 Price Level

Item:	Federal ($)	Non-Federal ($)	Total
General Navigation Features [a]	2,813,000	698,000	3,511,000
Local NED-Associated Costs	0	8,227,000	8,227,000
LERR (GNF) – Acquisition credit	0	4,000	4,000
Aids to Navigation	12,000	0	12,000
TOTAL NED Costs	2,825,000	8,929,000	$11,754,000
NED investment cost (w/ interest during construction)			$12,355,000
Interest and Amortization of NED investment cost			$690,000
Average annual NED maintenance cost			$159,000
Total average annual cost:			$849,000
October 2005 price level, 5 1/8 %, 50-year project life			
Average annual NED benefits			$2,082,000
Net annual NED benefits			$1,233,000
Benefit/cost ratio			2.5 : 1

[a] Cost sharing reflects provisions of WRDA 1986 – non-Federal initial share 10% of GNF plus reimbursement of 10% GNF minus LERR credit

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1.0 INTRODUCTION

1.1 Study Authority

This study is a general reevaluation of a previously authorized project at Saint Paul Island, Alaska. The reevaluation was authorized by the United States Congress in the Water Resources Development Act (WRDA) of 1999. Specifically, Section 303 of that Act states

> *The project for navigation, Saint Paul Harbor, Saint Paul, Alaska, authorized by Section 101(b)(3) of the WRDA of 1996 (110 Stat. 3667), is modified to include the construction of additional features for a small boat harbor with an entrance channel and maneuvering area dredged to a 20-foot depth and appropriate wave protection features at an additional estimated total cost of $12,700,000, with an estimated Federal cost of $5,000,000 and estimated non-Federal cost of $7,700,000.*

1.2 Scope of Study

The purpose of this general reevaluation study was to conduct analyses of project feasibility and prepare a decision document (this report) to serve as a basis to amend the existing Project Cooperation Agreement (PCA) for the previously authorized project. The scope of this study was to evaluate the viability and federal interest in development of a small boat harbor consistent with other ongoing or completed harbor developments. The study focused on conducting and documenting sufficient analyses to demonstrate:

1. that the authorized work added by Section 303 of the 1999 WRDA is compatible with the existing project,
2. that the overall project with the added work is economically justified,
3. that the project with the added work remains technically feasible,
4. that the project with the added work remains environmentally acceptable.

The Fiscal Year (FY) 2000 and 2001 Energy and Water Development Appropriations Acts provided funds for continuation of construction of the previously authorized Saint Paul Harbor project. Existing harbor features and features currently under construction are described in Section 1.6. This funding supported the analyses documented in this General Reevaluation Report (GRR).

1.3 Study Participants

The city of Saint Paul and the U.S. Army Corps of Engineers (Corps), Alaska District, have conducted this general reevaluation study as a partnership. The study management team includes representatives of both the city of Saint Paul and the Alaska District. Many other agencies and organizations contributed to this study, including:

Study Participants

U.S. Fish and Wildlife Service	Tanadgusix Corporation (local native corporation)
U.S. Environmental Protection Agency (EPA)	Central Bering Sea Fisherman's Association
National Marine Fisheries Service	Pribilof Islands Joint Management Board
Alaska Department of Transportation and Public Facilities	Saint Paul Interagency Working Group
Alaska State Historic Preservation Officer	Pribilof Bering Seafood
Alaska Department of Governmental Coordination	Bering Sea Ecotech
Alaska Department of Natural Resources	North Pacific Fisheries Management Council
Alaska Department of Fish and Game	International Pacific Halibut Commission
Tribal Government of Saint Paul Island	

1.4 Study Area

Saint Paul is located on a narrow peninsula on the southern tip of Saint Paul Island, the largest of five islands in the Pribilofs, in the eastern Bering Sea of Alaska. It lies 47 miles north of Saint George Island, 240 miles north of the Aleutian Islands, 300 miles west of the Alaska mainland, and 750 air miles west of Anchorage. It lies at approximately 57°07' N. Latitude, 170°16' W. Longitude (Sec. 25, T035S, R132W, Seward Meridian). The community is located in the Aleutian Islands Recording District.

Because the community is tied to the resources of the Bering Sea, the extended study area includes Bering Sea resources available to harvesters operating from Saint Paul and those delivering to processors based at Saint Paul. Also included is the area encompassing alternative harbors. These aspects of the extended study area are further discussed in Section 3.1 title "Problems and Opportunities". The study area is shown in Figure 1. The existing harbor layout is shown on Figure 2.

1.5 Previous Studies

Numerous studies of Saint Paul Harbor have been conducted by Federal, state, and local government agencies. Many of these studies are described in the following sections.

1.5.1 Investigations by the Corps of Engineers

Alaska District. 1996 (Dec.) "Information Report – Proposed Small Boat Harbor, Saint Paul Island, Alaska. The South Village Cove site was shown as the most acceptable with regard to planning criteria and objectives. The report recommended that (1) model studies be initiated for a harbor at the South Village Cove location, and studies should address practicality of incremental development; (2) the fully expanded harbor should include temporary moorage for 100-foot vessels; (3) because cost estimates are very sensitive to assumptions regarding materials to be excavated, exploration should be conducted prior to development of detailed estimates; and (4) upon completion of model studies, an Implementation Report should be prepared as a Post Authorization Change.

Alaska District. 1996 (Aug.) "Harbor Improvements Feasibility Report and Environmental Assessment," Anchorage. The study report recommends a plan for Salt Lagoon restoration and harbor improvements to accommodate increased boat and ship traffic, including refrigerated cargo vessels in excess of 300 feet in length. Improvements also aim to reduce damage to facilities and vessels from storm waves that overtop the breakwater. The

restoration of Salt Lagoon includes increasing water circulation and restoring biological productivity.

Alaska District. 1996 (Aug.) "Harbor Improvements Feasibility Report and Environmental Assessment - APPENDICES," Anchorage. This document includes the documentation of technical studies for the feasibility study.

Alaska District. 1995 (Jul). "Reconnaissance Report for Harbor Expansion," Anchorage.

Alaska District. 1995. "Saint Paul Salt Lagoon Project, Section 1135," Anchorage. This study was directed at opening a new channel on Boulder Spit outside the Saint Paul Harbor and enlarging the entrance channel to Salt Lagoon.

Alaska District. 1988 (May). "General Design Memorandum, Saint Paul Island Harbor, Saint Paul Island, Alaska," Anchorage. The harbor was authorized as a project for navigation in Section 202 of the Water Resources Development Act of 1986.

Waterways Experiment Station, Coastal Engineering Research Center (WES-CERC). 1998 (Sep). "Saint Paul Harbor Breakwater Stability Study," TR CERC-88-10, Vicksburg, MS.

WES-CERC. 1998 (Sep). "Saint Paul Harbor Design for Wave and Shoaling Protection, Saint Paul Island, Alaska," TR CERC 88-13, Vicksburg, MS.

Alaska District. 1998 (Feb). "Environmental Assessment, Saint Paul Island Harbor, Saint Paul Island, Alaska."

Alaska District. 1982 (Dec). "Final Harbor Feasibility Report and Environmental Impact Statement, Saint Paul Island, Alaska." This report describes the plan authorized by the Water Resources Development Act of 1986, Public Law (PL) 99-662. Modified by the Chief of Engineers' Report dated August 10, 1983.

1.5.2 Studies by Others

DHI Consulting Engineers, Dames & Moore, Inc. and Coastline Engineering. 1994 (May 5). "Report of Findings, Technical Addendum to U.S. Army Corps of Engineers Permit No. 870522, Marine Fill, Harbor Hydrodynamics and Salt Lagoon Impacts, Saint Paul Island Harbor Expansion," prepared for the Tanadgusix Corporation.

Tetra Tech, Inc. 1987 (Feb). "Alaska Saint Paul Harbor and Breakwater Technical Design Report," prepared for the city of Saint Paul.

Woodward-Clyde Consultants. 1983 (Nov). "Saint Paul Harbor Geotechnical Investigation," prepared for Norgaard Consultants.

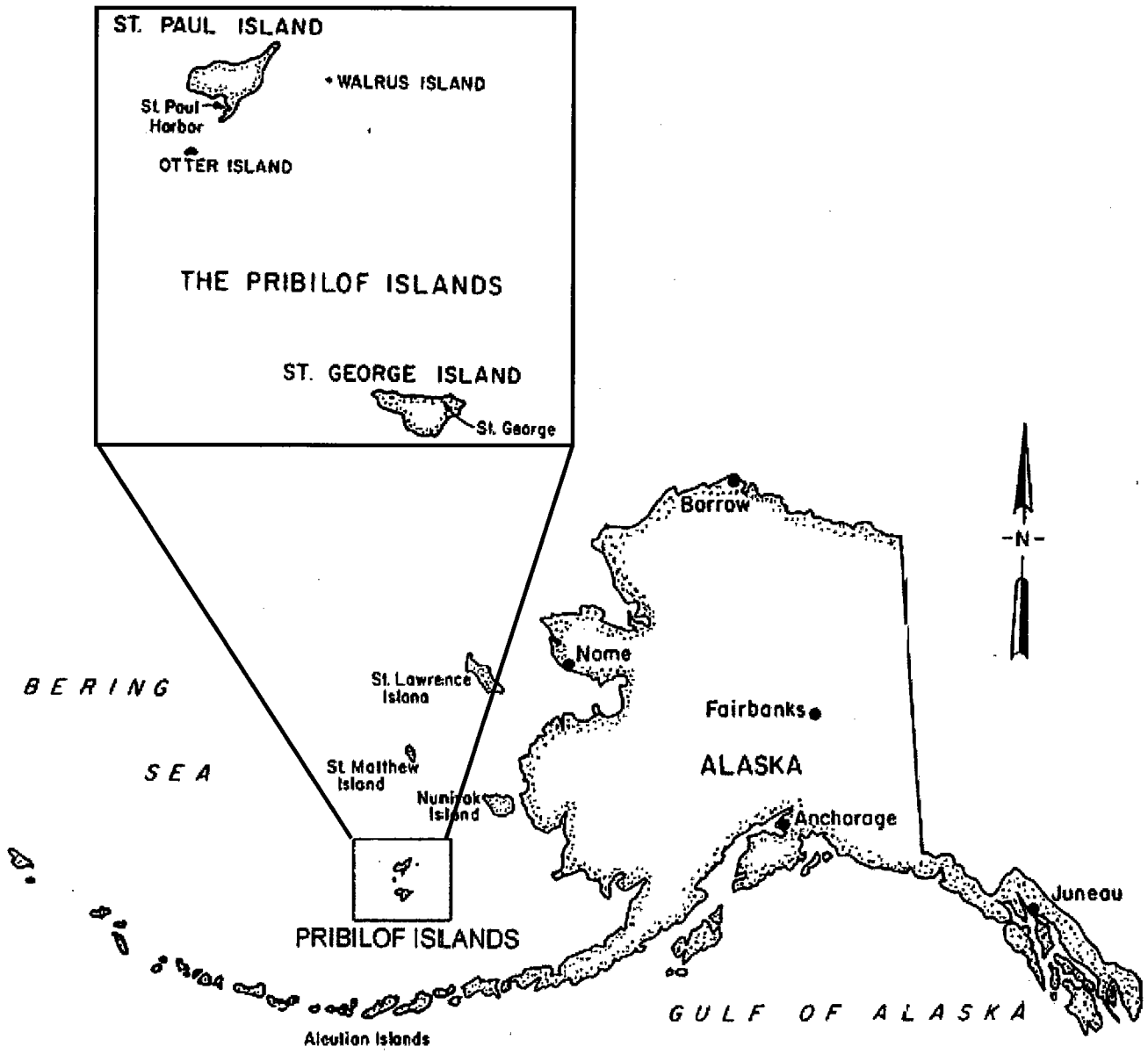

Figure 1. Location and vicinity Map

1.6 Completed and Ongoing Harbor Improvements

Saint Paul Harbor has been under development since the early 1980s. Development has occurred in three general phases. The three phases of harbor development are described in the following paragraphs and are displayed on Figures 2 through 4.

Phase 1: Harbor Development (complete) - A feasibility study and environmental impact statement to investigate navigational problems and opportunities in relation to Saint Paul Island and the eastern Bering Sea were completed in 1982. This report presented a harbor designed to accommodate vessels up to 120 feet and had a design fleet of 36 crabbing and bottomfish vessels. The project was based upon a design wave of 16.5 feet and 9.7 seconds for a fifty-year storm. Project features included a 1,800-foot breakwater, and an entrance channel and maneuvering area.

In 1983, a Chief of Engineers Report on the project was transmitted to the Secretary of the Army for review. This report and the plan it recommended were authorized in WRDA 1986. Also authorized in WRDA 1986, was the law (Section 204(e)) that permitted non-federal sponsors to undertake navigation improvements in harbors of the United States, subject to certain limitations. In December 1986, the city of Saint Paul requested permission to construct the authorized harbor under the authority of Section 204(e).

In 1988, the Corps completed the GDM for the harbor project, which the project design to include a main breakwater 1,050 feet long, 37 feet high; an inner breakwater 1,000 feet long, 18 feet high; a turning basin of 2 acres at a depth of 18 feet; a 700-foot dock; and a six-acre mooring basin. By 1990, construction of the general navigation features was completed. The phase 1 harbor features are shown on Figure 2.

Phase 2: Harbor Improvements (on-going) - Following completion of harbor construction in 1990, unanticipated demand for harbor services was experienced in Saint Paul Harbor. Harbor modifications were required to accommodate the increased boat and ship traffic, including refrigerated cargo vessels in excess of 300 feet in length. In addition, the constructed breakwater continued to experience problems with overtopping by storm waves causing damage to vessels and facilities.

A feasibility study of needed harbor improvements was completed in 1996. The recommended plan increased the depth of the entrance channel to –30 feet MLLW, a maneuvering basin at –29 feet MLLW, a spending beach on the lee side of the detached breakwater, and three offshore reefs parallel to the main breakwater, each 1,300 feet long at a depth of –12 feet MLLW. As an environmental restoration measure to restore water circulation and biological productivity to Salt Lagoon, the natural entrance channel to the lagoon will be realigned. The project, recommended in the 1996 feasibility report, was authorized by Section 101(b)(3) of the WRDA 1996 (110 Stat. 3667), and is currently under construction. The phase 2 harbor features are shown in Figure 3.

Phase 3: Small Boat Harbor Development (on-going study effort) - The report presents the findings of a study of the feasibility of adding a small boat harbor to the project authorized in 1996 and currently under construction. As presented herein, the study found the project to be engineering sound, economically justified as a last added increment to the existing project, politically acceptable, and implementable. These features are shown in Figure 4.

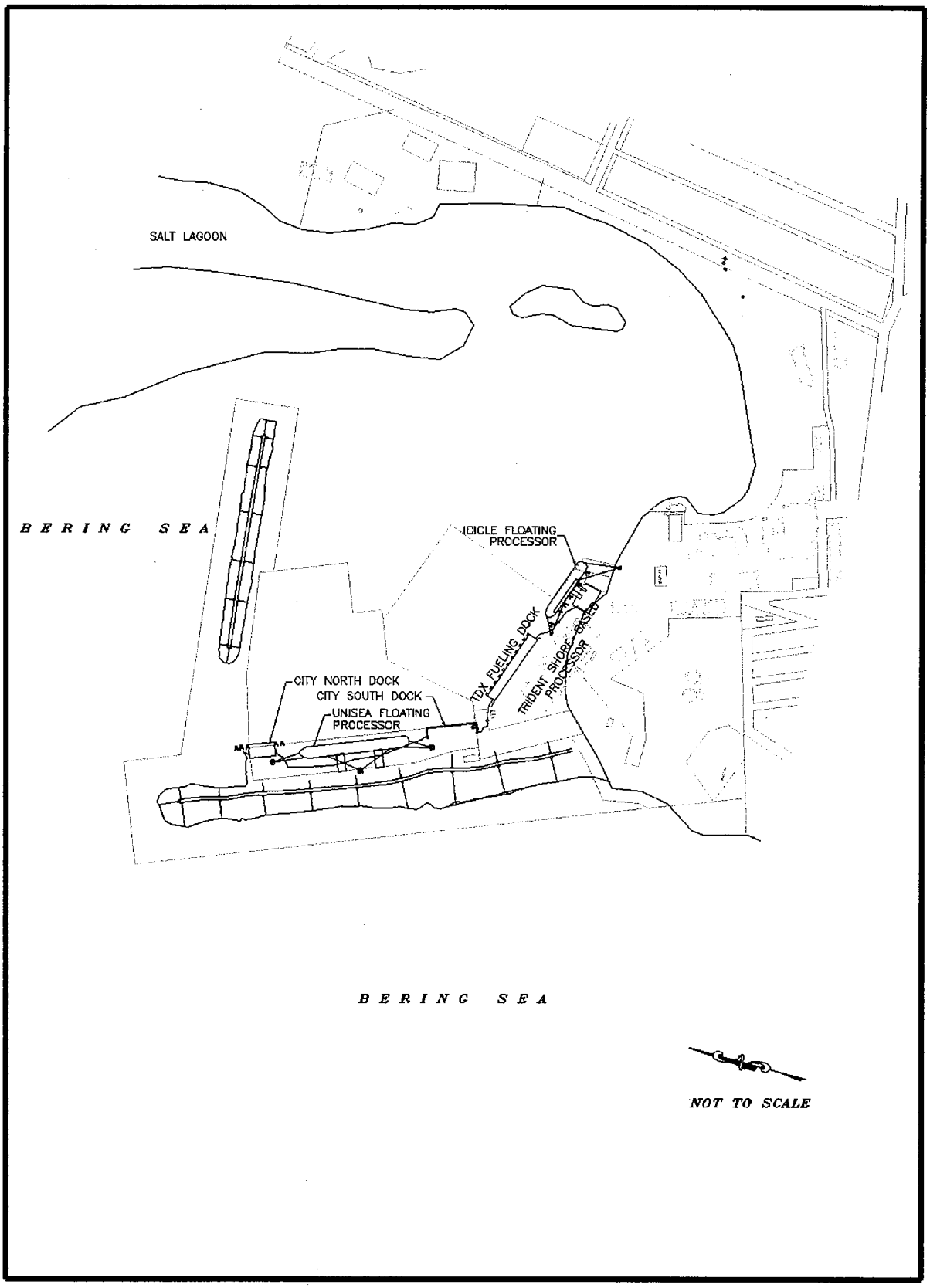

Figure 2. Harbor Development Prior to 1996 (Phase I)

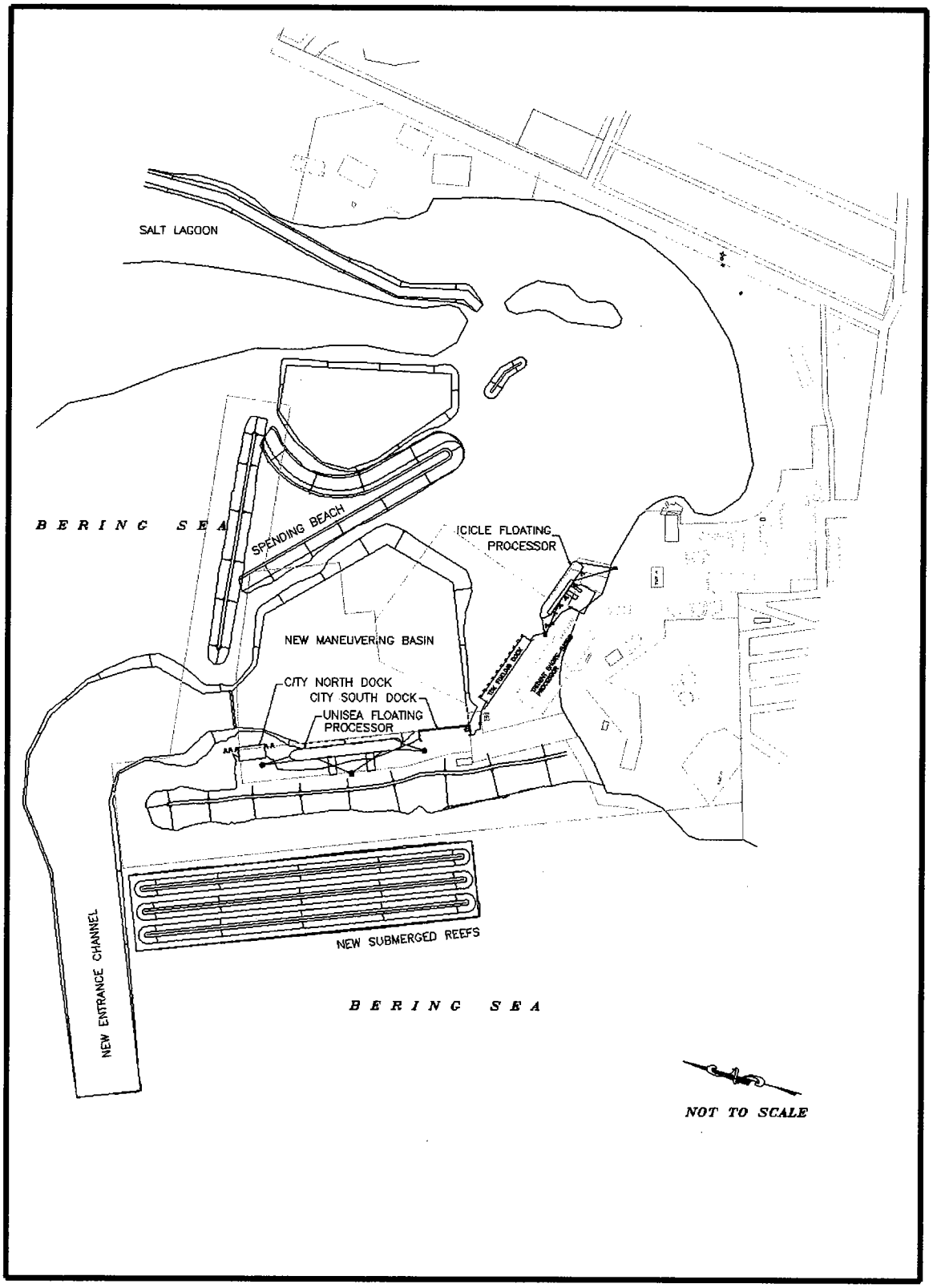

Figure 3. Phase 2 Harbor Development

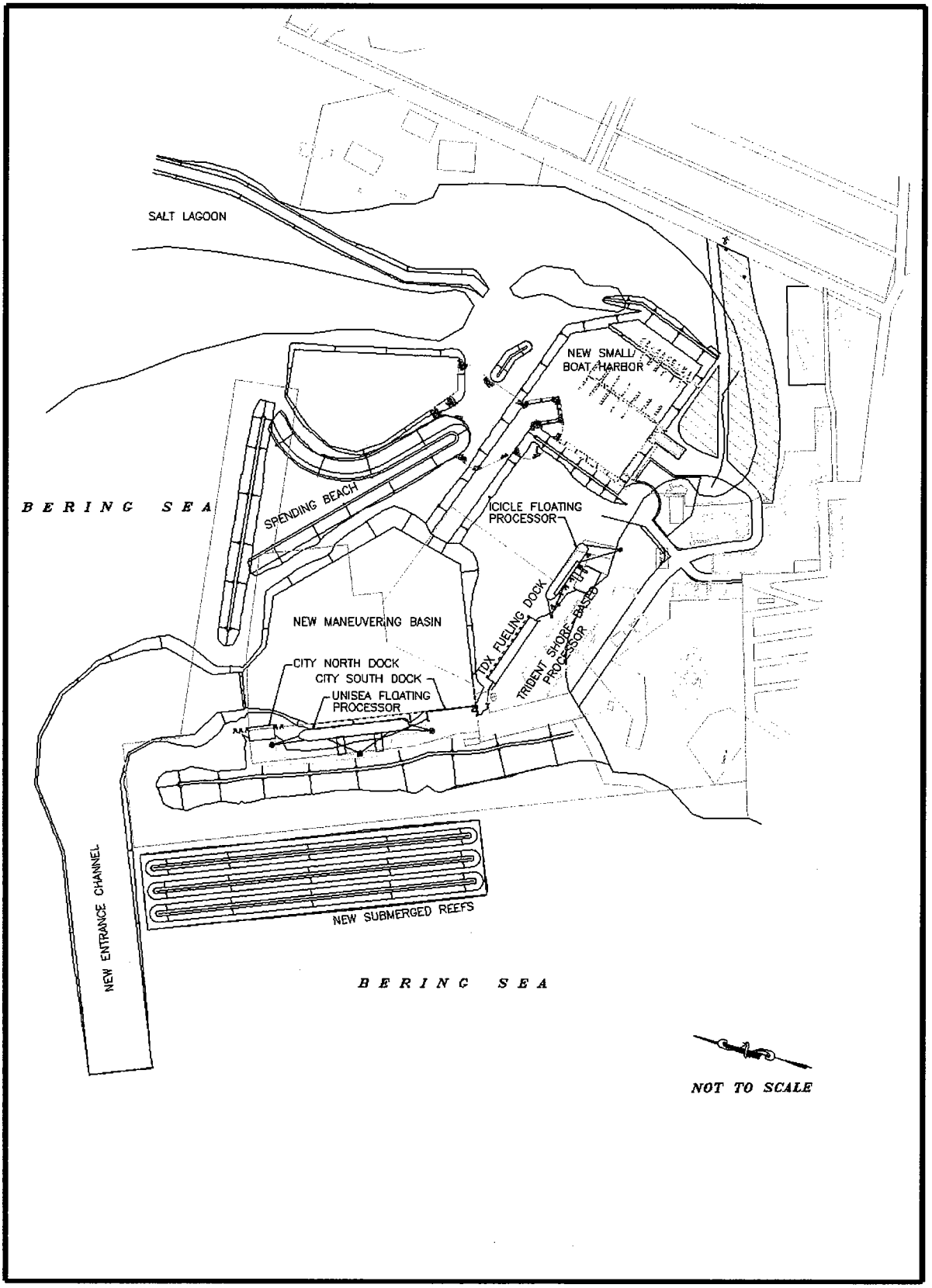

Figure 4. Phase 3 Harbor Development

2.0 STUDY AREA CONDITIONS

2.1 Socioeconomics

Saint Paul Island is the largest and northernmost of the Pribilof Islands in the eastern Bering Sea of Alaska with a land area of 44 mi^2. Only two of the Pribilof Islands are populated, Saint Paul with 585 people and Saint George with 290 people. Two-thirds of the Saint Paul population is Alaska Native. Saint Paul Harbor provides the only facility for boat moorage and service in the region except for a small harbor on Saint George Island.

Economic conditions on the Pribilof Islands are unique. Before October 1983, Saint Paul was classified as a Federal Government installation. The island was the center of fur sealing activities under the administration of the National Marine Fisheries Service (NMFS). Since the NMFS withdrew from the island in 1983, the community has had to find other sources of employment. The cessation of Government-supported sealing was a setback for the community: NMFS accounted for more than 60 percent of the total labor force employment and operated the island's basic services.

The City now provides basic services and has developed a new economic base related to fisheries by constructing a 750-foot breakwater and a 200-foot dock in 1986. The City of Saint Paul constructed the existing project in 1990, extending the main breakwater. The City also dredged the harbor to –23 feet MLLW, substantially deeper than the authorized elevation of –18 feet MLLW.

Prior to initial harbor development on the island, supply ships had to anchor offshore and be unloaded to open skiffs that took the cargo to the beach where it was carried ashore. Completion of the harbor has not only revolutionized the delivery of supplies to the island, it has also placed Saint Paul as a key transshipment point and processing center in one of the world's most productive fisheries.

Development of the harbor together with rapid changes in the fishing industry have placed major demands on Saint Paul Harbor to better accommodate the new mix of commercial fishing vessels, onshore and floating processors, and cargo vessels and barges. Use of the harbor over the last 10 years has surpassed all economic forecasts. Vessels in the 160-foot class routinely call on the harbor, which was originally intended as a refueling and water supply port for seven 110-foot vessels. Currently, three shore-based processors are located in the harbor, and vessels as large as 275 feet with 21-foot draft have called there. These demands resulted in the authorization of the deep draft harbor improvements currently under way.

Economic Base. Following the NMFS pullout, the City has had to build a new economic base, based largely on fishing. Many current fishing related jobs are seasonal, and local managers import workers to staff the food processing factories during peak harvest season. The developing local economy is the result of City development of a harbor to accommodate large fish catching and processing vessels. About 79% of adult residents have income from some form of employment (approximately 36% by local government). The most recent data available shows average household earned income among the island permanent residents was $40,900 in 1994, and per capita income was $13,100. Average earned income per employed person was approximately $18,000.

Employment in local government is large because the government role is woven into almost every aspect of the local economy, which is based on the fishing industry. The island economy is closely tied to a basically transient fishing fleet as a transshipment point and processing station. Management of this industry support role is a focal point for local government. Major sectors of employment of island residents in the local economy are summarized in Table 1.

Table 1. Saint Paul Employment By Sector

Sector	% Employed
Local Government	36%
Education	19%
Services	14%
Trade	12%
Fishing	18%

Even with the City's success in developing a fleet-service and processing-based economy, unemployment in the adult population remains at approximately 21%. After the harbor was constructed, the protected area was far too rough to accommodate smaller boats that island residents were interested in owning, and able to afford for subsistence fishing. Existing opportunity for subsistence fishing by the local fleet is limited by the lack of moorage and lengthy queuing periods for loading vessels during favorable weather windows. Today, island residents look forward to participation in the fishing industry as owners of modern harvesting vessels that would be made possible by implementation of a small boat harbor.

2.2 Fishery Resource Management

Responsibility for management and development of the fishery resources in the study area is shared between Federal, State, and quasi-governmental agencies. These agencies include the National Marine Fisheries Service (NMFS), the North Pacific Fishery Management Council (NPFMC), the Alaska Department of Fish and Game (ADF&G), and the International Pacific Halibut Commission (IPHC). The Magnuson Fishery Conservation and Management Act of 1976 (Public Law 94-265, as amended), often referred to as the Magnuson Act, provides for the conservation and exclusive management of all fishery resources within the U.S. Exclusive Economic Zone (EEZ). The U.S. EEZ extends from the seaward boundaries of the territorial sea (3 nautical miles from shore) to 200 nautical miles offshore around the coast of the United States.

2.3 Hydrologic and Hydraulic Environment

2.3.1 Location and Climate

Saint Paul is the northernmost and largest of the Pribilof Islands. The climate is maritime, resulting in considerable cloudiness, heavy fog, high humidity, and daily temperature fluctuations. Maritime influence in the Pribilofs keeps seasonal temperatures mild and daily variations to a minimum. Summertime temperatures are low with the highest recorded temperature being 64 °F. Precipitation on Saint Paul Island is minimal with an average annual rainfall of about 24 inches. The island area has periods of high wind throughout the year. Frequent storms occur from October to April, often accompanied by gale-force winds to produce blizzard conditions.

2.3.2 Tides and Water Levels

Tide levels at Village Cove on Saint Paul Island, referenced to MLLW, are shown in Table 2. Extreme high tide levels result from the combination of astronomic tides and rises in local water levels due to atmospheric and wave conditions.

Table 2. Saint Paul Tide Levels (ft)

Highest Tide (estimated)	+6.0
Mean Higher High Water (MHHW)	+3.2
Mean High Water (MHW)	+3.0
Mean Sea Level (MSL)	+2.0
Mean Low Water (MLW)	+1.0
Mean Lower Low Water (MLLW)	0.0
Lowest Tide (estimated)	-2.5

(Source: NOAA Tide Tables, 1980)

2.3.3 Currents

Currents near Village Cove are primarily tidal and are typically one to two knots, occasionally increasing to three knots when augmented by strong winds. The strongest nearby currents (to three knots) are encountered southeast of Village Cove between Reef Point and Otter Island. Currents within the localized area of the harbor, however, are dominated by storm surge and wave setup. Model studies of the harbor indicate currents of up to 8 feet per second (fps) are more than double the magnitude of currents associated with tides.

2.3.4 Ice Conditions

The icepack in the northern Bering Sea occasionally moves south and surrounds the island during periods of prolonged north and northeast winds between January and May. Mariners are warned by NOAA charts against the possibility of entrapment in Village Cove. Ice conditions could possibly preclude the use of the proposed day fishery mooring facilities during the months of January through May, and could require vessel removal for short periods in some years.

2.3.5 Waves

The existing harbor in Village Cove is in direct alignment with deep-water waves approaching between the west-northwest and southwest sectors. Deep-water waves approaching from the south and southeast sectors are partially sheltered by Saint George Island and Otter Island, and would diffract around Reef Point before impinging on the project site. Southerly and southeasterly deep-water waves therefore undergo considerable energy reduction before affecting the project site. Village Cove is in the lee of Saint Paul Island for waves approaching from northwest clockwise through southeast. Waves in the Bering Sea are extremely large, and around the shallower waters of Saint Paul Island, their heights are depth limited during numerous events each year. Maximum wave height to be expected near the entrance to the present harbor is 27 feet.

Wave heights in the present harbor are greatly modified by the breakwaters and spending beaches. Waves are expected to be attenuated to less than three feet by existing protection. Wave energy enters through both the east and west entrances with the dominant energy entering through the west entrance (the navigation channel).

2.3.6 Harbor Water Quality

Harbor water quality is dominated by the exchange of tide-generated flow through the harbor on its way to and from Salt Lagoon and by wave driven currents. The Salt Lagoon surface area is more than three times that of the harbor and more than double the tidal prism. This is very fortunate for the harbor because the harbor waters are mostly exchanged in one tidal cycle by just tidal flows. This characteristic does, however, put a great deal of pressure on the harbor users to maintain a clean harbor and to maintain as much flood flow as possible through the east entrance of the harbor to avoid contaminating or negatively impacting water quality in the Salt Lagoon. Harbor water is also exchanged by wave-generated setup even under minor storm conditions. The pocket where the eddy forms under storm conditions does not benefit to as great an extent as other portions of the harbor and care needs to be taken to insure against water quality problems in that region.

2.3.7 Lagoon Water Quality

Salt Lagoon water quality appears to be dominated by tidal exchange. Because of the small range in tidal elevation and length of basin, several tide cycles may be required before all the water is exchanged. Mixing of water in the tidal lagoon is thought to be good because waters are shallow, and winds are frequent and strong enough to stir from top to bottom. Storm surge water elevations of up to three or four feet above normal tidal elevations cause supplemental exchange in the lagoon and periodically improves water quality. Maintaining water quality in the Salt Lagoon is imperative to the local community.

2.3.8 Sedimentation

Sediments in the harbor area consist of sands and well-rounded boulders. The dominant transport mechanism for both is the current generated by the storm surges. Wave generated currents under more minor storm conditions are probably also capable of moving sands along the shoreline. Currents in the pocket where the harbor resides are generally in a clockwise direction and prior to harbor construction probably resulted in the harbor area fluctuating between being a sediment sink and a sediment source for down flow beaches. The position of the Salt Lagoon entrance has shifted several hundreds of feet over brief periods of time, indicating insufficient boulders in the material being transported to armor and hold its position beyond its present northerly position. The Salt Lagoon entrance is being stabilized in the deep-draft project currently under construction.

Prior to phase 1 harbor construction, sediment accumulation in the area was limited, and most accumulations were transported after brief periods of storage in the lagoon entrance. Since construction of the breakwaters, the currents have been modified, and the sediments reaching the harbor are retained in the area south of the east entrance in the general area from the entrance to the historic Salt Lagoon channel. Storm surges and the current driving mechanisms, however, are still similar to pre-construction. Construction sediment accumulation within the harbor appears to be less than 2,000 yd^3 per year: However, precise measurements of infill have not been made, and the 2,000 yd^3 could be exceeded. The observed accumulation is in the eastern segment of the harbor and was not expected to encroach on Federal facilities for five years.

Much of the sediment approaching the harbor is diverted westward along the detached breakwater and recirculated to the ocean about 1,000 feet offshore of its previous to existing

project circulation path. This likely results in some deficit of sediments along the headlands to the west and may extend into Zolotoi Bay.

2.4 Environmental

This section describes baseline environmental conditions in the study area. The documentation includes a summary of threatened and endangered species and other environmental resources of concern, including the salt lagoon, sea birds, and fur seals.

2.4.1 Threatened and Endangered Species

Two species of birds, six species of whales, and one sea mammal listed in the "United States List of Endangered and Threatened Wildlife and Plants" have been reported on or in the vicinity of the Pribilof Islands. The short-tailed albatross is reported as accidental in the Pribilofs, while a confirmed sighting of the Eskimo curlew has not occurred since the late 1880s. The six whales are the blue, finback, sei, humpback, right, and sperm. The sea mammal is the stellar sea lion, which occurs at two locations on Saint Paul Island but not in the vicinity of the harbor.

2.4.2 Environmental Resources of Concern

In addition to the threatened and endangered species listed above, the study area includes other resources of concern. Of the most significant concern for this study are the Salt Lagoon, sea birds, and fur seals, which are descried in the following sections. Other land mammals inhabiting Saint Paul Island include reindeer, house mouse, Pribilof shrew, and arctic fox. Reindeer were transplanted to Saint Paul Island in 1911 to provide subsistence meat for the Native population. Reindeer now roam freely on the island and are managed by the Saint Paul tribal government. Foxes are relatively abundant, particularly near bird colonies and on the main breakwater.

Salt Lagoon. The salt lagoon and its associated intertidal areas is the only salt lagoon on the island and in the central Bering Sea. It is an extremely productive body of water and supports large numbers of shorebirds, waterfowl, and other avian species from spring through fall. The heavy invertebrate populations also support juvenile fishes and water-oriented birds in Village Cove. Migrating waterfowl and many species of shorebirds use Salt Lagoon during the summer months. Unacceptable impacts to Salt Lagoon associated with the original harbor and breakwater development require water circulation restoration to protect the sensitive resource. Environmental restoration is a component of the harbor improvements project currently underway. The local community stresses the importance of avoiding any new impacts the Salt Lagoon when designing new projects.

Sea Birds. An estimated 250,000 sea birds of 11 species use Saint Paul Island annually for nesting and rearing young. The most abundant species are thick-billed murre, common murre, black-legged kittiwake, parakeet auklet, and least auklet. A large least auklet colony exists on Village Cove beach. The majority of the world's population of red-legged kittiwake nest in the Pribilofs. Lesser numbers of waterfowl, shore birds, and songbirds are found on the island either as migrants or residents. Salt Lagoon, the only salt estuary in the Bering Sea, is an important resource for migrating sandpipers and turnstones as well as migratory Eurasian species. Waterfowl occasionally use the freshwater ponds on Saint Paul Island.

Fur Seals. Seventy-five percent of the world's population of northern fur seals establish harems and pup on the Pribilofs at established rookeries scattered around the islands. Seals come to the Pribilofs for breeding and pupping from early May to October, feeding within a 200-mile radius of the islands. Fur seals begin migrating toward Southern California and Northern Japan during October and remain at sea until returning to the Pribilofs in May. They feed on anchovy, hake, herring, Alaska pollock, and other fish and squid. Other marine mammals, principally whales and porpoises, frequently are observed offshore at Saint Paul. Several fur seal rookeries are near the harbor but appear to be far enough away so that no direct harbor activities would impact them. Fur seals have been seen inside the harbor and in the entrance to Salt Lagoon.

2.4.3 Environmental Assessment

The environmental assessment is located in the environmental documents sections (colored pages) of this report. The assessment concluded that the Saint Paul small boat harbor could be constructed with no significant effect on the quality of the environment. The finding of no significant impact was signed September 9, 2002. The majority of the impacts would be minor and of short duration. The proposed action is consistent with state and local coastal management programs to the maximum extent practical.

2.5 Geology

The Pribilof Islands were formed through volcanic activity. Saint Paul Island is made up predominately of lava flows and sills of basaltic habit, with minor amounts of pyroclastic tuffaceous material and glacial sediments. No trace of glaciation is seen on the surface of the island, but evidence of glacial striation exists on Saint George Island, and Pleistocene sediments of apparent glacial origin are exposed in vertical sections along some of the steep sea cliffs near the city of Saint Paul.

Surface material in the proposed project area is generally sandy with scattered cobbles and boulders. Data from test borings, as well as from pile driving logs and dredging logs, indicates that subsurface material in the project area is black/gray with red poorly graded sand. Seismic profiles indicate that sediment deposits in the basin are underlain by very dense material (previously interpreted as bedrock).

3.0 PLAN FORMULATION

3.1 Period of Analysis

The primary period of study and analysis for this report was based on an October 2001 price level. Preliminary and detailed cost estimates and economic analyses, screening of alternatives, and subsequent selection of the NED plan were based on this price level.

During the review phase of this report the economic analysis and cost estimate of the recommended plan were updated to an October 2005 price level. An assessment of the alternative plans was also performed based on this update. This assessment confirmed the selection of the recommended plan. The recommended plan's project costs, cost apportionment, and NED benefits are presented in an October 2005 price level.

3.2 Problems and Opportunities

Residents of Saint Paul Island depended on marine mammal programs of the NMFS for employment. When NMFS withdrew in 1983, the community had to find other means of employment. Because of the Island's remote location in the eastern Bering Sea of Alaska, employment opportunities were limited and tied to the surrounding ocean's fishery resources. To take advantage of these opportunities, the community constructed a deep draft harbor consisting of a breakwater, channel, and dock in 1986. The Corps of Engineers (Corps) modified the project and completed construction in 1990. Until the 1980's, only a few skiffs and traditional skin boats were in service on the island. These vessels were used primarily for lightering freight to the island from ocean going vessels. Following completion of the harbor in 1990, the local fleet has grown to 26 vessels in the 20 to 30-foot class, primarily used in a day fishery for halibut within sight of the island.

Lack of protected moorage in the harbor for the small boat fleet has constrained opportunities to effectively participate in the region's commercial fisheries. Poor facilities for loading and offloading vessels cause significant time delays as local fishing vessels try to take advantage of fair weather windows. While the island has a strategic location advantage for efficiently participating in the fisheries, adequate infrastructure is not in place to realize the benefits. Local concerns were identified and documented in public meetings at the community. Major categories of problems identified by the public included inadequate moorage, harbor congestion, launching and haulout of vessels, inadequate upland support facilities, safety concerns, problems with theft and vandalism, and environmental concerns. Some specific local comments related to these problem areas are provided below.

3.2.1 Inadequate Moorage / Harbor Congestion

- The existing temporary dock, launch ramp, and haulout machinery have a practical limit of 32-foot vessels. Resources next to the island are plentiful, but the small boats are unsuited to the Bering Sea conditions. Upgrading of the fleet will require a protected moorage and an improved haulout facility. The Central Bering Sea Fishermen's Association (CBSFA) has determined local moorage needs to be for 30–60 or possibly more vessels up to 58 feet.
- The temporary floating dock does not have adequate space for all of the local vessels involved in commercial fishing, or aspiring to be involved. A concern of the Aleut Tribal Community is that members needing to launch or tie up skiffs for purposes of

subsistence harvest have no room. There is no direct economic consequence to the commercial harvest, but there is a consequence in the form of family subsistence hardship. The tribe needs a facility that will support subsistence use.

- The temporary docks and launch facilities are essentially limited to vessels no larger than 32 feet. This limitation of vessel size causes severe limits to be placed on the harvest. Larger vessels would be able to venture further out to sea and would be used in a wider range of weather conditions. They would also be more effective in targeting more distant stocks and would have higher production rates.
- The smaller vessels use the deep draft dock to unload their catch. When they arrive, they must wait for larger vessels to clear the area. Frequently they find themselves working while vessels in the 100- to 200-foot class are docking next to them. This can lead to extensive waiting periods, crowding, and safety concerns. There is a need to minimize congestion caused by small boats using the deep draft facility.
- Dock space is inadequate and rafting is sometimes required. Since there is no wave and wind protection, the vessels get banged together, and damages occur. Damages to vessels and docks cause the cost of harvest to increase. A new harbor would eliminate the damages, which the vessel owners consider to be part of their operating budget. Some of these costs appear as lost time since the vessels and docks are removed when there is a threat of storm damages.
- Currently large vessels enter the harbor for crew changes and for re-provisioning. The large number of service calls adds to congestion outside the harbor, in the approach channel, and at the harbor. Because the harbor is very busy, vessels often wait outside for dock space to become available. Future users of a small boat harbor have explored the possibility of tending waiting vessels with a water taxi service that would operate out of a new small boat harbor. It would move people and supplies to and from waiting vessels, at their option and would reduce the number of vessel hours spent waiting for service.
- The fleet is moored at unprotected temporary docks. When threatened by wave conditions the vessels and the docks must be removed from the water. It is a costly and time consuming operation, and it brings an end to all harvesting. The fleet needs all weather protection for as much of the year as possible.
- The temporary dock is impractical for managing heavy gear. With a protected moorage, a breakwater could be modified to provide for loading and off-loading. It could also serve to moor vessels too large to fit into the small boat harbor as well as for temporary moorage of disabled.

3.2.2 Launch and Haulout

- There is an existing launch ramp, but the surface is broken and sheets of concrete have been displaced causing an uneven traction surface. The ramp is too narrow to accommodate launch trailers sized to handle the larger vessels. Its use is further discouraged by the fact the ramp terminates at the water's edge causing vehicles to be stuck and damaged as they roll off the edge. The launch ramp is not protected from wave action and is frequently unusable for that reason.
- The vessels and docks must be removed by use of a rented crane owned by a local contractor. Protected harbor is needed to save the cost of crane service.

- Congestion in the launch process, limited crane services, and ramp limitations stretches out the amount of time it takes to launch the entire fleet. At times, the launch process can be so challenging as to eat away the fair weather window to the point that fishing trips are canceled.
- High haulout cost results from the need to hire a crane. The use of a crane requires an operator and a spotter. An additional cause of high cost is limited uplands, which cause a bottleneck during the haulout thus stretching out the time that the crane is needed. Future users argue that a small boat harbor must provide a means to remove vessels and docks efficiently at low cost.

3.2.3 Inadequate Upland Facilities

- The existing temporary dock has practically no dedicated staging area. The shore side area is not dedicated to providing support for the harbor operation so parking of trucks, trailers, vessels, and gear is neither guaranteed nor secure. This creates a situation where juggling of equipment causes a great deal of lost time. All of the potential users of a small boat harbor stated that adequate uplands be necessary as part of the moorage facility.
- The island lacks a convenient boat repair facility. Vessel repair, maintenance, and improvements require repair crews to be flown to Saint Paul or require vessels to be taken elsewhere sometimes under tow or aboard a freighter.
- An ongoing vessel repair and maintenance project sponsored by CBSFA has been one of the most important undertakings for the local fleet. Currently, the vessel work done during these clinics takes place in the open or in a temporary shop. Future users of a small boat harbor have urged that the harbor be planned such that community development of a boat repair facility can be integrated into the overall harbor plan.

3.2.4 Safety

There are reefs near the existing temporary docks. The approach is so limited by the reefs that several captains familiar with the approach have damaged their vessels. An adequate and safe approach channel is needed in connection with a new moorage facility.

3.2.5 Theft and Vandalism

Vessel security is a concern due to theft and vandalism problems related to the large number of short-term visitors. The island is host to several hundred temporary workers when local processing facilities are in full swing.

3.2.6 Environmental Concerns

Salt Lagoon is a sensitive environmental area southeast of the temporary dock and moorage. Small boat traffic congestion and reefs near the dock could potentially cause of accidents resulting in pollution spills.

3.3 Planning Objectives

The Federal objective of water and related land resources planning is to contribute to National Economic Development (NED) in a way consistent with protecting the Nation's environment. NED features are those that increase the net value of goods and services

provided to the economy of the United States as a whole. Only benefits contributing to NED may be claimed for economic justification of the project.

The specific planning objectives of this study relate to addressing study area problems and opportunities consistent with achieving the NED goal of improving the value of goods and services to the Nation. The following are the specific planning objectives of this study:

- Reduce operating (harvest) costs of U.S. commercial fishing
- Reduce damages to fishing vessels caused by storm waves within the existing harbor
- Reduce damages to fishing vessels associated with current loading/offloading
- Reduce and prevent costs associated with vandalism and theft
- Reduce current delays in use of deep draft harbor
- Reduce current vessel repair costs
- Reduce costs of dock maintenance
- Enable effective and efficient subsistence fishery
- Improve safety of vessels operating in the harbor
- Protect environmentally sensitive areas, especially Salt Lagoon

3.4 Plan Evaluation Criteria

Planning policy provides four general plan evaluation criteria for the evaluation of alternatives. These criteria are: completeness, effectiveness, efficiency, and acceptability. For the purpose of this study, these general criteria were further specified in the categories of economic criteria, engineering criteria, environmental criteria, and social criteria. These specific criteria are as follows.

3.4.1 Economic Criteria

The evaluation and comparison of alternative plans and selection of the NED plan is based on an October 2001 price level with a 50-year project life. During the report review process, the costs and benefits of the NED Plan were updated to October 2005 price levels. Other alternatives (those not selected as the NED plan) were not updated to this price level. The lineal relationship of escalated benefits and costs of the alternatives would not have changed selection of the NED plan. Presentation of the NED plan is based on an October 2005 price level.

Plan development must be such that benefits exceed project costs to the maximum extent possible. The benefits must be capable of being expressed in terms of constant time and value of money and must exceed the equivalent economic costs of the project.

3.4.2 Engineering Criteria

The selected plan should be adequately sized to accommodate user needs. Adequate depths and size are needed in the entrance channel and the maneuvering basin to accommodate the vessels required to meet NED goals. Wave energy within the small boat harbor must be reduced to a level that does not restrict harbor activities (either in the water or on shore) and does not compromise human safety. The plan must be feasible from an engineering standpoint. Specific engineering criteria include:

Physical Criteria for Harbor Development – Develop a harbor facility for a day fishing fleet within the general confines of the existing Saint Paul Harbor without conflicting in a significant manner with other land use and development plans. Minimize adverse impacts to the environment and the existing deep draft harbor operations.

Waves – Waves in the day facility harbor are to be reduced to 1.5 feet or less under the most adverse storm conditions.

Currents – Currents in the day facility harbor should either be reduced to less than three fps under maximum storm surge conditions and post storm surge emptying of the Salt Lagoon, or moorages established that would prevent residual vessel damage under more adverse currents. Engineering should maximize opportunities to develop circulation gyres (that will enhance flushing) under normal tidal exchange.

Sedimentation – Sediments are to be managed so their interference with the day fishery harbor and main harbor facilities is minimized. Maximum effort should be extended to develop beneficial uses for dredged material.

3.4.3 Environmental Criteria

Environmental criteria include identification of aquatic life and wildlife that might be impacted by implementation of the plan, minimizing the disruption of the area's natural resources, documenting all threatened and endangered species in the project vicinity and avoiding any adverse impact thereon, maintaining consistency with the Alaska Coastal Management Plan, and protecting or enhancing existing environmental values, including water quality in the salt lagoon. Specific environmental criteria include:

Harbor Water Quality – The objective is for the day fishery and main harbor water to be exchanged within three tidal cycles. Steps need to be taken to ensure trash, sewage, and oil and greases are collected. Normal ebb tide flows from the Salt Lagoon need to be directed through the harbor to the same or greater extent than they now are.

Salt Lagoon Water Quality – Tidal flushing is not to be impaired by the day fishery harbor, and the flood flow path for exchange is given east channel preference.

3.4.4 Social Criteria

Plans considered must minimize adverse social impacts and maintain consistency with State, regional, and local land use plans, both public and private. The plan must be reasonably acceptable to the local sponsor. Specific social criteria of the local community include:

Protection – The project would need to provide all-weather, year-round protection. (excluding occasional freezing of sea ice and winter time haulout)

Location – The harbor should be in a secure location and out of the way of larger vessels.

Size – The harbor should allow for 40 or more boats up to 58 feet in length.

Benefits – Benefits would need to exceed costs.

Environmental Impacts – Design must be beneficial or non-harmful to Salt Lagoon.

Uplands – Beneficial use of the IRA Tribal Operation area is welcome as part of the project. Respect for existing property rights and land use plans is required.

3.5 Determination of Small Boat Harbor Fleet

To determine the design criteria for the small boat harbor, fleet sizes that would use the harbor were estimated. The fleet projection was derived by determining the gross harvest income that would be captured by a Saint Paul based fleet and then by calculating the number of vessels that income would support. The gross harvest income was based upon a fishery resource assessment conducted for the study and vessel operating cost data. The resource assessment and the development of the with-project fleet are summarized below and are discussed in greater detail in the Appendix B (Economic Analysis).

3.5.1 Resource Assessment and Valuation

The fishery resource assessment for this study focused on eastern Bering Sea species that would be targeted by small vessels operating out of a new harbor at Saint Paul. These species are crab, cod, and halibut. Generally, the stocks near the island were inventoried in terms of allowable catch. The assessment depicts harvests by Saint Paul based vessels as they are anticipated with the project and includes an estimate of the value of harvest. The derivation of harvest values is summarized in the following sections.

Crab Harvest. In order to incorporate the cyclical nature of annual crab harvest data, an average of harvest data over the last ten years was used as an estimate of future harvest activity. The ten-year average used in the analysis includes boom years and bust years. It also is recent enough to capture productivity effects of present day capital and technology. The data show an average annual harvest of tanner, Pribilof red/blue king, and Saint Matthew red/blue king of 185.4, 0.94, and 2.75 million pounds, respectively.

Although Saint Paul is practically at the center of the crab fishery, the fleet currently operates out of other ports. Most crab harvesters are too large to find moorage at Saint Paul in both the with-project and without-project condition. There are typically between 10 and 40 vessels under 60 feet that operate successfully in the Bering Sea crab fishery.[1] Currently these vessels must do so from other ports. In harvest years before the huge specialized crabbers were introduced (early 1980s), vessels under 60 feet could compete and were in the fishery in greater numbers. It is vessels in this under 60-foot size class (if based at Saint Paul under the with-project condition) that will realize lower operating cost due to the harbor's significant location advantage.

According to data of the Commercial Fisheries Entry Commission, vessels under 60 feet make up approximately 2% of the total crab harvest.[2] For this study, the harvest of these smaller vessels was allocated to the with-project Saint Paul-based fleet on the strength of the economic advantage of operating from there. Harvest data indicates these vessels historically account for about 1,340,000 lbs per year, valued at $1,430,000. Adding Saint Paul Island's CDQ[3] harvest allocation, valued at $1,100,000, the estimated annual crab harvest by a Saint Paul-based fleet is valued at **$2,530,000**.

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[1] Generally, the higher the harvest limit in a given year, the more smaller vessels that are likely to participate.

[2] In year 2000, crab fishers under 60 ft made up 215 of the 1,035 active crab harvesters statewide.

[3] CDQ stands for Community Development Quota. It is an exclusive harvest share allocated to residents of Saint Paul.

Cod Harvest. The majority of the Pacific cod harvest occurs in the spring and early summer. The entire fishery is active for 90 to 120 days each year in the eastern Bering Sea and Aleutian Islands. Pacific cod are not allocated between shore-based and at-sea fisheries. Long-line fishermen concentrate their efforts in the vicinity of Saint Paul Island during much of the year.

The total allowable catch for Pacific cod in the eastern Bering Sea and Aleutian Islands has varied between 164,500 and 250,000 metric tons in the 1990s. The harvest of Pacific cod varied from 206,000 to 167,000 metric tons during the decade. The Pribilof area contains 76% of the cod population of the entire eastern Bering Sea. Development of a small boat harbor would allow the local fleet to fully participate in the cod fishery.

A December 1999 stock assessment prepared by Natural Resources Consultants of Seattle, Washington, indicated allowable biological catch for eastern Bering Sea cod over the past 20 years has been 140,000–240,000 metric tons. The applicable Commercial Fisheries Entry Commission (CFEC) database for year 2000 shows 1,717 longline, jig, and pot permits, for vessels under 60 feet. With a harbor at Saint Paul providing year around moorage for 60 vessels, about 3.5% of the total fleet under 60 feet would likely be based there. It was estimated that with the project, 3.5% of the harvest of Pacific cod would be by vessels from St Paul, an annual harvest of 7,000 metric tons. Under the without-project condition, the harvest will be by vessels operating out of Dutch Harbor. At an ex-vessel value of $.45/lb (average price in the 1999 and 2000 west coast market), the total annual value of harvest taken by the Saint Paul fleet is estimated at **$6,930,000**.

Halibut Harvest. The total year 2001 IFQ[4] halibut quota for Area 4C[5] was 1,015,000 pounds, but that quota is distributed among permit holders home ported outside of Saint Paul. In 2001, the Saint Paul fleet's halibut quota included 1,015,000 pounds of CDQ, which gave Saint Paul exclusive rights to these stocks. The annual average halibut landings at Saint Paul during the last three years have been 100% of the 3-year average CDQ. Activity by the local fleet accounted for all of the CDQ halibut landings.

With the project, it is anticipated that the economic advantage of the location of St Paul will result in half the Area 4C IFQ being harvested by vessels home ported at Saint Paul with over half of the Area 4C halibut fleet based out of the new harbor. These vessels will arrive with IFQ. In addition, the Central Bering Sea Fisherman's Association is actively seeking IFQ for the local fleet. With reliance on IFQ, there will be an increase in average annual landings at St Paul, of at least 508,000 pounds. At ex-vessel prices of $2.00 per pound, this will yield an estimated increased gross long-term average annual income of the local fleet of **$1,016,000**. Without the project, the balance of the area harvest would be by vessels continuing to operate out of Dutch Harbor with some incidental participation by vessels possibly from King Cove, Sandpoint, and False Pass.

Subsistence Harvest. Under current Alaska and Federal law, subsistence is defined as customary and traditional, non-commercial uses of wild resources for a variety of purposes. The uses include harvest and processing of wild resources for food, clothing, fuel,

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[4] IFQ is individual fishing quota, which is a marketable quota for a specified level of harvest of managed species.

[5] Halibut fishing grounds within the study area fall in the managed zone called Area 4C.

transportation, construction, arts, crafts, sharing, and customary trade. As such, subsistence cuts across Native cultures and is significant to survival well beyond basic food needs.

Alaska has a subsistence law because subsistence supports a major part of the State's economy and culture. Alaska is unique in this regard. Traditional cultures and economies co-exist with the industrial-capitalism of Alaska's urban centers. The intent of the Federal and State subsistence laws was to provide the opportunity for the traditional cultures and economies to co-exist.

Statewide, non-commercial fishing and hunting provided about 35–44 million pounds of food annually to rural areas during the 1980s. This is about 318–400 pounds per person a year or a pound per person per day for the 110,000 subsistence users.

For the Aleutian Island area, data gathered by ADF&G in 1994, reveals average per person subsistence harvest is 378 pounds per year. Current subsistence data for Saint Paul indicates per capita harvest of 267 pounds. Alaska's highest per capita subsistence harvest is at Hughs where it is 1,498 pounds. A 1989 study by ADF&G entitled *Alaskan's Per Capita Harvest of Wild Foods*, summarized the following as factors accounting for some communities having extraordinarily high per capita consumption rates:

- The subsistence harvest is high because it is used as a substitute for milk products (the single largest item in the American diet), fruits, vegetables, and grains.
- In the U.S., average meat and poultry consumption is 255 pounds per year, but in Saint Paul the subsistence harvest also provides clothing, home goods, trade, ceremony, arts and crafts, and other uses.
- Native communities harvest more wild foods than communities with higher non-native populations.
- Generally, harvests increase as the distance from road systems increase.
- Because of the high cost of transportation and storage, store bought foods in remote areas can be expensive, and often the choices are very limited.

A survey of the community by ADF&G revealed that 89% of the people are involved in subsistence harvests, but 99% use subsistence resources. Pressure on harvesters is indicated by 1994 ADF&G statistics that reveal over 14,000 pounds of halibut were removed from the commercial harvest to be used for subsistence purposes. This is an indication that fish, which the islanders harvested for commercial purposes, were more valuable to the islanders for subsistence use. There is an obvious unmet need for subsistence harvest.

For purposes of this analysis, discussion with residents support the assumption that the community would harvest at least enough halibut to bring the community subsistence harvest up to that of other Aleutian villages. Subsistence harvests by residents of Akutan, Atka, False Pass, King Cove, Nelson Lagoon, Nikolski, Sand Point, and Unalaska were used to establish an average harvest level. Based on this baseline, the Saint Paul harvest would be an increase from 267 to 378 pounds per year for the 492 subsistence harvesters on the island to equal the average for the Aleutian area. The result is an increase of 99,900 pounds for all Saint Paul permanent residents. Studies by ADF&G use replacement food values for subsistence harvest in the $3–$5 range. Using $4.00 per pound, the value of the increased subsistence harvest is **$399,600** annually.

3.5.2 Projected Fleet with Project

A fleet for the proposed small boat harbor was projected by determining the number of vessels that the harvest values determined in the resource assessment would support. These values are summarized in Table 3.

Table 3. Fleet Harvest Value Estimates by Fishery

Crab	Cod	Halibut	Subsistence	Total Harvest
$2,530,000	$6,930,000	$1,016,000	$399,600	$10,875,600

The table presents the total value of the potential harvest for a day fishery fleet based out of Saint Paul to be **$10,900,000**. To determine the number of vessels that would be supported by the projected harvest, vessel operating cost data, and income threshold levels were analyzed.

Vessel Operating Costs. The most applicable data on vessel operating costs for use in this study was identified as the database maintained by the University of Alaska. This data shows ex-vessel values for a multiple fishery fleet of vessels under 50 feet as follows:

- Operating Expense = 24%, including fuel, gear, bait, food, and special payments to hired captains and vessel owners.
- Crew Share = 49%, including crew payments net of expenses shared by the crew.
- Operator's Share = 27%, including fixed cost such as license, insurance, moorage, maintenance, and vessel payments.
- Net Operator's Share = 12%, excluding deductions for fixed costs estimated at 15%.

Using the net operator's share of 12% as a basis for estimating operator's income, the fleet based at Saint Paul would provide a total net operators share of $1,305,048.

Income Threshold Levels. Income threshold levels were estimated to provide an adequate incentive to induce development of a local fleet. These threshold levels were set at 120% and 140% of the average income in Saint Paul of $18,100 or at $21,720 and $25,340, respectively. These levels place entry into fishing among the better employment opportunities on the island.

Projected Fleet Size Distribution. Based on an increase in landings by the Saint Paul fleet of $10,875,600, a net operators share of 12% ($1,305,048), and threshold income levels of $21,720 and $25,340, the number of vessels that will be added to the local fleet will be a low of 50 and a high of 60. Given that a with-project condition could support a fleet of up to 60 vessels, a fleet configuration was needed.

Typically the Bering Sea resources are harvested by vessels in the 90–230-foot class. These huge vessels stay on the fishing grounds for a longer time and are able to withstand the sea conditions in which they must operate for long periods. A harbor at Saint Paul offers a harbor of refuge in proximity to the fishing grounds to allow local vessels under 60 feet to maximize harvest on a daily basis and return to port nightly.

For the analysis, it was assumed that the Saint Paul fleet would mirror the distribution of vessel sizes in the pre-IFQ halibut fleet.[6] This assumption is supported if the Saint Paul fleet becomes a multi species harvester. The pre-1995 halibut fleet had the characteristic of being multi-species, and 80% of the halibut fleet was made up vessels under 60 feet. There is no other Bering Sea fleet with comparable characteristics. Table 4 presents the fleet size distribution for a 60-vessel small boat fleet based out of Saint Paul.

Table 4. Distribution Of Harvest By Vessel Size Class

Class	Crab ($)	Cod ($)	Halibut ($)	Subsistence ($)	Harvest Total ($)	Number of Vessels
0–26	0	970,000	142,200	399,600[7]	1,511,800	28[8]
26–39	0	2,772,000	406,400	0	3,178,400	14–17
40–55	0	2,079,000	304,800	0	2,383,800	11–13
55+	2,530,000	1,108,800	162,600	0	3,801,400	17–22
Total	2,530,000	6,930,000	1,016,000	399,600	10,875,400	70–80
Moorage Demand without Trailerable Vessels						50–60

The 60-vessel harbor economic analysis was based upon the vessel sizes presented in Table 5. The 20 trailered vessels anticipated to be users of the launch ramp. Other harbor sizes were evaluated based upon a similar ratio of vessel sizes.

Table 5. Design Fleet

Class (ft)	No. Vessels
0–26 (trailered)	20
0–26 (moored)	8
26–39	17
40–55	13
55–60	22
Total	80

3.5.3 Design Vessel

The design vessel length was estimated at 60 feet. The average beam was estimated to be in excess of 30% of the length, and 22 feet was used. The loaded draft used for the major part of the harbor was 8 feet.

3.6 Preliminary Alternative Harbor Plans Considered

There was an early consensus among all project stakeholders that the most appropriate course of action to address study area problems and opportunities and accomplish planning objectives was through the development of a small boat harbor on Saint Paul Island,

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[6] The pre-1995 halibut fleet was used with one modification. The modification was dictated by the nature of the crab harvest because in order to handle the necessary equipment, and operate at a scale that is profitable, minimum crab vessel size is at the upper limit of the Saint Paul fleet. Therefore, crab harvest was allocated to the class above 55 ft for the Saint Paul Fleet.

[7] Evaluated at an equivalent market price based on substitute values. Includes only the project related harvest increase.

[8] The allocated harvest justifies 8 additional vessels based on the income threshold. An estimated 20 local skiffs were included in this class. All are trailered or carried and are anticipated to be users of the launch ramp.

consistent with the study authorization. The general harbor location was relatively fixed due to the existing and ongoing harbor development at the existing deep-draft harbor. The locations of these alternatives are shown in Figure 5. The initial plans are described below:

3.6.1 Hammerhead

This plan, located near the vicinity of the existing maneuvering basin, consists of a rubble-filled foundation with a timber trestle. The trestle would allow access to the head that could be utilized as wharf space for the transshipment of goods. The plan was discarded because it did not meet the engineering criteria: It concentrated storm generated current in the mooring area and would not have reduced wave activity to an acceptable level.

3.6.2 Floating Breakwater

An anchored structure located adjacent to the TDX docks at the south end of Village Cove would work to dampen wave activity. Wave attenuation of such a structure in the long period wave climate would be primarily by reflection. The added wave activity in the reflected wave path would adversely affect other harbor operations. Currents in the harbor under design storm conditions would make mooring the structure very difficult. This alternative was rejected from this study based on its failure to meet engineering criteria, primarily due to its adverse effects on harbor waves.

3.6.3 TDX Plan 4A and TDX Plan 2A

TDX conceptual plans 4A and 2A are variations of a two-dock concept that incorporate moorings for vessels which are larger than anticipated for the day use harbor. These plans also include a major dock facility. Both of the plans were eliminated from further consideration because they failed to meet environmental criteria. Both plans were configured to require the major proportion of flood flow water entering Salt Lagoon to pass through the harbor complex before entering the lagoon. This is an ideal situation for the harbor, but it places a higher potential for Salt Lagoon contamination than environmentally acceptable. Also, both plans were expected cause unacceptable increases in velocities during and immediately after storm events.

3.6.4 Salt Lagoon

Also suggested as TDX plan 1A is a harbor located in the entrance to Salt Lagoon. It would be well protected from waves but would suffer from exposure to high velocity flows when storm surge water volumes are purged from the Salt Lagoon. A harbor in this location would also eliminate bird-feeding habitat and expose Salt Lagoon to a higher potential for contamination than is desirable. This alternative was eliminated from further consider due to its failure to meet environmental criteria.

3.6.5 Westerly Harbor

A harbor site to the east of the Icicle Barge was examined. Water depths were favorable in that location. The wave climate and currents during storm conditions require both a wave barrier and the current barrier extending out from the south shoreline to provide protected moorage on the south shoreline. Most of the existing depth advantage would be eliminated by the breakwater's footprint. Placement of the harbor in this location constrains other potential harbor uses and violates engineering plan criteria. There is no major cost advantage

to a harbor at this site, and there would be major losses in benefits to other users. The site was not studied in further detail.

3.6.6 South Village Cove

The plan (referred to as TDX plan 3A) considered for the same location as the floating breakwater plan, initially consisted of a short north breakwater and a west breakwater near the public access area. The day use harbor would consist of two docks and would occupy about twelve acres. Of all plans examined this plan has the most potential for meeting planning and engineering goals. With modest future excavation, it could also meet late surfacing goals of a tribal dock and temporary moorage of 100-foot plus vessels. This plan and variations thereof are pursued more fully in the remainder of the analysis.

3.7 Preliminary Alternative Plan Section - South Village Cove

Based upon the evaluation of alternative sites by the study team in coordination with the local sponsor, the South Village Cove site was identified as the only site meeting the planning criteria. Subsequent analysis in this study focused on refining specific elements of the small boat harbor at this site and the costs and benefits associated with each feature. Section 4 provides details of further study efforts for development at this site.

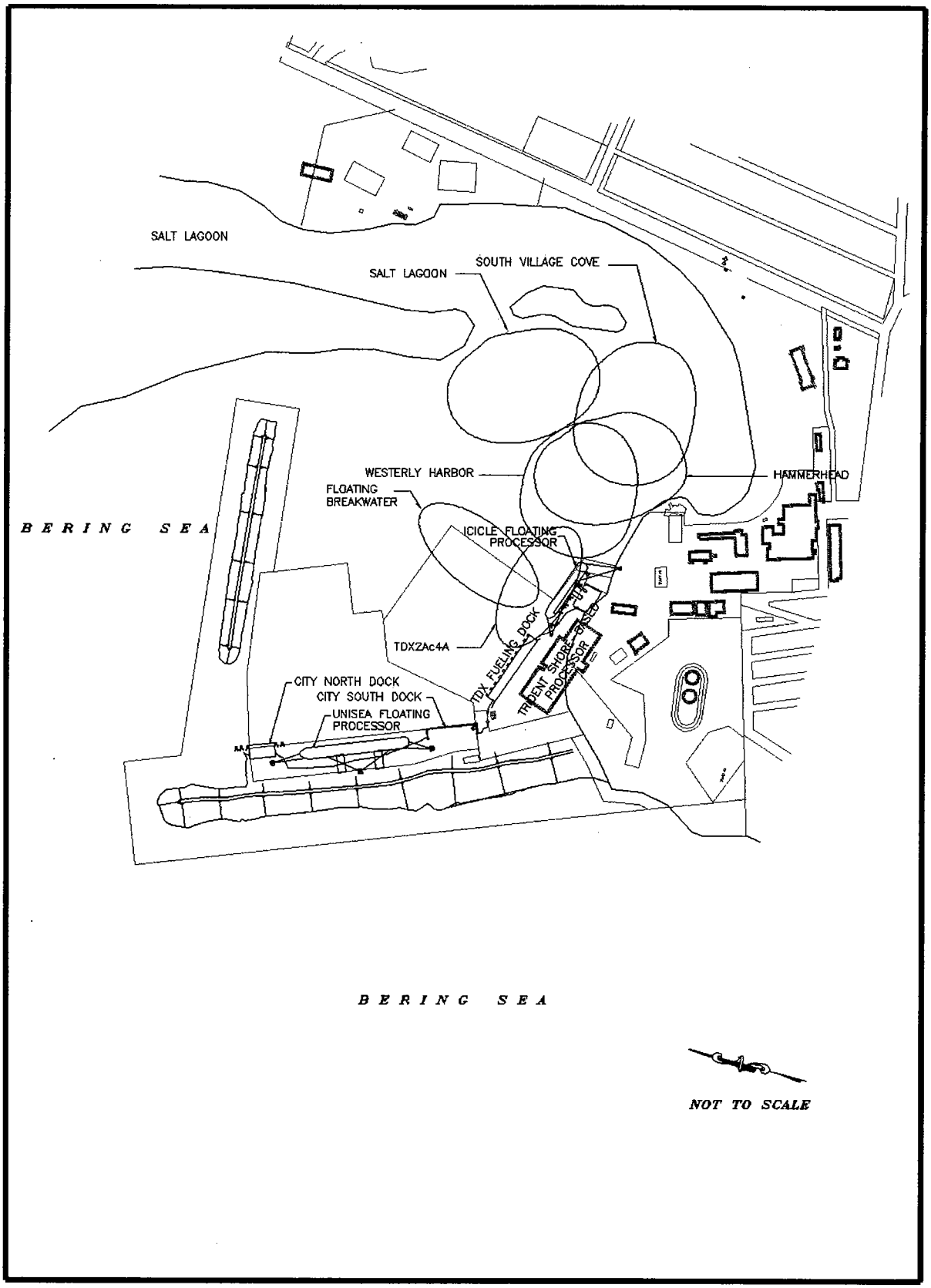

Figure 5. Preliminary Harbor Plan Locations

4.0 ALTERNATIVE PLANS AND NED PLAN SELECTION

4.1 Physical Model Study

A three-dimensional physical model of Saint Paul Harbor was developed for previous deep-draft harbor studies. The model was first used to evaluate the relative differences in harbor wave action, currents, and sedimentation in support of the design in the August 1996 Harbor Improvements Feasibility Report. The model was used for a second study to evaluate wave induced currents and flushing within Salt Lagoon in August 1997. For this small boat harbor feasibility study, the model was applied a third time to:

- Define the potential for harbor surge
- Define small boat harbor wave activity
- Ensure Salt Lagoon flushing with the proposed harbor in place
- Maximize the exchange of water in the small boat harbor
- Test ultimate development in other areas of the embayment
- Test ice circulation patterns
- Locate the interior detached breakwater to best enhance circulation in the small boat harbor and Salt Lagoon
- Ensure that the decrease in elevation of the spending beach did not have major impact on waves or circulation

The three-dimensional model reproduced approximately 2,865 meters (9,400 feet) of the Saint Paul Island shoreline. This produces an extent from Tolsti Point easterly and then southerly to a point south of the existing breakwater trunk. It also reproduces the existing harbor and underwater topography in the Bering Sea to an offshore depth of 12.2 meters (40 feet) with a sloping transition to the wave generation pit elevation of –30.5 meters (–100 feet), MLLW. A small connecting channel to the Salt Lagoon (located east of the harbor) also was included in the model as well as the tidal prism of the Salt Lagoon. Vertical control for model construction was based on MLLW, and horizontal control was referenced to a local prototype grid system. Details and conclusions from the model study are provided in Appendix A. Relative merits of the various plans were evaluated by:

- Comparison of short-period wave heights and long-period wave heights (seiches) at selected locations in the model
- Comparison of wave-induced current patterns and magnitudes
- Comparison of tidal flows
- Visual observations

4.2 Harbor Design Criteria

Input parameters for harbor design were based on the existing and ongoing harbor development and input from public meetings, model studies, climatological data, and professional judgment of the study team. Public meetings provided local requirements for harbor layout and basic criteria for dock facilities to maintain a given size and composition fleet. The physical controls for design were extracted from model studies, climatological

data, and common practice for harbor depths and channel dimensions. The following sections describe key harbor design criteria:

4.2.1 Harbor and Channel Depth

The harbor was designed to provide ingress and egress for vessels for all reasonable conditions. The entrance channel depth was established based upon vessel draft; pitch, roll, and heave; flotation; squat; and safety. Consideration of these factors resulted in an entrance and maneuvering channel initial design depth of –12 feet MLLW (see Section 4.2.4 for a description of the modified entrance channel depth). The design tide selected would allow entrance and exit under all but the most extreme conditions of offshore winds and would be approximately a 99% use condition. The design harbor depth was based on having flotation under the estimated lowest tide of –2.5 feet MLLW.

4.2.2 Harbor Flushing

Using the physical model, the harbor was tested for its flushing characteristics using both a 3.2-foot tide and a 7-foot tide with the navigation channel at –12 feet MLLW. This was combined with the smallest persistent wave that would normally be encountered during the non-storm periods. Circulation within the harbor was developed under these conditions but the multiple gyre system was weaker than under without-project conditions. To improve gyre strength, the hydraulic efficiency of the small boat basin entrance was improved by deepening the first segment of the entrance channel (~750 ft x 76 ft) by 4 feet to an elevation of –16 feet MLLW. The gyres were strengthened to the point that the mass transfer of water by this mechanism was similar to the without project conditions. Wind and wave setup in the harbor are other major mechanisms for mass transfer and mixing. These remain unchanged under with- and without-project conditions. The entrance channel depth required for water quality levels similar to existing conditions in the southeastern harbor is –16 feet MLLW for the initial channel segment.

4.2.3 Entrance Channel and Maneuvering Basin Width

The entrance channel of 100 feet was designed for two-way traffic where vessel speeds are not constrained under most conditions. One-way traffic is possible under the more adverse wind and current conditions. The width of the maneuvering channel was determined to be 120 feet to account for the wind and current drift associated with constrained vessel speeds and congestion associated with arrivals and departures from the docks.

4.2.4 Wave Height in Moorage Area

Guidance on long-period waves (seiches) indicates that considerable seiche sizes can be accommodated if vessels and docks are properly oriented and moorings account for the forces imposed by the seiche activity. Based on model studies, short-period wave heights of less than one foot prevailed in the harbor under all test conditions. Long-period waves in the 110-second to 140-second range will, however, be present in the harbor. The southeastern corner of the harbor has the maximum vertical response in a seiche mode under these conditions. The seiche is oriented in an east to west direction and therefore boat moorages must be oriented in that direction to allow a vessel to ride with the seiche when moored. Harbor oscillation horizontal velocities are quite low, and mooring stresses should be easily accommodated.

4.2.5 Erosion Protection

The project areas that have high velocities are in the vicinity of the breakwater nose and the high ground that supplies natural harbor wave protection. The high ground is that area between the spending beach and the interior detached breakwater. The –2 feet MLLW grade must be maintained at that location for wave protection and also retained for flushing control for the harbor. The area will be excavated so that erosion protection can be placed to the –2 feet MLLW elevation. The protection will consist of 50-pound minus riprap with a two-foot layer thickness. The added thickness was selected in lieu of a gravel filter. A plus or minus tolerance of six inches is to be allowed over an area not exceeding 200 feet^2 to allow ease in placement. In-situ boulders need not be removed if they lie within this tolerance, and erosion protection can be continuous without sand pockets.

4.2.6 Interior Harbor Layout

The orientation of moorings is critical to the harbor functioning satisfactorily during periods of seiching and were included in this study and design phase. All mooring configurations were designed to minimize adverse impacts of seiching.

4.2.7 Sensitivity to Future Deep-Draft Harbor Modifications

Deepening of the deep-draft portions of the harbor is always a future possibility. The harbor lying west of the small boat harbor was examined to see the potential impacts of expansion on the small boat harbor, other portions of the harbor, and water quality. The area was modeled, and the differences between conditions with existing topography and with deepening to –22 feet MLLW were examined and found to be minor. Harbor circulation is adequate to allow development and there does not appear to be obvious technical reasons to constrain future development. There are technical items that must be considered. The harbor seiche manifests itself in this segment of the harbor. The surge is a gain oscillating on an east to west axis making mooring perpendicular to this direction difficult. Local desire to place a fixed dock parallel to the small boat harbor breakwater will need to take the seiche conditions under consideration.

4.3 Alternative Plans

The existing and ongoing harbor development at the South Village Cove site and design criteria dictated by the physical model study limited the array of alternatives. To ensure that the NED plan was identified the costs and benefits of five alternatives of the harbor design were evaluated and compared. Design features that varied across the alternatives included harbor size (number of vessels accommodated) and harbor depth. The array of alternatives is presented in Table 6. Different fleet sized harbors are characterized as follows:

30-Vessel Harbor – primarily a halibut fleet in the under 32-foot class with most of them in the 20–30-foot class. Vessels under 26 feet are considered trailerable and are primarily subsistence fishers.

60-Vessel Harbor – includes the day use halibut fleet plus a larger fleet of primarily 40–58 feet multi-use vessels. During most of the year, these larger vessels would be capable of targeting all species available to the island. They would be the primary wintertime crab harvesters.

90-Vessel Harbor – includes the 60-vessel resident fleet with transient moorage for 30 more.

4.3.1 Alternative Plan Costs

Engineering design studies showed that the space required for a harbor that can be protected from waves and currents, generate good flushing qualities, and protect the flushing characteristics of Salt Lagoon is about 12 acres. This basin would require a breakwater, dredged entrance channel with erosion protection, dredged maneuvering basin within the harbor, circulation berm, and other local service facilities.

Cost estimates were developed for the three harbor sizes identified: a 30-vessel harbor, a 60-vessel harbor, and a 90-vessel harbor. Cost estimates were also developed for the 60-vessel harbor at three depths: 8 feet, 10 feet, and 12 feet. The cost estimates, includes all project implementation costs and economic opportunity costs (including interest during construction) for the various basin sizes and are summarized in Table 6. Detailed cost estimate information is provided in Appendix C.

Table 6. Comparison of NED Costs

	Alternative 1 60 vessels, 12-ft depth	Alternative 2 60 vessels, 10-ft depth	Alternative 3 60 vessels, 8-ft depth	Alternative 4 30 vessels, 12-ft depth	Alternative 5 90 vessels, 12-ft depth
Mob and Demob	1,454,000	1,400,000	1,346,000	1,414,000	1,568,000
Breakwaters	863,000	863,000	863,000	863,000	863,000
Dredging	1,052,000	912,000	770,000	998,000	1,335,000
Inner Harbor Development	3,557,000	3,557,000	3,557,000	3,299,000	3,932,000
Subtotal	6,926,000	6,732,000	6,536,000	6,574,000	7,698,000
Contingency	1,345,000	1,306,000	1,267,000	1,275,000	1,500,000
Subtotal	8,271,000	8,038,000	7,803,000	7,849,000	9,198,000
Engineering and Design	808,000	784,000	760,000	765,000	899,000
Subtotal	9,079,000	8,822,000	8,563,000	8,614,000	10,097,000
Construction Management	710,000	690,000	669,000	673,000	792,000
Construction Cost	9,789,000	9,512,000	9,232,000	9,287,000	10,889,000

4.3.2 Economic Benefits for Alternative Plans

The evaluation of economic benefits started with the resource assessment and income analysis presented in Section 3.4. This was central to forecasting the type of fleet that would operate out of Saint Paul. The resource assessment provided the basis for estimating potential gross income. Given the makeup of the fleet, the cost of operations, and the harvest income, a comparison was made of operating out of Saint Paul and out of alternative ports. In addition, alleviation of the problems incurred by the limited fleet operating at Saint Paul, under the without-project condition, were also identified and quantified as benefits.

Corps' planning is conducted in a with-project and without-project context. By comparing forecasts of future conditions in a study area without a project to forecasts of conditions with a project, the differences in costs incurred by, and benefits accruing to the study area as a result of the project, are more readily identified. In order to ensure that plan alternatives are economically efficient, it is necessary to impose the condition of economic rational behavior on individuals and firms in both the with- and without-project condition. The result of the evaluation is identification of a theoretical willingness to pay for the project outputs and is used to express the NED benefit regardless of who will actually pay. In this analysis four techniques had a role in estimating willingness to pay:

- Actual market prices (used to determine ex-vessel harvest values)

- Changes in net income (used to estimate fleet development)
- Cost of the most likely alternative (used to estimate benefits due to project caused improvements in harbor efficiency, travel cost, and subsistence harvest)
- Administratively established values (used to estimate opportunity cost of time)

The NED benefits are summarized in Table 7. The benefit analysis for each category is summarized in the following sections. Details of the economic benefits are provided in Appendix B.

Table 7. NED Benefit Summary

NED Benefit Category	30-Vessel Fleet	60-Vessel Fleet (12-ft depth)	90-Vessel Fleet
Harvest travel cost reduction	168,800	360,300	360,300
Prevention of damage to vessels	12,300	127,900	188,700
Prevention of theft loss	5,000	52,000	76,700
Prevention of vandal Loss	2,000	21,000	30,900
Congestion delay prevented by water taxi	80,000	80,000	80,000
Reduced cost of vessel repair	0	540,400	540,400
Port land opportunity cost	260,000	20,000	(943,000)
Vessel launch and haulout	69,800	69,800	69,800
Transportation savings for disabled vessels	0	198,300	198,300
Reduced harbor dock maintenance cost	48,100	48,100	48,400
Improved subsistence fishery	399,600	399,600	399,600
TOTAL	$1,045,600	$1,917,400	$1,050,000

Harvest Travel Cost Reduction. Without a project, a relatively small portion of the harvest is landed by the existing 28-vessel fleet (0–25 feet) currently operating out of Saint Paul. The significant harvest of the resources around the island is by 58-foot plus vessels operating out of Dutch Harbor and delivering there. A run of between 215 and 340 miles is necessary to reach the main eastern Bering Sea fishing grounds from Dutch Harbor. This open water trip is made with vessels heavily loaded and under frequent adverse weather conditions. The typical trip from Dutch Harbor used in this analysis was a three-day trip out of which about 30 hours are spent fishing.

With a project, a mixed fleet of 58 ft x 23 ft vessels operating out of Dutch Harbor and 58 ft x 17 ft vessels operating out of Saint Paul was assumed. This allows both fleets to harvest to the maximum potential of vessel capacity and is the most economical mode of operation.

The three-day trip from Dutch Harbor with 30 hours fishing was compared to the reduced travel time and six-hour fishing periods for day trips out of Saint Paul. The operating scenario for the two fleets would also differ in that the Dutch Harbor vessels are anticipated to be actively involved in the fishery every day when the weather is suitable. This gives the Dutch Harbor vessels an advantage in terms of catch per harvest day and fewer vessels are needed to conduct the harvest. This advantage is somewhat offset by the increased travel time to and from Dutch Harbor. When compared to the with-project condition travel cost of $596,500, the annual saving provided by the small boat harbor will be **$168,800** for the 30-vessel fleet, **$360,300** for both the 60- and 90-vessel fleets.

Prevention of Damage Loss. Based on discussions with fifteen local fishermen, existing damages to vessels and equipment is related to:

- Wind, tidal currents, and wave action that pushes vessels into one another as they wait to be hauled out
- Wind, tidal currents, and wave action that sets vessels onto shoals near the launching area
- Larger vessels which take the right of way and squeeze the local fleet away from tie up locations

Existing average annual damages to the existing 26-vessel fleet are estimated at $12,300. The fleet, under the with-project condition, is expected to expand to 50–60 vessels as early as the year 2002, and no later than 2005. The vessels that will be added are larger than the local fleet and will be relocated from other ports where they experience similar damage. For example, average annual damage per vessel at Dutch Harbor was reportedly estimated at $5,000 in 1999. Annual prevented damages with the project are estimated to be **$12,300** for the 30-vessel fleet, **$127,900** for the 60-vessel fleet, and **$188,700** for the 90-vessel fleet.

Prevention of Theft Loss. Presently the vessels are stored wherever there is usable space available. This finds them scattered throughout the industrial area and around the island. Little of the outside area of the island is illuminated at night, and there are no fences to allow vessel security. In addition, the community is host to hundreds of vessel stops each year, and there are frequently large numbers of outsiders coming in to work at the processors or waiting to be picked up as crew replacements. When vessels are left unattended for short periods just before or just after a fishing trip, theft is common. The most common items taken are electronic navigation equipment, safety equipment, survival suits, gas cans, and fuel. All of the theft would be preventable in a secure harbor with controlled access, a 24-hour security service, and fenced area.

There is no statistical data available to estimate the losses associated with theft. The issue was discussed at a local meeting with a group of fishermen, where average losses were estimated at $1,000 per year for each theft event. Preventable theft loss is estimated at **$5,000** per year for the present fleet. With fleet value increases associated with the 60- and 90-vessel fleets, preventable theft losses are estimated at **$52,000** and **$76,700**, respectively.

Prevention of Vandalism. Vandalism is a continual problem for vessel owners and happens in any open moorage. There is some overlap of complaints of vandalism problems with theft problems. The vandalism however differs in that the stolen items are usually discovered damaged, broken, or discarded. Recent complaints included anecdotes involving slashed survival suites, gas cans recovered empty, VHF radios recovered with the cases smashed or removed, skiffs that had been used and abandoned, and broken windows in stored vessels. All of the vandalism could be prevented if vessels were in a secure moorage. Preventable damages are estimated at **$2,000** annually for the current fleet and are adjusted by estimated fleet value factors to arrive at **$21,000** and **$30,900** for the 60- and 90-vessel fleets, respectively.

Congestion Delays Prevented by Water Taxi. Large trawlers and crabbers over 90 feet regularly call at Saint Paul for crew change, supplies, and medical assistance. During a 1999 sample period of port records for a 300-day period, harbor records show 1,680 tie-ups at dockside by these deep draft commercial vessels. Because the harbor is so busy, many of

these vessels were frequently required to wait outside for a clear channel and a place to tie-up. Vessels occasionally waited eight or more hours, but the normal waiting period was generally two hours or less. If they wanted to use the harbor when it was full, they had no choice but to wait because the nearest alternative port is 275 miles away.

With the small boat harbor, a water taxi could service vessels waiting outside and deliver people and supplies. With a call-ahead strategy in place, a water taxi service based at the small boat harbor could be on the scene with supplies, parts, and personnel as the customer arrived, thus reducing waiting time. Since a water taxi should be able to service vessels waiting outside in a wide range of weather conditions, the operating cost of the taxi was based on a 58-foot vessel.

Without the project, vessels waiting cost was estimated to be $180,000 based upon operating expenses. Wave activity outside the harbor will make it impractical to provide water taxi service 35% of the time so the preventable waiting cost is $117,000. Under the with-project condition, benefits associated with water taxi service made possible by the project are **$80,000** for the three fleet sizes (30-, 60-, and 90-vessel fleets).

Reduced Cost of Vessel Repair. The new small boat harbor will supply moorage needed to make a vessel repair operation viable. The repair yard will exist only under the with-project condition and will be located on existing uplands near the harbor. The boatyard analysis included evaluation of the regional demand for vessel repair services, the economic viability of a yard at Saint Paul, and the capital and operating costs of the yard.

Benefits are based on reduced operating cost for vessels at large because the location of Saint Paul will save the cost of travel to other locations for repair work. Reduction in variable operating cost was used to estimate willingness to pay for reduced travel to alternate facilities. NED benefits are earned for reduction in trips to use yard facilities elsewhere.

There are 14 locations in Alaska, which were considered as alternative haulout for vessels up to 58 feet and which offer hull, machinery, electronic, and hydraulic, repair facilities. They are Anchorage, Seward, Valdez, Kenai, Homer, Sitka, Petersburg, Ketchikan, Juneau, Kodiak, King Cove, King Salmon, Dutch Harbor, and Sand Point. All of the harbors are wait listed. These locations vary in distance from Saint Paul, ranging from 300 to 1,300 miles. Under the with-project condition, the annual travel saving of using a repair facility at Saint Paul was estimated as **$0** for the 30-vessel fleet[9] and **$540,400** for both the 60- and 90-vessel fleets.

Port Land Opportunity Cost. The City's land use plan shows that potential development is restricted. Most of the developable area has already been improved. Some valuable port lands are tied up because the local fleet is required to be stored out of the water. After a harbor is built the fleet will be accommodated in the water most of the year, and formerly used port lands will become available for other income producing activities. To a certain extent this results in a net economic gain. Presently vessels are stored on cradles or trailers tying up land needed for highly valued marine services. The with-project condition enables the storage to be on lower valued lands.

[9] The 30-vessel harbor layout provides inadequate moorage to accommodate the transient customers necessary to support a break-even boat repair yard operation.

The difference in annual land lease cost for storage of the existing fleet with the project, compared to without it, is estimated at **$260,000** for the 30-vessel harbor. Alternative plans that consider expansion beyond 30 vessels require navigation servitude lands having a high opportunity cost. The value of these lands is not recognized elsewhere in the study so is treated as a non-monetary economic cost in this aspect of the economic analysis. This non-monetary opportunity cost effectively cancels out much of the economic gain of using less valuable lands for storage. At the scale of a 60-vessel harbor, the economic cost of the navigation servitude lands is so high as to reduce the overall gain in terms of port land use opportunity cost to **$20,000** annually. For the 90-vessel harbor, the benefit becomes a net opportunity cost with an annual economic loss of **$943,000** annually.

Vessel Launch and Haulout. Launching is currently done with a crane and on occasion with a large wheeled loader. Cost of using the equipment is $100 per hour for the loader and an operator, and $240 per hour for the crane, including an operator and volunteer spotter. Fishermen ordinarily avoid use of the loader because the channel at the put-in point is narrow with rock shoals that are difficult to avoid even when the tide is not running and winds are light. Each year several outdrives are damaged and at least one vessel has been sunk. The launching and retrieval often demand the attention of six people for a single vessel. Skippers must use valuable weather windows for launching and retrieval. Fishing for subsistence and for commercial purposes are interrupted, and to a great extent limited.

Because of the need to wait on availability of a crane or loader, and the fact everyone rushes to launch and retrieve within a limited weather window, each launch can take 2 hours and 45 minutes of crane time for the first vessel and 45 minutes for each additional vessel, for a total crane time of 22 hours to service the 26-vessel fleet. Similar queuing occurs when vessels wait for haulout to avoid adverse weather. The study assumed seven annual launch and retrieval windows, under the without project condition, based upon weather history.

With the project, a hydraulic trailer will be used instead of a crane. Only one haulout each year will be required taking a half hour per vessel. Annual savings are estimated to be **$69,800** for all three fleet sizes (30-, 60-, and 90-vessel fleets).

Transportation Savings For Disabled Vessels. Presently vessels over 32 feet, which are in need of repair, must be towed to Dutch Harbor. Saint Paul does not have adequate haulout facilities, crane capacity, or dockside work area for repair crews to fix larger vessels. Each year there are 5–10 vessels that must risk the open water trip from Saint Paul to Dutch Harbor for repairs, and frequently, the vessels must be taken in tow for the entire trip. Sometimes the owners elect to return vessels to Seattle where they contract with the manufacturer for repair. Vessels have sunk on the way to Dutch Harbor because it was not possible for them to be repaired at Saint Paul.

Since there is not an ocean going tug stationed at Saint Paul, one must make the trip from Dutch Harbor to take the disabled vessel in tow. It takes time to arrange for a tow thus adding lost income to the financial damages. The Ocean Challenger was in the harbor 3 months, Smokey Point 2 months, and the High Seas 6 months. An average of five tow trips from Saint Paul to Dutch Harbor were reported during the last three years. Benefits related

to transportation savings for disabled vessels are **$0**[10] for the 30-vessel fleet and **$198,300** for both the 60- and 90-vessel fleets.

Reduced Harbor Dock Maintenance Cost. When storm conditions cause wave activity inside the harbor, floating docks that are used for temporary tie-ups for the small boat fleet are required to be removed. The crane lifts the three approximately 60-foot units from the water and stores them alongside the waterfront at a cost per event of $30,000, not including the opportunity cost associated with storage of the dock units on valuable industrial land and damage to the docks. During an assumed "normal year" this removal activity will take place one time. Annual savings from eliminating the need to remove the docks is estimated at **$48,100** annually for all three fleet sizes (30-, 60-, and 90-vessel fleets).

Improved Subsistence Fishery. Weather conditions limit the time the local fleet fishes, and each hour saved in the launch and retrieval process is an hour of additional harvest time for the subsistence fisheries. There is considerable room for expansion of local fleet activities, and local fishermen have stated a small boat harbor is needed so they can increase their subsistence harvest. The value of the increased subsistence harvest is **$399,600** annually. See Subsistence Harvest in Section 3.5.1 for details.

4.4 Plan Comparison and NED Plan Selection

Section 4.3 described the costs and benefits of associated with the final array of alternative harbor development plans at the South Village Cove site. The annual costs and benefits of these plans are summarized in Table 8. Alternative 1 maximized the net NED benefits and was selected as the NED and Recommended Plan.

Table 8. Alternative Plan Comparison

(October 2001 Price Level)

	Alternative 1 60 vessels, 12-ft depth	Alternative 2 60 vessels, 10-ft depth	Alternative 3 60 vessels, 8-ft depth	Alternative 4 30 vessels, 12-ft depth	Alternative 5 90 vessels, 12-ft depth
Construction Cost	9,789,000	9,512,000	9,232,000	9,287,000	10,889,000
Interest During Construction	562,454	546,516	530,410	533,579	625,662
NED Investment Cost	10,351,454	10,058,516	9,762,410	9,820,579	11,514,662
Annual NED Cost (50 yrs at 6 1/8%)	672,000	653,000	633,000	637,000	747,000
Annual OMRRR	159,000	159,000	159,000	151,000	172,000
Total Annual NED Cost	831,000	812,000	792,000	788,000	919,000
Average Annual Benefits	1,917,000	1,829,000	797,000	1,046,000	1,050,000
Benefits to Cost Ratio	2.3	2.3	1.0	1.3	1.1
Net Annual Benefits	1,086,000	1,017,000	5,000	258,000	131,000

[10] Transportation benefits would not exist because the small boat harbor would not accommodate fishing vessels significantly larger than the existing fleet (it would accommodate one water taxi of approximately 58 ft). Boats larger than 32 ft would still be towed to Dutch Harbor for repair.

4.4.1 Basin Size Optimization

The harbor configurations were relatively the same for the three alternatives with changes limited to the north breakwater and inner-harbor facilities to accommodate changes in the basin area and different design fleets. Therefore, selection of the optimum harbor size was done as part of the selection of the NED plan.

4.4.2 Project Depth Optimization

Some economic studies of NED depth trade off fleet delay cost against the cost of deepening the project. In some cases, it has been shown that waits will be so infrequent and by so few vessels that provision of an increment of depth is not justifiable. In the case of Saint Paul, waiting was not considered to be an option.

The harbor is designed to act as a day-use harbor. The fleet must be able to seek shelter without delay due to the sudden arrival of treacherous sea conditions. In addition, the blow-down of water surface was considered to be unpredictable and random. A reasonable database was not available to do the analysis, and an error could jeopardize human life. This was considered to be an unacceptable and unnecessary risk.

Concerning the depth of the entrance channel, it was necessary to provide a depth of 16 feet for Entrance Channel Segment A. This was a specified hydraulic design constraint on all alternatives. Lesser depths at the entrance could not provide the tidal cycle water exchange existing in the without-project condition. Greater depths were not evaluated in the economic analysis because the entire fleet would be able to pass unhindered with a 16 feet depth, and there would be no incremental benefits to be achieved.

The comparison of benefits and costs for the various depths indicates 12 feet to be supportable as the NED depth for Entrance Channel Segment B, the maneuvering basin, and the mooring area. It was not bracketed by a deeper project. It was the maximum depth evaluated because it accommodates the entire fleet being planned by the local community, and the incremental benefit from added depth would be zero. There is no residual delay.

4.4.3 Reconciliation of Fleet Cost and Income

Reconciliation is necessary to demonstrate that the claimed difference between the with-project and without-project conditions is actually achievable. Estimated cost reductions cannot be so great as to reduce costs below reasonable operating levels. Nor can without-project costs be so high as to remove the prospect of profitability. Reasonableness was verified by tallying all of the benefits related to fleet operating cost and added them to the vessel operating budgets to determine if the fishers could actually operate and show profitability in both the with-project and without-project conditions. It was concluded that the fishers will be profitable in both cases, and the estimated savings are reasonable.

4.5 Hazardous, Toxic, and Radioactive Waste Investigation

HTRW investigation for the small boat harbor was limited to a literature review of existing sampling data. This review indicated that the proposed dredge material is compatible with its intended use.

4.6 Evaluation of Risk and Uncertainty

Details of the risk and uncertainty analysis are presented in Appendix B. A summary of this analysis is presented below:

The summary R&U analysis classified each of the NED benefit categories as *Uncertain*, *Reasonably Certain*, or *Reliable and Supported.* The category of **Uncertain** consisted of: prevention of damages to vessels, prevention of theft loss, and prevention of vandalism loss. The benefit estimated from these three *uncertain* benefit categories totaled $200,900 for the NED plan. Even if these benefits were excluded entirely, the NED plan would still have a benefit to cost ratio of 2.2 to 1.

Two NED benefit category estimates used were classified as **Reasonably Certain**: harvest travel cost reduction and reduced cost of vessel repair. The estimated benefits from this category totaled $900,700. Even if these benefits were excluded entirely, the NED plan would still have a benefit to cost ratio of 1.3 to 1.

The remaining NED benefit categories were classified as **Reliable and Supported**: congestion delays prevented by water taxi, port land opportunity cost, vessel launch and haulout, transportation savings for disabled vessels, reduced harbor dock maintenance cost, and improved subsistence fishery. Theses benefits totaled $815,800.

In the economic analysis, multiple benefit estimates were derived by alternate methodologies for the following benefit categories: harvest travel cost reduction, congestion delays prevented by water taxi, reduced cost of vessel repair, transportation savings for disabled vessels, and improved subsistence fishery. In these cases, the benefit estimate adopted was the lower, more conservative estimate. If the high-side benefit estimates for these categories were used in the analysis, the total benefits of the NED plan would be $2,715,800, resulting in net benefits of $1,922,000 with a benefit to cost ratio of 3.4 to 1.

To incorporate the uncertainty in engineering cost estimates, a 20% cost contingency was applied to the estimate of total direct costs for each alternative and included in the cost estimate for each. If this contingency were increased to 200%, the NED plan would have a benefit to cost ratio of 1.1 to 1.

5.0 RECOMMENDED PLAN

5.1 Plan Components

The recommended plan provides a protected small boat harbor at the Village Cove Site at the southeastern corner of Saint Paul Harbor. The plan will provide moorage for up to 60 vessels up to 60 feet in length. The design fleet is presented in Table 5. The recommended harbor layout is shown in Figure 6. General navigation features of the recommended plan consist of the dredged entrance channel and maneuvering basin, channel erosion protection, breakwater, and circulation berm. Local service facilities consist of the dredged mooring basin, floats, docks, boat launch ramp, and boat lift trailer.

5.1.1 Entrance Channel

Due to physical constraints of the harbor site, the entrance channel is presented in two sections, differentiated by depth. Approximately 77,000 yd^3 would be dredged to form the entrance channel. The first section, entrance channel A (EC_A), starts in the middle of the eastern end of the existing harbor's maneuvering basin and continues eastward for approximately 750 feet at a depth of –16 feet MLLW. This depth is required to provide flushing characteristics similar to the existing conditions. The channel is 100 feet wide. An area, extending from the eastern 350 feet of EC_A north and northeast towards the previously authorized new sediment management area and new spending beach, will be protected from erosion by placement of a 2-foot thick layer of riprap.

The second entrance channel section, entrance channel B (EC_B), extends from the eastern terminus of EC_A approximately 250 feet east and then 300 feet southeast and serves as a main channel that connects EC_A with local facilities areas at the east end of the harbor. EC_B is –12 feet MLLW. The depth will provide flotation under the estimated lowest tide of –2.5 feet MLLW. The channel as designed will allow two-way traffic for the design vessel where vessel speeds are not constrained under most conditions. This vessel is 60 feet long, 22 feet wide, and drafts 8 feet fully loaded.

5.1.2 Maneuvering Area

Approximately 22,000 yd^3 of dredged material would be excavated to create a 1.1 ac maneuvering basin dredged to a depth of –12 feet MLLW. The –12 feet MLLW depth would allow the design vessel to remain in the harbor regardless of the tide level. Also, the maneuvering area could be used for the temporary mooring of vessels displaced from the dock that provides a temporary moorage for disabled vessels.

5.1.3 Mooring Area

The recommended plan includes a 3.3-ac mooring area dredged to –12 feet MLLW. Excavation of approximately 41,000 yd^3 of dredge material will be required.

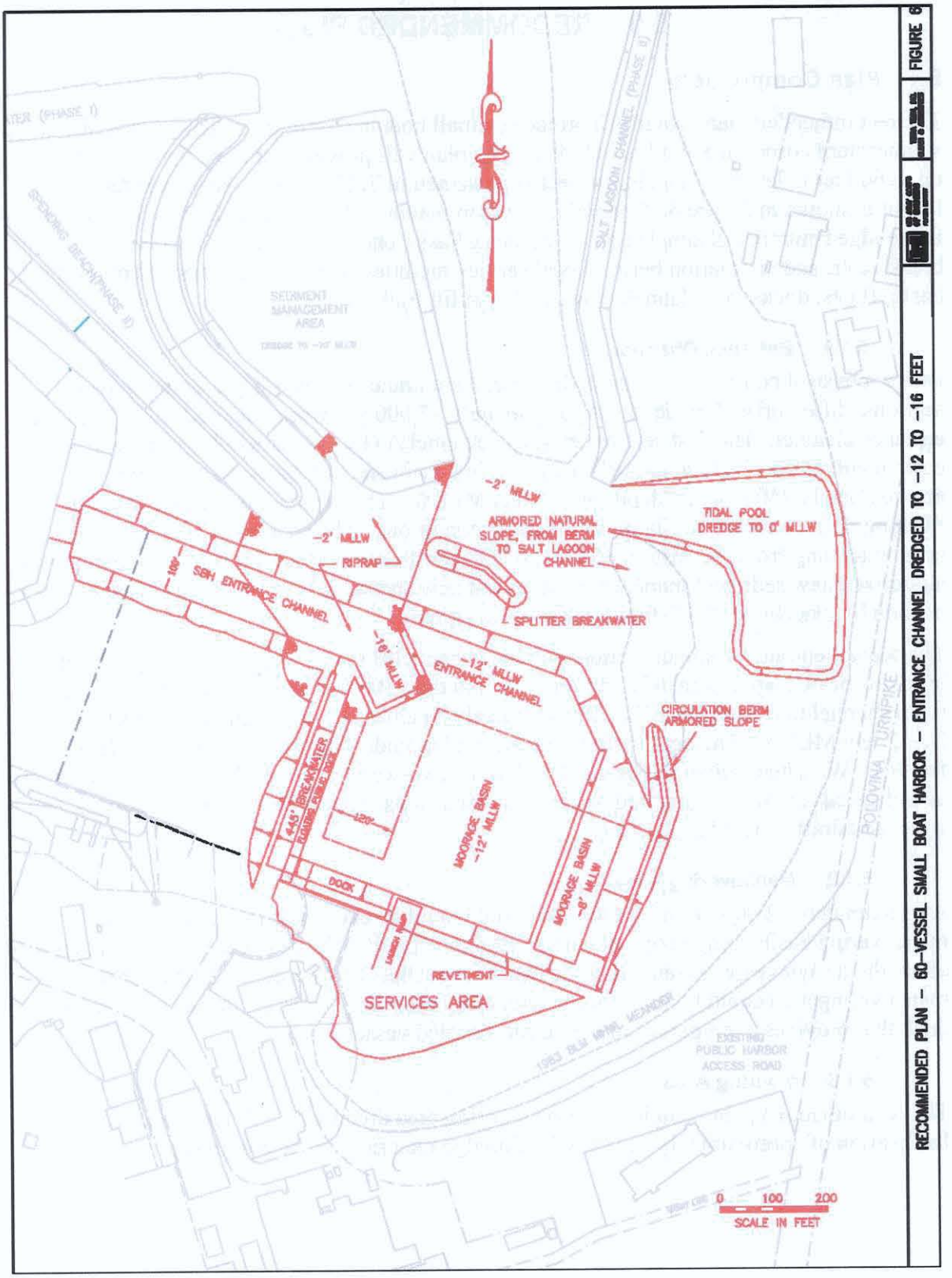

Figure 6. Recommended Plan

5.1.4 Dredged Material Disposal

About 115,000 yd^3 of dredged material from the entrance channel, maneuvering basin, and tidal pool and 41,000 yd^3 from the boat basin will be disposed of in the intertidal area adjacent to the boat basin.

Dredged maintenance material will be used as fill material at the city-owned Ataqan subdivision or other public lands to be identified by the local sponsor. About 28,000 yd^3 of dredged material (14,000 yd^3 at a 10-year interval) will be disposed of during the 20-year period. This volume of material will not exceed the needed fill material during that period.

5.1.5 Breakwater

A 445-foot breakwater would be constructed at +10 feet MLLW parallel to, and approximately 50 feet to the west of, the maneuvering basin. The breakwater would run perpendicular to entrance channel A. The eastern toe of the breakwater would be at –20 feet MLLW. The breakwater would reduce all waves within the small boat harbor mooring area to less than 1.5 feet.

5.1.6 Circulation Berm

A circulation berm would extend from the southeastern corner of the proposed harbor 520 feet to the north, terminating into an armored natural sloped area from the north end of the berm to the Salt Lagoon entrance channel being constructed as part of the deep draft improvement. The berm is required to maintain circulation constraints imposed due to the project's proximity to the sensitive Salt Lagoon.

5.1.7 Floats

Within the mooring area, two systems of pile stabilized floating docks were designed. The eastern float system is located in the far southeastern corner of the harbor and includes seven 44 ft x 6 ft finger piers on its western side and ten 25 ft x 6 ft finger piers on its eastern side. The western float system is located between the eastern float system and the boat launch ramp and includes seven 60 ft x 6 ft finger piers on its east side and five 60 ft x 6 ft finger piers on its west side. The two float systems are separated by a 100-foot harbor fairway.

5.1.8 Boat Launch Ramp

The harbor plan includes a 50 ft x 140 ft boat launch ramp at a 15% slope. The ramp is located immediately to the east of the South Dock and immediately to the west of the harbor's western float system. The recommended design proposes use of a 12 in. structural precast concrete boat ramp.

5.1.9 Docks

Two docks are included in the recommended plan. These docks are referred to in this report as the west floating dock and the south dock based upon their orientation within the harbor. The west floating dock is located immediately to the east of the breakwater and is approximately 20 ft x 275 ft. It is a floating dock that is connected to shore by a 20 ft x 115 ft ramp. The south dock (50 ft x 160 ft) is located approximately 30 feet east of the east dock and approximately 10 feet west of the boat launch ramp.

5.1.10 Boat Lift Trailer

A 60-ton capacity mobile boat lift trailer is proposed for launch and retrieval of larger vessels in service during extreme winter weather conditions.

5.1.11 Mitigation

Mitigation for project impacts would consist of the following.

- Splitter breakwater realignment – The rubblemound splitter breakwater is currently being constructed as part of the Phase II construction project. For mitigation of the small boat harbor, the breakwater will be realigned to provide adequate flushing of the harbor during ebb tides.
- Use oil booms and absorbents during dredging to collect any hydrocarbons in the water column.
- Construct in early summer to avoid conflict with fur seals.
- Use of dredged material for beneficial public use – Initial dredged material will be disposed of at the intertidal area adjacent to the boat basin. Maintenance dredged material will be disposed of at the city-owned Ataqan subdivision or other public lands to be identified by the local sponsor for development of uplands.
- Salt Lagoon entrance channel tidal pool – A 2.5-acre tidal pool with a bottom elevation of 0 feet, MLLW will be dredged adjacent to the Salt Lagoon entrance channel and within the tidelands. The pool will recreate intertidal habitat, which has shoaled in over the years.

5.2 National Economic Development Benefits

The recommended plan would provide average annual NED benefits of $2,082,000 for the 60-vessel fleet. Net annual NED benefits are $1,233,000 and the benefit to cost ratio is 2.5 based on an October 2005 price level.

5.3 Plan Implementation

5.3.1 Construction Phasing

The time needed for construction is estimated at less than six months but will represent two construction seasons because mobilization, demobilization, and entrance dredging must be scheduled around seasons conducive to their accomplishment and environmental resource construction windows. Moorings and docks would be constructed during the second season. Construction scheduling would facilitate the continued use of the harbor by local fishermen, fish processing facilities, and cargo vessels during construction.

The Corps would be responsible for construction of the breakwaters, entrance channel, and intertidal dredge material disposal area. The USCG would be responsible for installing aids to navigation. The sponsor would be responsible for providing all lands, easements, and rights-of-way and relocations necessary for the project. The sponsor would also be responsible for utility service to the harbor and for funding its share of the general navigational features. The sponsor is also responsible for the cost of all local service facility features.

5.3.2 Operations & Maintenance

Table 9 provides a description of the O&M requirements for each of these features as well as an annual O&M cost estimate for each. The total annual O&M costs of the project are estimated to be $159,000. Federal O&M responsibilities would be for entrance channel dredging and breakwater, totaling $38,000 annually. Non-Federal O&M responsibilities would be for mooring area dredging, boat launch ramp, floats and walkway ramps, west floating dock, south dock, and the boat lift trailer, totaling $121,000 (rounded) annually.

Table 9. O&M Requirements and Annual Costs

		Equivalent Annual Cost ($)		
	Interval (yr)	Corps	Local Sponsor	Total
Federal channel dredging	10	6,500		
Mooring area dredging	10		2,600	2,600
Breakwater	20	31,500		31,500
Boat launch ramp	20		2,300	2,300
Floats and walkway ramps	1		34,700	34,700
West floating dock	1		31,200	31,200
South dock	1		49,600	49,600
Boat lift trailer	1		1,000	1,000
TOTAL OMRRR COSTS		38,000	121,400	159,400

5.3.3 Real Property Interests

The project is located within Village Cove at Saint Paul, Alaska. The non-federal sponsor, the City of Saint Paul, will be required to provide all Lands, Easements, and Rights-of-Way (LER) necessary for access, construction, operation, and maintenance of the project. The Government's dominant right of navigation servitude will be exercised for tidelands below the mean high water (MHW) line, which covers a majority of the Federal general navigation features (GNF) for the proposed small boat harbor. The City will provide local service facilities (LSF) for the project and will provide perpetual and temporary easements for the GNF berm tie-in on a small island within the cove. An informal value estimate for lands and related administrative costs is shown below. The detailed Real Estate Plan is provided in Appendix D, with a detailed map, and sponsor assessment as attachments to the plan.

	Federal ($)	Non-Federal ($)
Lands – GNF		4,000
Administrative Costs	16,000	16,000
TOTAL Real Estate Costs	16,000	20,000

5.4 Project Costs

Table 10 presents the detailed cost estimate for the recommended plan to develop a small boat harbor at Saint Paul Island. The estimate includes project implementation costs and excludes economic opportunity costs, operation and maintenance costs, and LERR.

Table 10. Summary Cost Estimate for Recommended Plan

(October 2005 price level)

Item	Cost Share	Unit	Quantity	Unit Cost ($)	Total Direct Costs ($)	Contingency ($) 20%	PED ($) 10%	S&A ($) 8%	Total Cost ($)
Mob/Demob (1st season)	GNF	ls	1	628,216	628,216	125,643	75,386	66,340	895,584
Mob/Demob (2nd season)	LSF	ls	1	1,122,003	1,122,003	224,401	134,640	118,483	1,599,527
Dredging: EC_A (-16 ft)	GNF	cy	47,630	8.50	404,867	80,973	48,584	42,754	577,179
EC_B (-12 ft)	GNF	cy	28,950	8.50	246,082	49,216	29,530	25,986	350,815
Maneuvering Basin (-12 ft)	GNF	cy	22,420	8.50	190,576	38,115	22,869	20,125	271,685
Mooring Area (-12 ft)	LSF	cy	41,000	8.50	348,510	69,702	41,821	36,803	496,837
Entrance Channel Armor	GNF	cy	6,500	46.08	299,545	59,909	35,945	31,632	427,031
Dredge Disposal Armor	GNF	cy	2,625	54.81	143,867	28,773	17,264	15,192	205,096
Breakwater	GNF	cy	12,653	47.66	602,981	120,596	72,358	63,675	859,610
Circulation Berm	GNF	cy	27,300	2.92	79,582	15,916	9,550	8,404	113,453
Pile Stabilized Floats	LSF	sf	13,438	84.98	1,141,982	228,396	137,038	120,593	1,628,009
Float Walkway Ramps	LSF	sf	960	99.80	95,809	19,162	11,497	10,117	136,585
Boat Launch Ramp	LSF	sf	7,000	24.67	172,693	34,539	20,723	18,236	246,192
South Dock	LSF	sf	8,000	223.09	1,784,735	356,947	214,168	188,468	2,544,319
West Floating Dock & Ramp	LSF	sf	7,800	99.80	778,448	155,690	93,414	82,204	1,109,756
Boat Lift Trailer	LSF	ls	1	245,967	245,967	-	-	-	245,967
LERR – Federal Admin Cost	GNF	ls	1	15,750	15,750	-	-	-	15,750
LERR (GNF) – Acquisition Cost	LSF	ls	1	4,200	4,200	-	-	-	4,200
LERR – Non-fed Admin Cost	LSF	ls	1	15,750	15,750	-	-	-	15,750
Nav. Aids – USCG (not cost shared)		ls	1	12,000	12,000				12,000
TOTAL COST						1,608,000	965,000	849,000	11,754,000

5.4.1 Cost Apportionment

Construction costs for the project would be apportioned in accordance with the Water Resources Development Act of 1986 and is shown in Table 11.

Table 11. Apportionment Of Construction Costs

	Construction cost contribution (%)	
Portion of project	Federal	Local
General navigation features (includes entrance channel, maneuvering basin, and breakwaters)	80	20[a]
Local features (includes floats and mooring basin)	0	100
Coast Guard navigation aids	100	0

[a]Non-federal interests must provide cash contributions toward the costs for construction of the general navigation features (GNF) of the project, paid during construction (PDC) as follows: For project depths of up to 20 ft–10%; for project depths over 20 ft and up to 45 ft–25%, and for project depths exceeding 45 ft–50%. For all depths, they must provide an additional cash contribution equal to 10% of GNF costs (which may be

financed over a period not exceeding 30 years), against which the sponsor's costs for LERR (except utilities) shall be credited. *Note:* Costs for general navigation features include associated costs, such as mobilization.

The sponsor is also responsible for 100 percent of the construction cost of the local service facilities. Table 12 provides a breakdown of the initial Federal and non-federal costs of the project of the recommended plan. The fully funded cost is $13,261,000.

The Federal Government would assume 100 percent of the operation and maintenance costs for the breakwaters, entrance channel and maneuvering basin, and tidal pool. The non-federal sponsor would assume all other operation and maintenance costs. The sponsor would be responsible for providing LERRD for construction and future maintenance of the inner harbor facilities.

In addition to the sponsor's share of costs for general navigation features, the sponsor is responsible for costs associated with other NED and non-NED features. The pertinent data table in the front of this report provides a summary of all shared costs.

Table 12. Cost Apportionment for Recommended Plan

(October 2005 Price Level)

Items	Total Project Cost ($000)	Implementation Costs ($000)			
		Federal	%	Non-Federal	%
General Navigation Features (GNF):					
Mob/demob – 1st season	754	679		75	
Breakwaters and circulation berm	819	737		82	
Entrance channel and maneuvering basin	1,369	1,232		137	
Preconstruction, engineering, & design	294	265		29	
Construction management (S&A)	259	233		26	
LERR (GNF) - Administrative costs	16	14		2	
Subtotal GNF	3,511	3,160	90	351	10
Additional Funding Requirement					
10% of GNF		-351		351	
GNF LERR credit		4		-4	
Adjustment for GNF LERR credit		-347		347	
Subtotal of GNF Related Items	3,511	2,813		698	
LERR (GNF) - Acquisition credit	4	0	0	4	100
Aids to navigation	12	12	100	0	0
Local Service Facilities					
Mob/demob – 2nd season	1,346	0		1,346	
Mooring basin, floats, walkways, & ramps	5,604	0		5,604	
Preconstruction, engineering, & design	671	0		671	
Construction management (S&A)	590	0		590	
LERR (LSF)	16	0		16	
TOTAL LOCAL SERVICE FACILITIES	8,228	0	0	8,227	100
ULTIMATE FIRST COST REQUIREMENTS	**11,754**	**2,825**		**8,929**	

The initial construction cost of the general navigation features is 90 percent for the initial Federal investment and 10 percent for the initial local share because all dredging is less than 6.1 meters (20 ft). The non-federal sponsor must also contribute an additional 10 percent, plus interest, during a period not to exceed 30 years after completion of the General Navigation Features. The sponsor would be credited toward this 10-percent cost with the value of LERR necessary for construction, operation, and maintenance of the general navigation features. This post construction contribution is currently estimated at $347,000 as shown in Table 13.

Table 13. Post-Construction Contribution

Total GNF	10 % of GNF	LERR Credit	Non-federal post construction contribution
3,511	351	4	347

5.4.2 Assessment of Sponsor's Financial Capability

As the local sponsor, the city of Saint Paul will require the leaseholder to develop local service facilities. The State of Alaska has obtained appropriations from legislature for the balance of the local share of the project. The sponsor's letter of intent is provided in appendix E.

5.5 Local Economic Impacts

Development of a local boat harbor will enhance prospects for development of an economic base that will be able to create jobs and bring money into the community. An analysis of local economic impacts of the recommended plan estimates creation of 51–91 new jobs. Saint Paul's 2000 population is approximately 580 residents. These new job opportunities would employ approximately 9% to 16% of the local population. Four primary categories of new jobs were identified and described in the sections to follow.

5.5.1 Seafood Harvest Jobs

The recommended plan will produce a minimum of 42 full time equivalent (FTE) harvest jobs. Under present conditions, the local fleet spends a few weeks fishing during the summer. Among the 26 vessels there are probably less than 10 FTE jobs even though there are a large number of fishers employed for a short period. A net gain in harvest FTE in excess of 32 jobs was estimated.

5.5.2 Seafood Processing Jobs

Harbor development is essential to achieving the local communities plan for development of multi-species processing on the island. Near term impacts are creation of from 10–50 jobs directly in processing including 5–10 in management product development, packaging, and marketing. Including a multiplier effect, assumed to be a factor of two based on the isolated nature of the island, indicates total related employment would range from 20–100 jobs.

5.5.3 Hospitality and Tourism

The community plans to promote tourist visits to the community and the framework plan includes development of bed and breakfasts and restaurant operations for regularly scheduled tours. Community cultural resources, bird watching, and nature walks will entertain visitors

who may also be attracted to future development of local sport fishing opportunities. The small boat harbor provides the community with the opportunity to develop a sport charter fishing operation like no other. A charter operation would add stability to the fleet by diversifying dependence on commercial harvest. A secondary effect of a growing charter business would be an invigorated hospitality industry. Shore side support for tours and service to vessels making refueling stops will create four additional jobs.

5.5.4 Marine Services Jobs

Management, operation, and maintenance of the harbor will require a harbormaster. Also, the development of a boat repair yard will employ a full time manager and four marine repair specialists.

5.6 Social Impacts

The recommended plan is consistent with local values that emphasize development of an economic base, maintaining focus on stewardship of the island, and preservation of unique aspects of the Aleut community. The plan is consistent with community guidelines related to expansion of the harbor, development of a day boat facility, preservation of adequate harbor space for three processors, and minimization of environmental impact.

Development of a boat harbor will expand opportunities for subsistence gathering and will also create the opportunity for a stable economic base. The economic expansion is not expected to stimulate growth in the population because a local labor pool exists and unemployment is a problem. The most likely future is one of expanded job opportunities for the residents, increased family incomes, and decreases in the number of persons at or below the poverty level.

5.7 Environmental Impacts

Environmental impacts associated with the construction and operation of a small boat harbor at the south end of Village Cove will be minor. The intertidal and subtidal environs are of minor habitat value. There are no threatened or endangered species at the site, and the area does not support fish or shellfish species of commercial or subsistence value. A Clean Water Act Department of the Army permit public review was completed in 1999 for a proposed small boat harbor at the exact location. The permit was issued with no letters of objection.

5.7.1 Consultation Requirements

Extensive coordination with resource agencies concerning the navigation improvements on Saint Paul Island has occurred. This coordination is documented in the 1982 feasibility study and environmental impact statement, the 1987 environmental assessment, the 1988 general design memorandum and environmental assessment, and the 1996 environmental assessment. The most recent NEPA document is the 2002 environmental assessment, which covers the small boat harbor.

The NMFS and USFWS were consulted for species included in the Endangered Species Act. There are no listed threatened or endangered species that would be affected in the project area. NMFS has also been consulted concerning the northern fur seal. Construction timing criteria has been established to assure no impact on fur seals. The USFWS concluded that no further coordination is required under the Fish and Wildlife Coordination Act for the

proposed small boat harbor. Completion dates for NEPA documents are provided below. These documents are located in the Environmental Assessment.

Environmental Compliance	Date Completed	Discussion
FONSI Signed	September 9, 2002	
EIS Filed	N/A	
ROD Signed	N/A	
Endangered Species Act, Section 7, US Fish and Wildlife Service	September 9, 2002	No effect determination in the EA
Coastal Zone Management Consistency Determination	September 13, 2002	
Clean Water Act Certification, Section 401	March 15, 2002	
Clean Water Act, Section 404(r)	N/A	
Clean Water Act, Section 404(b)(1)	September 9, 2002	Evaluated in EA
Section 103, Marine Mammal Protection Act Evaluation	March 2002	Reviewed as part of the EA
Section 106, National Historic Preservation Act	February 17, 2005	Coordinated during permit review – no affected properties
Seal Island National Historic Landmark	February 23, 2005	Coordinated with the National Park Service – no affect to landmark
USFWS Coordination Act Report	N/A	No need for additional USFWS CAR – coordinated during permit and EA review and mitigation planning
Clean Air Act	September 9, 2002	

5.7.2 Alaska Coastal Management Program Consistency Determinations

The city of Saint Paul applied for and received a Coastal Consistency Determination for a small boat harbor in a Department of the Army permit action in the same location and of almost the same configuration as the proposed alternative. The Alaska Department of Governmental Coordination determined the only part of the proposed action that required additional coastal consistency review was the proposed intertidal fill. A consistency determination has been issued.

5.8 Views of the Local Sponsor

The city of Saint Paul worked closely with the Corps study team during this study. Cooperation between the Corps and city resulted in the selection of the NED Plan, which became the Recommended Plan. The city has stated its preference for the Recommended Plan and agrees that the project will meet the planning objectives.

5.9 Hazardous, Toxic, and Radioactive Waste Cleanup

Section 3(a) of Public Law 104-91 states that "The Secretary of Commerce shall, subject to the availability of appropriations provided for the purposes of this section, clean up landfills, wastes, dumps, debris, storage tanks, property, hazardous or unsafe conditions, and contaminants, including petroleum products and their derivatives, left by the National Oceanic and Atmospheric Administration on lands which it and its predecessor agencies abandoned, quitclaimed, or otherwise transferred or are obligated to transfer, to local entities or residents of the Pribilof Islands, Alaska, pursuant to the Fur Seal Act of 1966 (16 U.S.C. 1151 et seq.), as amended, or other applicable law."

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The studies documented in this report indicate that Federal construction of a small boat harbor at Saint Paul, Alaska, as described in the recommended plan in this report, is technically possible, economically justified, and environmentally and socially acceptable. It has been demonstrated that the modification of the previously authorized harbor improvements project at Saint Paul currently under construction will not be adversely impacted by the addition of the small boat harbor. With the addition of the small boat harbor as a last added increment, the previous project remains economically justified.

The recommended plan includes general navigation features that include an entrance channel in two segments, one at –16 feet MLLW and the second at –12 feet MLLW; a vessel maneuvering area at –12 feet MLLW, a breakwater to +10 feet MLLW, and a circulation berm to +10 feet MLLW. Local service facilities recommended include a mooring area at –12 feet MLLW with revetment; two pile stabilized float systems with walkway ramps; a boat launch ramp; two docks; and a boat lift trailer.

The recommended plan alleviates problems and realizes opportunities in the study area by reducing the travel cost of harvest, preventing vessel damages, relieving harbor congestion and delays, reducing the cost of vessel repair, providing transportation savings for disabled vessels, reducing dock maintenance costs, and improving the local subsistence fishery. Based on an October 2005 price level the annual NED benefits were estimated as $2,082,000 with an annual cost, including operation and maintenance, for the recommended plan of $831,000. The recommended plan has a net benefit of $1,233,000 and a benefit to cost ratio of 2.5.

The city of Saint Paul is willing and able to act as the local sponsor for the project and fulfill all the necessary local cooperation requirements. Thus it is concluded that the recommended plan should be pursued by the United States in cooperation with the city of Saint Paul and the State of Alaska.

6.2 Recommendations

I recommend that the navigational improvements at Saint Paul, Alaska be constructed generally in accordance with the plan herein and with such modifications thereof as in the discretion of the Chief of Engineers may be advisable at an estimated total Federal cost of $2,825,000 and $38,000 annually for Federal maintenance provided that prior to construction the local sponsor agrees to the following:

A. Enter into an agreement which provides, prior to execution of the project cooperation agreement, 25 percent of the design costs;

B. Provide, during construction, any additional funds needed to cover the non-federal share of design costs;

C. The estimated non-federal initial costs for the general navigation features of the project is $698,000 plus $4,000 for GNF LERR and $8,227000 for local service facilities;

D. Provide, operate, maintain, repair, replace, and rehabilitate, at its own expense, the local service facilities consisting of the new mooring basin and moorage facilities in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;

E. Provide all lands, easements, rights-of-way, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features (including all lands, easements, and rights-of-way, and relocations necessary for dredged material disposal facilities);

F. Provide, during the period of construction, a cash contribution equal to the following percentages of the total cost of construction of the general navigation features (which include the construction of land-based and aquatic dredged material disposal facilities that are necessary for the disposal of dredged material required for project construction, operation, or maintenance and for which a contract for the federal facility's construction or improvement was not awarded on or before October 12, 1996;):

1. 10 % of the costs attributable to dredging to a depth not in excess of 6.1 m (20 ft)
2. 25 % of the cost attributable to dredging to a depth in excess of 6.1 m (20 ft) but not in excess of 13.7 m (45 ft)
3. 50 % of the costs attributable to dredging to a depth in excess of 13.7 m (45 ft)

G. Pay with interest, over a period not to exceed 30 years following completion of the period of construction of the project, up to an additional 10 percent of the total cost of construction of general navigation features. The value of lands, easements, rights-of-way, and relocations provided by the non-Federal sponsor for the general navigation features, described below, may be credited toward this required payment. If the amount of credit exceeds 10 percent of the total cost of construction of the general navigation features, the non-Federal sponsor shall not be required to make any contribution under this paragraph, nor shall it be entitled to any refund for the value of lands, easements, rights-of-way, and relocations in excess of 10 percent of the total cost of construction of the general navigation features;

H. For so long as the project remains authorized, operate and maintain the local service facilities and provide lands, easements, and rights-of-way for any dredged or excavated material disposal areas, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and state laws and regulations and any specific directions prescribed by the Federal Government;

I. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor owns or controls for access to the general navigation features for the purpose of inspection, and, if necessary, for the purpose of operating, maintaining, repairing, replacing, and rehabilitating the general navigation features;

J. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project, any

betterments, and the local service facilities, except for damages due to the fault or negligence of the United States or its contractors;

K. Keep, and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total cost of construction of the general navigation features, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and local governments at 32 CFR, Section 33.20;

L. Perform, or cause to be performed, any investigations for hazardous substances as are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction, operation, maintenance, repair, replacement, or rehabilitation of the general navigation features. However, for lands that the Government determines to be subject to the navigation servitude, only the Government shall perform such investigation unless the Federal Government provides the non-Federal sponsor with prior specific written direction, in which case the non-Federal sponsor shall perform such investigations in accordance with such written direction, subject to Section 3(a) of Public Law 104-91 states that "The Secretary of Commerce shall, subject to the availability of appropriations provided for the purposes of this section, clean up landfills, wastes, dumps, debris, storage tanks, property, hazardous or unsafe conditions, and contaminants, including petroleum products and their derivatives, left by the National Oceanic and Atmospheric Administration on lands which it and its predecessor agencies abandoned, quitclaimed, or otherwise transferred or are obligated to transfer, to local entities or residents of the Pribilof Islands, Alaska, pursuant to the Fur Seal Act of 1966 (16 U.S.C. 1151 et seq.), as amended, or other applicable law."

M. Assume complete financial responsibility, as between the Federal Government and the non-Federal sponsor, for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features, subject to Section 3(a) of Public Law 104-91 states that "The Secretary of Commerce shall, subject to the availability of appropriations provided for the purposes of this section, clean up landfills, wastes, dumps, debris, storage tanks, property, hazardous or unsafe conditions, and contaminants, including petroleum products and their derivatives, left by the National Oceanic and Atmospheric Administration on lands which it and its predecessor agencies abandoned, quitclaimed, or otherwise transferred or are obligated to transfer, to local entities or residents of the Pribilof Islands, Alaska, pursuant to the Fur Seal Act of 1966 (16 U.S.C. 1151 et seq.), as amended, or other applicable law."

N. To the maximum extent practicable, perform its obligations in a manner that will not cause liability to arise under CERCLA;

O. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987, and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, required for construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features, and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

P. Comply with all applicable Federal and state laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 USC 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army";

Q. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project, in accordance with the cost sharing provisions of the agreement;

R. Accomplish all removals determined necessary by the Federal Governement other than those removals specifically assigned to the Federal Governement;

S. Do not use Federal funds to meet the non-federal sponsor's share of total project costs unless the Federal-granting agency verifies in writing that the expenditure of such funds is authorized.

The recommendations for implementation of navigation improvements at Saint Paul, Alaska reflect the policies governing formulation of individual projects and the information available at this time. They do not necessarily reflect the program and budgeting priorities inherent in the local and State programs or the formulation of a national civil works water resources program. Consequently, the recommendations may be changed at higher review levels of the executive branch outside Alaska before they are used to support funding.

TIMOTHY J. GALLAGHER
Colonel, Corps of Engineers
District Engineer

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8.0 ABBREVIATIONS

ABC	Allowable biological catch
ADFG	Alaska Department of Fish & Game
ADOT	Alaska Department of Transportation
BSAI	Bering Sea Aleutian Islands
CBSFA	Central Bering Sea Fishermen's Association
CDQ	Community development quota
CFEC	Commercial Fisheries Entry Commission
EBS/AI	Eastern Bering Sea/Aleutian Islands
EEZ	Exclusive economic zone
F/V	Fishing vessel
FTE	Full time equivalent
GHL	Guideline harvest level
HP	Horsepower
IFQ	Individual fishing quota
I-O	Inboard-outboard
IPHC	International Pacific Halibut Commission
IRA	Indian Reorganization Act
KW	Kilowatt
LLP	Limited license program
LOA	Length overall
LRIC	Long run incremental cost
MHHW	Mean higher high water
MHW	Mean high water
MLLW	Mean lower low water
MLW	Mean low water
MSL	Mean sea level
NED	National economic development
NMFS	National Marine Fisheries Service
NRC	Natural Resource Consultants
PNW	Pacific northwest
TAC	Total allowable catch
TDX	Tanadgusix Corporation
USACE	United States Army Corps of Engineers
WRDA	Water Resources Development Act

ENVIRONMENTAL ASSESSMENT
ST. PAUL HARBOR IMPROVEMENTS
ST. PAUL ISLAND, ALASKA

FINDING OF NO SIGNIFICANT IMPACT

In accordance with the National Environmental Policy Act of 1969, as amended, the U.S. Army Engineer District, Alaska, has assessed the environmental effects of the following action:

Small Boat Harbor, Emergency Action, and
Disposal under Section 103 of Marine Protection, Research and Sanctuaries Act
St. Paul Island, Alaska

The action includes the construction of a small boat harbor within the confines of the existing breakwater, the ongoing emergency action for the protection of the existing breakwater and related infrastructure, and the disposal of dredged material from the existing authorized project and the proposed small boat harbor in waters under the jurisdiction of the Marine Protection, Research and Sanctuaries Act (MPRSA).

Boat Harbor. The small boat harbor site is in south Village Cove at a location that has been permitted for an almost identical harbor as proposed. The harbor requires dredging 140,000 cubic yards (yd^3) of material for the entrance, turning basin, and moorage area. About 100,000 yd^3 of fill material will be needed to construct the breakwaters and revetments, circulation berm, and service fill area. The harbor will accommodate 60 vessels for the local fishing fleet. The small rubblemound splitter breakwater designed for the approved portion of the overall St. Paul Harbor improvements has been modified slightly to mesh with the new small boat harbor design.

Emergency Action. Condition surveys of the main breakwater at St. Paul indicated erosion along portions of the breakwater toe causing imminent danger to the breakwater and associated infrastructure. Approximately 10,000 yd^3 of material was used to construct a road along the breakwater to move equipment to the area of concern. Upon completion of the emergency work, the road will be removed and the area restored to pre-project conditions. Thirteen weirs connecting the main breakwater to the closest reef will be constructed. The weirs are 100 feet apart with a top width of 20 feet. The emergency action is only partially completed; the remainder of the weirs will be completed at the end of the 2002 construction season.

Section 103 of MPRSA. An evaluation for disposal of dredged material in open water has been completed and is attached to the environmental assessment. The lack of public uplands and the cost of upland disposal is a concern for both the local sponsor and federal government. The proposed disposal site was selected with the assistance of the local fishing fleet and the resource agencies. The site is north of St. Paul Island, about 20 nautical miles from Village Cove. About 400,000 yd^3 of dredged material will be disposed of.

Work will not affect any sites eligible for inclusion in the National Register of Historic Places. The project also will not affect any threatened or endangered species or their critical habitat. These determinations have been coordinated with the State Historic Preservation Office, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

All appropriate and practicable mitigation measures have been incorporated into the project and include: (a) realigning the splitter breakwater to fit the new small boat harbor design; (b) using an oil boom and absorbents during dredging to collect any hydrocarbons in the water column; (c) constructing in the early summer months to avoid conflict with fur seals; (d) using the dredged material for a beneficial public use; and (e) including the restoration of intertidal habitat in the historic Salt Lagoon entrance channel as described in the EA.

The city of St. Paul received permits from the Corps of Engineers Regulatory Office and the State of Alaska to construct a very similar small boat harbor in the exact location of the action discussed in this document. All comments from the Federal and State agencies, the city of St. Paul, and general public that were part of the environmental record have been incorporated into the design.

The action is consistent with State and local coastal zone management programs to the maximum extent practicable. The accompanying environmental assessment supports the conclusion that the project does not constitute a major Federal action significantly affecting the quality of the human environment. There were no adverse comments received on any of the actions described in the accompanying documentation. Therefore, an environmental impact statement is not necessary to construct a small boat harbor, for ocean disposal of dredged material or for construction of the emergency action at St. Paul Island, Alaska.

Steven T. Perrenot
Colonel, Corps of Engineers
District Engineer

9 SEP 02
Date

Environmental Assessment
St. Paul Harbor Improvements
St. Paul Island, Alaska

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1.0 INTRODUCTION

1.1 Scope of the Environmental Assessment

This document addresses the environmental effects from construction of a small boat harbor at South Village Cove and the ocean disposal of the dredged material from the proposed small boat harbor. This document also addresses the environmental effects of the emergency action undertaken to protect the harbor from storm damage and is an after-the-fact evaluation.

The analysis includes direct, cumulative, and secondary impacts associated with the proposed actions. The Corps prepared an environmental impact statement (EIS) for the boat harbor and distributed it for public review in 1982. With the signing of the Record of Decision (ROD) in December 1986, the requirements of the National Environmental Policy Act (NEPA) were completed. In 1984 and 1985, the city of St. Paul constructed a 750-foot-long breakwater. The breakwater was damaged by a storm during construction in December 1984 and was rebuilt in 1985. The city asked for Federal assistance to extend the breakwater, and an environmental assessment (EA) and a Finding of No Significant Impact (FONSI) were completed in February 1987 to evaluate the use of Federal funds for the project. The Federal Government adopted the project in 1987. The new design added several features that required new public input, and an environmental assessment was prepared and distributed for public review in February 1988. Comments from the Federal and State agencies, the city of St. Paul, and the general public were incorporated into the design, and the FONSI was signed in April 1988. The Federal project, which was completed in 1990, extended the breakwater to 1,800 feet and added a 970-foot-long detached breakwater. The major change in the EA from the project described in the EIS was the construction of the detached breakwater and the associated impacts. The Corps prepared an environmental assessment for phase 2 of the harbor improvements, which consisted of constructing reefs outside the breakwater to reduce wave damage, deepening the entrance channel and maneuvering basin, constructing a spending beach, and mitigating harbor effects on Salt Lagoon. The EA was distributed for public review and the FONSI was signed on July 31, 1996.

All environmental stipulations and requirements included in the 1982 EIS and in the 1987, 1988 and 1996 EA's would be followed for the proposed action. Consequently, this EA does not address broader issues of project effects considered in the previous documents. This EA does address adverse effects of the previous construction that have been identified since the last NEPA document was prepared in 1996. The 1982 feasibility report and EIS, the 1987 EA, the 1988 General Design Memorandum and

EA, and the 1996 EA are incorporated by reference into this environmental assessment.

1.2 Need for the Actions

1.2.1 Background

The original St. Paul Harbor facilities were designed for a fleet of 65 vessels with an average length of 110 feet, a 35-foot beam, and an unloaded draft of 12 feet. The entrance channel and maneuvering basin were designed to accommodate only unladen fishing vessels going into the harbor to refuel and stock provisions. Large loaded vessels were not expected to use the harbor because it was believed that all transfers of fish product would occur at the fishing grounds. Subsequently, the harbor was redesigned to receive larger vessels by deepening the entrance channel and turning basin. Construction of these improvements has been authorized but has yet to begin.

1.2.2 Small Boat Harbor

St. Paul is within 65 miles of more than 50 percent of the nation's commercial fishing activity, but historical circumstance precluded residents from participating in the Bering Sea fisheries until the last decade or so. The community's efforts to develop competitive infrastructure, combined with the leverage of the Community Development Quota (CDQ) program, are beginning to pay off. (*Western Alaska. CDQ allocates a percentage of all Bering Sea and Aleutian Islands quotas for groundfish, prohibited species, halibut, and crab to eligible communities. The purpose of the CDQ Program is to provide the means for starting or supporting commercial fisheries business activities that will result in an ongoing, regionally based, fisheries-related economy in Western Alaska.*) Nevertheless, island residents have limited employment opportunities because they lack a diversified self-sustaining economic base. To overcome this they are establishing a formal relationship with multi-species harvesters and processors. The diversification will include establishing new processing facilities on the island. The processing facilities are expected to be state of the art and as such are expected to be competitive with ports such as Dutch Harbor. This means vessels now delivering to Dutch Harbor will deliver to processors at St Paul. St Paul Harbor expects to see an increase in traffic of vessels over 90 feet. These larger boats are paying customers for dock facilities. This will lead to increased competition for space and will result in lost time, increased damages, and income loss for local boats up to 58 feet.

The local fleet may see an increase in its potential harvest in the near future. The community developed a financial strategy for increasing locally owned quotas. In addition, the CDQ Plan also makes a good case for an increased community quota. Potential development of a cod fishery is being addressed. Fleet modifications will allow targeting multi-species and will allow more time to be spent harvesting.

Local residents need moorage facilities to compete in the fishery. There is no safe moorage available for the local fishing fleet, and no facilities are available to remove the vessels from the water on a daily basis.

1.2.3 Emergency Action

During reef construction surveys in the spring of 2001, the contractor noted scouring had occurred between the main breakwater and the partially constructed reefs. The scour formed a trench ranging from 3 to 13 feet in depth and jeopardized the stability of the breakwater by oversteepening the native foundation material. Maximum scour depth occurred beyond reef station 13+25, which is north of the failed head of the original locally constructed breakwater. (*Station 10+00 is at the landward side of the breakwater. Station 13+25 is 325 feet from station 10+00.*) The locally constructed breakwater failed shortly after construction. The scour then decreased towards the tip of the breakwater where reef construction had not been completed during the past construction season.

The erosion was examined station by station because there is a significant variation in the depth of sediment loss. The southern end of the structure appears to be semi protected by the collapsed head of the locally constructed original breakwater. The more severe erosion, immediately north of that failed breakwater head, appeared to be a combination of sediment starvation due to the raised bed of the failed breakwater and increased transport capacity caused by confinement of a rip current between the reef and breakwater. The decrease in erosion depth beyond station 16+25 is apparently a combination of erosion supplying sediments from station 13+25 to station 16+00 and a decrease in sediment transport potential. The decrease in transport may be attributable to the flow expansion allowed by the uncompleted segment of the reefs.

A 1:100-scale physical model of St. Paul Harbor, Alaska, was reactivated to investigate alternatives for the prevention of scour adjacent to the St. Paul Harbor main breakwater. The model was originally constructed in 1995 at the Corps of Engineers Waterways Experiment Station (WES) in Vicksburg, Mississippi, to study harbor improvements at the site. Results of the study were published in Technical Report CERC-96-7, "Study of Harbor Improvements at St. Paul Harbor, St. Paul Island, Alaska," dated September 1996. A layout of the model is available upon request. As part of the 1995 study, WES recommended constructing submerged reef breakwaters seaward of the main breakwater to minimize overtopping. WES revised the model to allow the reproduction of waves from a more angular direction than tested in the 1995 model. WES also conducted experiments June 25-29, 2001, on structural alternatives to minimize scouring between the main breakwater and the reef.

Wave-induced current patterns and magnitudes (depth-averaged), wave heights, and/or sediment tracer patterns were obtained for existing conditions and the various improvements plans with a +7.0-foot still water level (SWL). All elevations are

referenced to mean lower low water (MLLW)) unless otherwise noted. Surface currents were measured by insertion of dye and time measurement of the dye track over a constant distance. Strength and direction of bottom currents were deduced by observing coal tracer movement and bedform direction. Neutrally buoyant flags were placed on the bottom to confirm bottom current direction and forces acting on the bottom. Bottom currents, when combined with the rip current caused erosion perpendicular to the breakwater and reef-long axis. When dominated by waves, the current causes the bed alignment to form parallel to the breakwater. Bottom flags, when rip currents were not present, oscillated with the waves' orbital motion. The Alaska District proposes to retain the reef protection features.

1.2.4 Disposal of Dredged Material under Section 103 of MRSDA

Ocean disposal is a necessary component of the harbor project because of the large quantity of dredged material and the high cost of transporting the material to an upland site. Preliminary cost estimates indicate there would be a savings to the government of over $2,000,000 with offshore disposal of the dredged material. No upland disposal sites have been identified that meet local land use needs. The local sponsor, the City of St. Paul, has very limited land ownership and no parcel of land that could contain the estimated 400,000 cubic yards (yd^3) of dredged material. The majority of land is privately owned and would require purchasing easements and paying storage fees to dispose of the material. There appears to be several projects planned for St. Paul that could use some of the material; however; the total potential need is far below the amount available. The material is unconsolidated and only useful for bulk filling. If an upland disposal site were identified, the material would have to be barged to a dock to be loaded onto trucks. Trucking would occupy a large amount of dock time and space over the course of the project. The estimated load capacity of a dump truck is 15 yd^3 based on the road system and city ordinances. The disposal of the material would require 30,000 round trips for the disposal operation. City roads would require maintenance during the high use period. Dust control, road damage repair, and a major increase in road traffic would be major considerations.

Intertidal and near shore areas are available but highly undesirable for use as a disposal site due to the high productivity of the St. Paul island coastline, notably as fur seal and seabird habitat.

1.3 Authority

This study is authorized by a resolution adopted on December 2, 1970, by the Committee on Public Works of the U.S. House of Representatives, Document Number 414, 83rd Congress, 22nd Session.

The city of St. Paul requested the harbor improvements phase of the St. Paul Harbor project in late winter 1993. The city's request cited navigation problems with the existing harbor. The Alaska District, U.S. Army Corps of Engineers (Corps) completed a reconnaissance report in July 1995 recommending a feasibility study for

navigation improvements at St. Paul Harbor.

2.0 PROJECT DESCRIPTION

2.1 Project Location

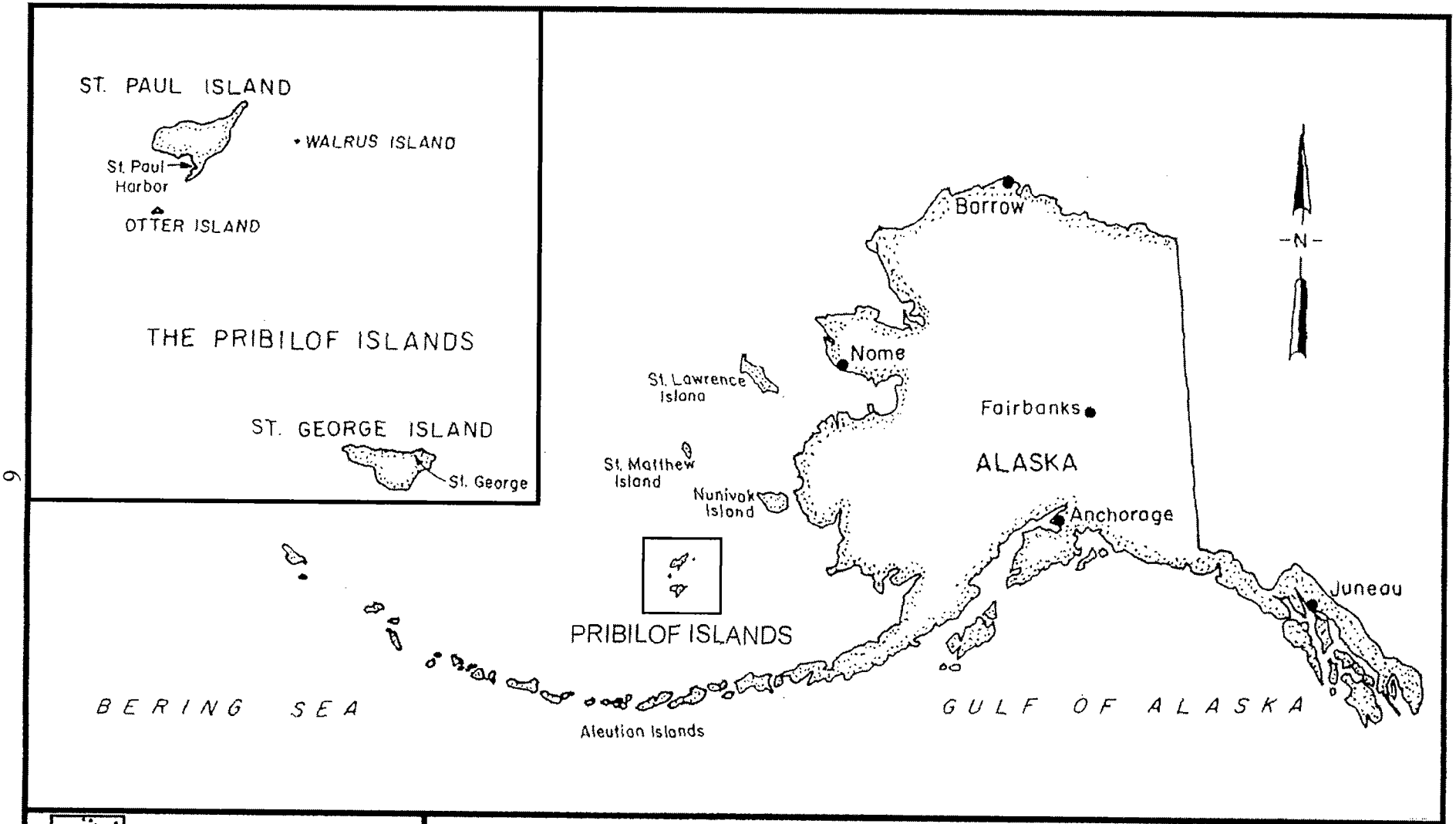
St. Paul Island is in the Pribilof Island group in the eastern Bering Sea, approximately 775 air miles west of Anchorage, Alaska (figure 1). The island is of volcanic origin, and topography includes volcanic hills, basalt ridges, and sand dunes. The city of St. Paul is on a narrow, sandy peninsula on the extreme south end of the island. The harbor is in Village Cove, adjacent to the city of St. Paul.

2.2 Alternatives Considered for Small Boat Harbor Construction (including no action)

During planning sessions three basic alternatives were identified, and through follow-up input from the Aleut Community of St Paul; Pribilof/Bering Seafood, Ltd.; Bering Sea Eccotech; the Central Bering Sea Fisherman's Association (CBSFA); and the Tanadqusix Corporation (TDX), four other concept plans emerged. The plans differ in their breakwater configuration and location, which are two major factors affecting their ability to serve as all-weather, year-round harbors in a cost effective way. The South Village Cove site, alternative 1 is the preferred alternative.

2.2.1 No-Action Alternative

The no-action alternative means there would be no Federal involvement in the proposed small boat harbor. This alternative would cause the least environmental damage but would not meet the needs to provide moorage for the local fishery. If the Federal government is not directly involved in the small boat harbor project, the project may still be constructed using other funding. Both the city of St. Paul and the TDX Corporation have received State and Federal permits to construct similar boat harbors at the same location as the proposed activity. Department of the Army permit number 2-981150, Village Cove 2 was issued to the Aleut Community of Saint Paul and Tanadgusix Corporation on March 6, 2000, for a small boat harbor at South Village Cove (figure 2). Department of the Army permit number 2-981089, Village Cove 1 was issued to the city of St. Paul on March 22, 2000, for a small boat harbor at the same location (figure 3). Both permit actions went through the State and Federal public review process. Comments were incorporated into the designs and they were authorized for construction. Copies of the permits or permit applications are in Appendix 3.



ALASKA DISTRICT
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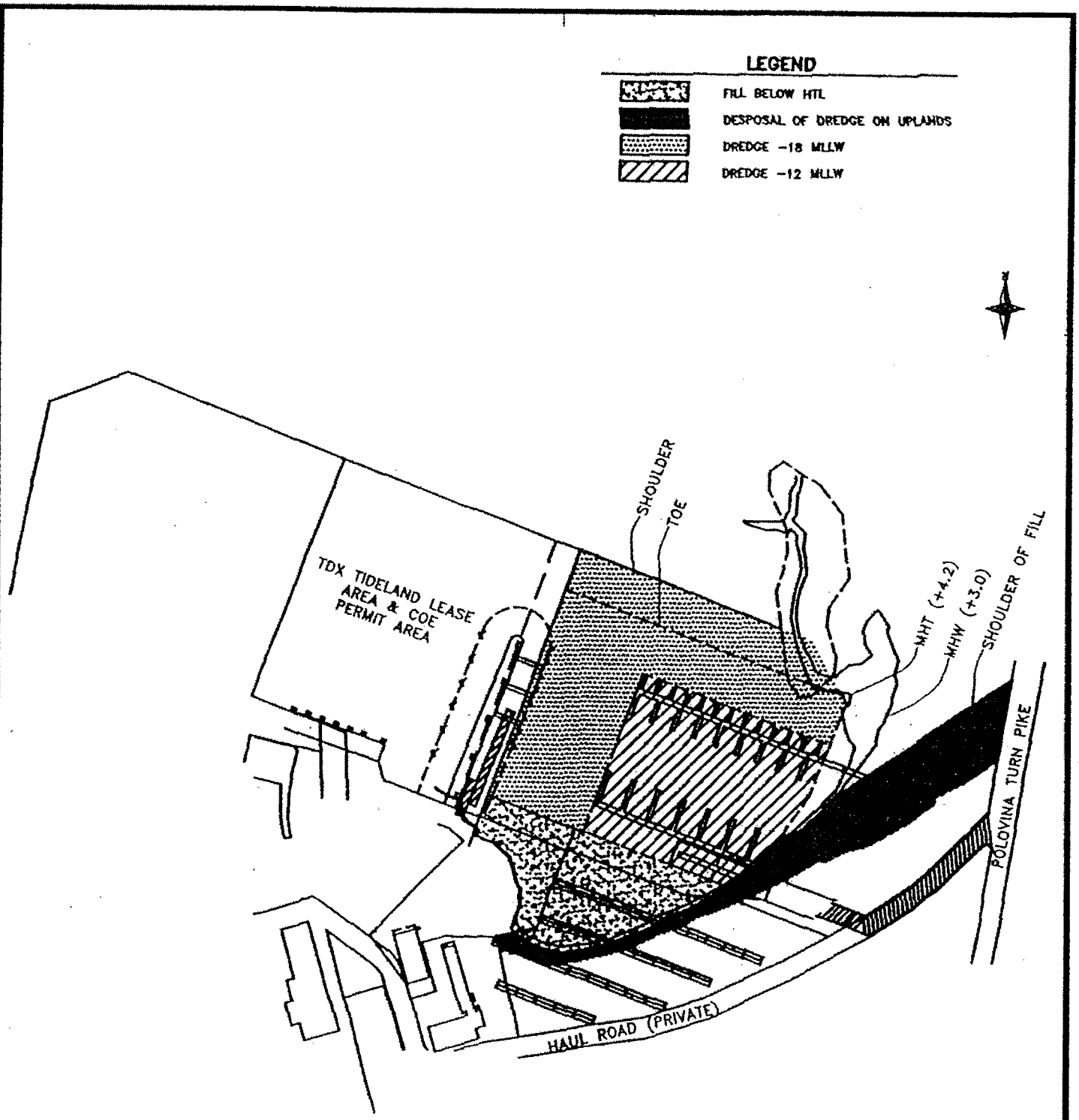
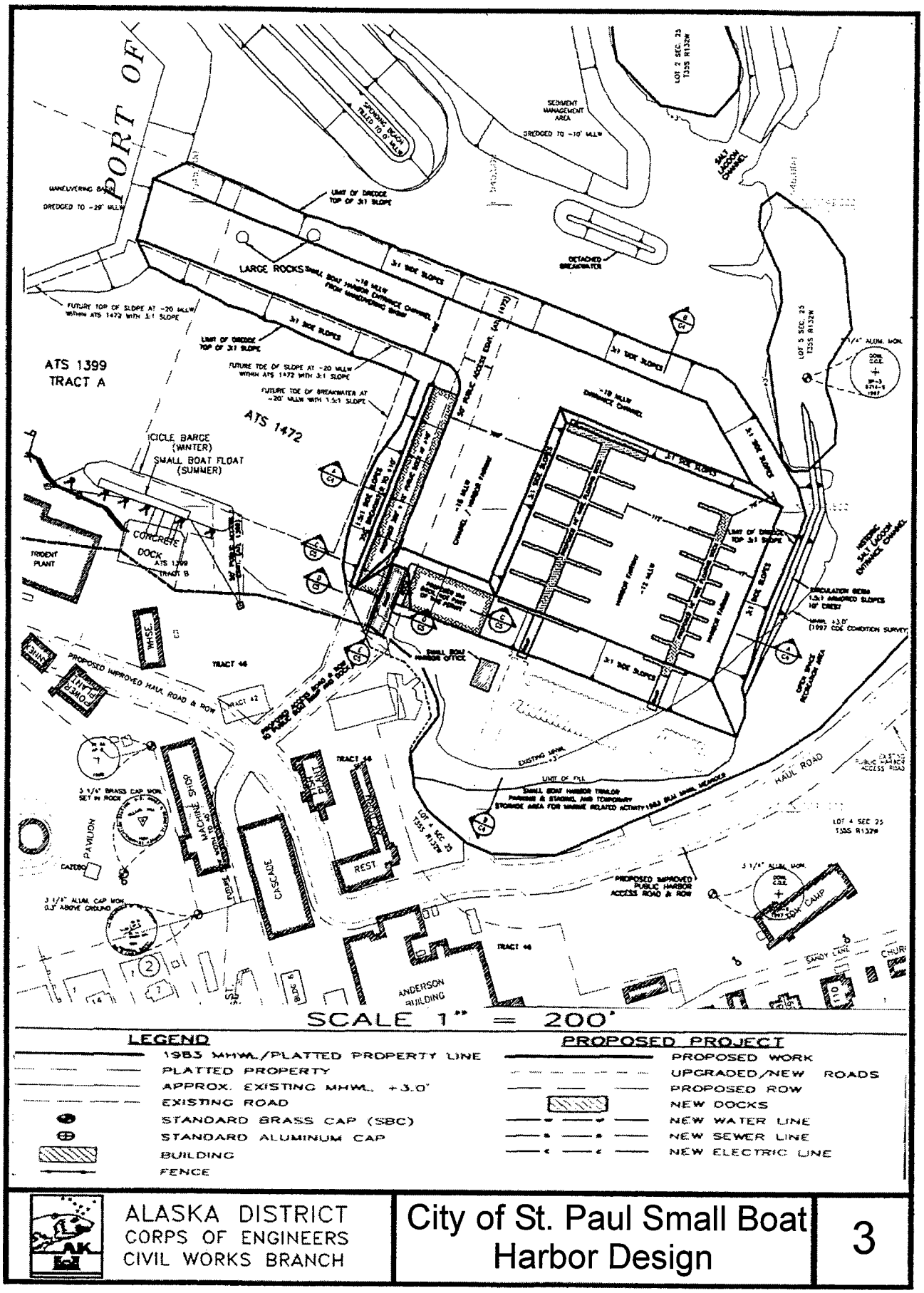
Location and Vicinity Map
Saint Paul Island Harbor

1



Scale 1"=300'

ALASKA DISTRICT CORPS OF ENGINEERS CIVIL WORKS BRANCH	TDX Small Boat Harbor Design	2



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CIVIL WORKS BRANCH

City of St. Paul Small Boat Harbor Design

3

2.2.2 Hammerhead

This plan, near the vicinity of the spending beach and maneuvering basin, is a rubble fill foundation with a timber trestle. The trestle would allow access to the head that could be used as wharf space for the transshipment of goods. The Corps discarded the plan as it concentrated storm-generated current in the mooring area and would not have reduced wave activity to the extent other plans could.

2.2.3 Westerly Harbor

The Corps examined a harbor site about 200 feet west of the preferred alternative site as water depths there appeared favorable. Examination of the wave climate and currents during storms depicted in model studies indicated that both a wave barrier and a current barrier extending out from the south shoreline would be required to protect moorages on the south shoreline. When such a structure was placed near the Icicle barge, most of the existing depth advantage was eliminated by the breakwaters' footprint. Placement of a harbor in this location also constrained other potential harbor uses. As there was no major cost advantage to a harbor at the site and because there would be major losses in benefits to other users, the site was not studied in detail.

2.2.4 Floating Breakwater

Located adjacent to the TDX docks at the south end of Village Cove, this plan would use an anchored vessel to dampen wave activity. Wave attenuation of such a structure in the long-period wave climate would be primarily by reflection. The added wave activity in the reflected wave path would adversely affect other harbor operations. Currents in the harbor under design-storm conditions could make mooring the structure very difficult. The alternative was rejected from this study based on its adverse effects on harbor waves.

2.2.5 TDX Plan # 4A and TDX Plan # 2A

TDX Conceptual plans # 4A and # 2A* are variations on a two-dock concept that incorporates moorings for vessels larger than those anticipated for the day-use harbor and also include a major dock facility (the TDX plans are described in Appendix 3). Because the financial benefit of the added facilities is not obvious and the analysis is beyond the scope of this study, the additional costs were not estimated. The increased cost, however, would have been significant. Both plans have one environmental characteristic that could eliminate them from consideration: both plans are configured to require the major proportion of flood flow water to pass through the harbor complex before entering Salt Lagoon. This is an ideal situation for the harbor, but it would increase the potential for Salt Lagoon to be contaminated. Both plans also would have major problems with high velocities during and immediately after storms.

2.2.6 Salt Lagoon

Also suggested as *TDX plan #1A, this is a harbor in the entrance to Salt Lagoon. It would be well protected from waves but would suffer from exposure to high velocity flows when storm surge water volumes were purged from the Salt Lagoon. A harbor in this location also would eliminate bird habitat and increase the risk of potential contamination of Salt Lagoon. The harbor would be located in what are believed to be sand deposits and excavation costs other than for the approach channel should be minimal. An in depth evaluation was not undertaken due to the potential for Salt Lagoon contamination.

2.2.7 South Village Cove

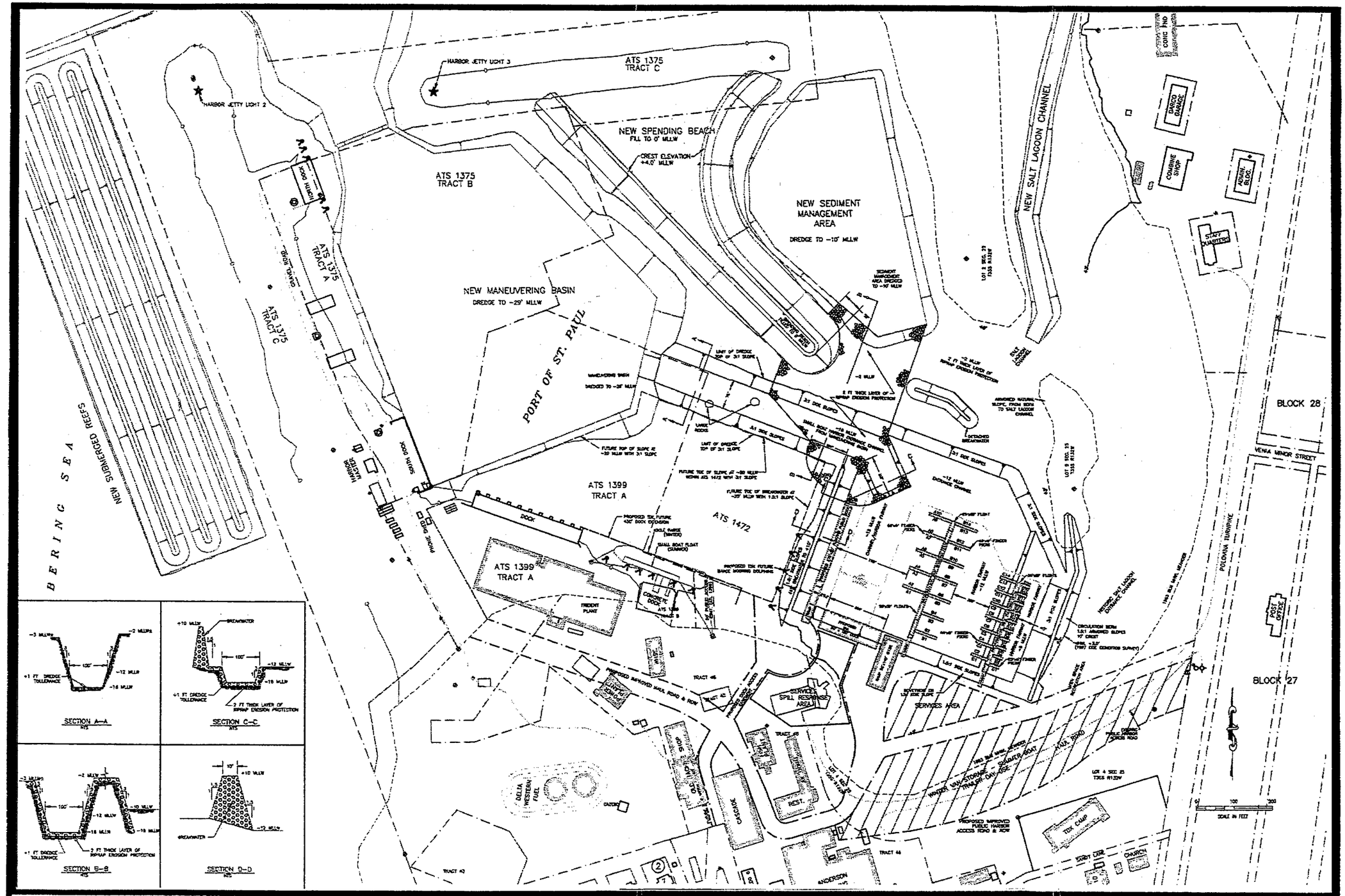
Also suggested as *TDX plan #3A, this plan is at the same location as the floating breakwater plan. It consists of a short north breakwater and a west breakwater near the public access area. The day-use harbor consists of two docks and occupies about 12 acres. Of the plans examined, it is the plan that has the maximum potential for meeting planning and engineering goals. With modest future excavation, it could also meet later needs of a tribal dock and temporary moorage for the 100-foot plus vessels. This plan, and variations thereof, is described below.

Alternative 1—South Village Cove, 60-vessel, 12-foot depth (preferred alternative). The preferred alternative is almost identical (figure 4) to the city of St. Paul's harbor design that was submitted and permitted through the Corps of Engineers Regulatory Branch and deemed consistent with the St. Paul and Alaska Coastal Management Plan. The changes made to the city of St. Paul's design were incorporated through results of the physical model at Vicksburg, Mississippi. The changes consist of the following:

- Entrance Channel Deepened. The physical model indicated that velocities in the entrance channel exceeded optimal velocities for the safe maneuvering of vessels. The deepening of the entrance channel reduced velocities sufficiently to ensure safe vessel passage.

- Splitter Breakwater Repositioned. The splitter breakwater was repositioned to ensure the right amount of tidal water originating from Salt Lagoon passes through the proposed small boat harbor. The splitter breakwater would

* The TDX alternatives are from conceptual drawings to show different layouts and locations to the St. Paul Community Planning Committee. They were not engineered and are not designed and were meant to be for display purposes only. The TDX design described in the Corps of Engineers permit "Village Cove 1" is the official TDX design. Copies of the conceptual drawings TDX 1A through 4A are in Appendix 3.



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Preferred Alternative

4

function as described in the 1996 EA (maximize the amount of water entering Salt Lagoon from the north, while allowing a sufficient amount of water from Salt Lagoon into the small boat harbor from the ebb tide to improve circulation, but not such an extreme amount that would damage moored vessels).

- Harbor Footprint. There is a very minor change to the footprint of the proposed harbor. The reconfiguration of the float system allows the extra vessels.

- Local Service Facilities. These include open areas, structures, or equipment on shore for receiving, storing, and transferring cargo and passengers (port facilities); for providing water, ice, provisions, repairs, and other services to vessels (harbor facilities); or for launching boats via ramps or equipment, storing boats on land, parking vehicles, and public access areas and restrooms (recreation facilities). These local service facilities would require placing about 53,000 yd^3 of fill to construct the 3.5-acre area. Approximately 1.4 acres are presently below the mean high water level.

The preferred alternative for a small boat harbor consists of a federally developed entrance and maneuvering channel and a west breakwater. The entrance and maneuvering channels in the interior of the harbor would be constructed to a depth of –12 feet MLLW to within 100 feet of the harbor breakwater. The entrance channel would be initiated at the boundary of the turning basin and would extend from that point to a position about 100 feet inside the harbor. The depth required for flushing in this segment would be –16 feet MLLW. At that position it would transition to a depth of –12 feet MLLW. The width of the entrance channel segment, where vessel speed allows reasonable control, would be 100 feet with a depth of –12 feet MLLW. In the speed-restricted maneuvering channel, the width would increase to 120 feet at a 12-foot depth. The entrance channel would narrow to 65 feet at the eastern segment of the harbor that would be used by smaller craft in the fleet. The Federal breakwater would be 445 feet long and constructed to an elevation of +10 feet MLLW. The breakwater elevation assumes an extreme tide of 6 feet MLLW plus a surge of 4 feet. Model results show that surges may exceed this value under certain circumstances. Those circumstances, however, are infrequent and added elevation is not deemed necessary. Breakwater construction would be a randomly placed rubblemound with 1.5 on 1 side slopes (figure 4). Erosion control would be required in the areas shown between the spending beach and the interior detached breakwater and in the channel along the end of the harbor breakwater. The eastern end of the harbor would be bounded by a circulation berm requested by environmental interests. The berm would control waters that might enter from the relic channel lying east of the Grass Islands. The berm would be built from the +10-foot MLLW elevation in the services area to the Grass Islands. The berm would be constructed to a top elevation of +10 feet MLLW and capped with filter and revetment. The revetment would be composed of 12-inch-minus boulders removed during excavation of the harbor.

Locally developed portions of the project would consist of:

- A mooring basin of about 3.5 acres.
- Mooring floats for a 60-vessel harbor
- A launch ramp 50 feet by 140 feet capable of handling the larger vessels in the fleet.
- A boat launch trailer.
- A 50-foot by 160-foot dock at the southwestern boundary of the project
- A 20-foot by 275-foot pile-anchored floating dock along the eastern side of the federal breakwater.
- Intertidal fill along the southern bank line.
- Revetment on the southern bank of the harbor. The revetment would be rock and bedding to protect the fill area.
- Associated onshore facilities
- A +10-foot MLLW berm from shore to the Grass Islands on the east bank.

The locally developed portions of the project would be part of the overall federal project, but would be totally funded by the local sponsor. The costs of all these items are included in the project costs because these items were necessary to establish the benefits for the project. Although the above items would be part of the federal project, the local sponsor would be required to obtain a Section 10 permit for the placement of the mooring floats.

Entrance Channel. Due to physical constraints of the harbor site, the entrance channel is presented in two sections, differentiated by depth (figure 4). The first section, Entrance Channel A (ECA), would start in the middle of the eastern end of the existing harbor's maneuvering basin and continue eastward for approximately 750 feet at a depth of –16 feet MLLW. This depth would be required to provide water quality levels similar to the existing conditions in that area without the project. The channel would be 76 feet wide and have side slopes of 3:1. The eastern end of ECA would run perpendicular to the breakwater.

An area extending from the eastern 350 feet of ECA north and northeast toward the previously authorized new sediment management area and new spending beach, respectively, would be protected from erosion by placing a 2-foot-thick layer of riprap (6,500 yd^3 of 24-inch rock).

The second entrance channel section, Entrance Channel B (ECB), would extend from the eastern terminus of ECA, approximately 250 feet east (-140 feet wide), and then

300 feet southeast (-100 feet wide) and serve as a main channel that connects ECA with local facility areas at the east end of the harbor. ECB would be –12 feet MLLW. This depth was based on a loaded vessel draft of 8 feet, with .5 foot for pitch, roll and heave, 1 foot for safety, and -2.5 feet MLLW flotation. It would also provide entrance and exit under 99 percent of weather conditions. The depth would provide flotation under the extreme tide of -2.5 feet MLLW.

The channel as designed would allow two-way traffic for the design vessel where vessel speeds are not constrained under most conditions. The design vessel is 60 feet long, 22 feet wide, and drafts 8 feet fully loaded. One-way traffic is possible under the more adverse wind and current conditions.

Maneuvering Area. A 48,000-square-foot (125 feet x 380 feet) maneuvering basin would be dredged to a depth of -12 feet MLLW to allow the design vessel to turn while approaching and leaving the west floating dock. Approximately 19,590 yd^3 of dredged material would be excavated to create the maneuvering area. The –12-foot MLLW depth would allow the design vessel to remain in the harbor regardless of tide levels. Also, the maneuvering area could be used to temporarily moor vessels temporarily displaced from the dock or provide temporary moorage for disabled vessels.

The maneuvering area would be located immediately east of the west floating dock and immediately west of the harbor's western mooring area. The proposed south dock would be immediately to the south end of the maneuvering area, and immediately to the north would be the eastern end of entrance channel A.

Breakwater. A 445-foot-long breakwater would be constructed at +10 feet MLLW parallel to, and approximately 50 feet to the west of, the maneuvering basin. The breakwater would run perpendicular to Entrance Channel A. The breakwater would have 1.5:1 side slopes and would be constructed of approximately 12,650 yd^3 of 2-ton minus rock. The eastern toe of the breakwater would be at –20 feet MLLW. The breakwater would reduce all waves within the small boat harbor mooring area to less than 1.5 foot.

Circulation Berm. A circulation berm would extend from the southeastern corner of the proposed harbor 520 feet to the north, terminating into an armored natural sloped area from the north end of the berm to the Salt Lagoon entrance channel being constructed as part of the deep-draft improvements underway. The berm is required to maintain water quality constraints imposed due to the project's proximity to the environmentally sensitive Salt Lagoon. The performance of the berm was tested in model studies. The circulation berm would be composed of 2,130 yd^3 of dredged fill and 600 yd^3 of rounded excavated boulders, with 1.5:1 armored side slopes and a +10-foot crest.

Mooring Area. The preferred alternative would include 145,000 square feet of mooring area dredged to –12 feet MLLW, requiring the excavation of approximately 37,500 yd^3 of dredged material. The southern side of the mooring area would be sloped at 1.5:1 and would be covered with a revetment composed of approximately 2,625 yd^3 of 18-inch rock and a 6-inch gravel bedding layer (approximately 875 yd3 of gravel).

Floats. Within the mooring area, two systems of pile-stabilized floating docks were designed. Each float system was configured to minimize to acceptable levels adverse impacts resulting from long-period waves. The eastern float system would be in the far southeastern corner of the harbor and include seven 44-foot by 6-foot finger piers on its western side and ten 25-foot by 6-foot finger piers on its right side. The western float system would be between the eastern float system and the boat launch ramp and include seven 60-foot by 6-foot finger piers on its east side and five 60-foot by 6-foot finger piers on its west side. The two float systems would be separated by a 100-foot harbor fairway.

Boat Launch Ramp. The harbor plan includes a 50-foot by 140-foot boat launch ramp at a 15 percent slope. The ramp would be immediately to the east of the south dock and immediately to the west of the harbor's western float system. The recommended design proposes use of a 12-inch structural precast concrete boat ramp.

Docks. Two docks are included in the preferred alternative. These docks are referred to in this report as the west floating dock and the south dock based on their orientation in the harbor.

The west floating dock would be immediately to the east of the breakwater and would be approximately 20 feet by 275 feet. It would be a floating dock connected to shore by a 20-foot by 115-foot ramp.

The south dock would be approximately 30 feet east of the east dock and approximately 10 feet west of the boat launch ramp. The dock would be a 50-foot by 160-foot pile-supported precast concrete dock.

Boat Lift Trailer. A 60-ton capacity mobile boat lift trailer is proposed for launch an retrieval of larger vessels for service or for removal and storage during extreme winter weather conditions.

Upland Transportation Corridor. The preferred alternative includes a design for an improved transportation and service corridor upland of the harbor. These improvements are part of the overall federal project but are the responsibility of the local sponsor and are not cost shared The transportation corridor plan as shown on figure 4 includes:

- Improved haul road and right-of-way. Refer to figure 4 for the new road alignment. The roadway appears to be moved so as not to split the new upland storage area.

- West dock access road and turnaround. These are existing uplands with part of the turnout area placed on the proposed fill. Approximately 11,000 square feet of fill would be placed in the intertidal/subtidal area. The area is now the site of the boat launch ramp. Refer to figure 4.

- South dock and boat launch ramp access road and turnaround. There is no access to the proposed area at this time. The purpose of the dock is for unloading and loading fishing gear and commodities to the vessels. These items, especially the fishing gear, will require mechanical assistance for loading and unloading. The dock will need access as will the boat launch ramp. A turnaround is also necessary for the boat launch facility. These facilities will be placed on the proposed fill of approximately 22,000 square feet.

- Improved public harbor access road and right-of-way. The public harbor access road would be placed on the proposed fill to provide road access to the east float. The road would be placed on the proposed fill.

- Services area. The services area includes facilities such as the harbormaster's office, boat maintenance yard, equipment to move vessels to repair facilities, and storage and other vessel related facilities. This area is adjacent to the proposed boat harbor on the proposed fill.

- Spill response area. The spill response building will be constructed to store spill response equipment and provide a maintenance facility for the equipment. The proposed site is an existing upland area that was occupied with a building.

- Winter storage area. The winter storage area will provide space for the local fleet when the vessels are removed from the water during times of non-use. A portion of the proposed storage area is on the proposed fill.

- Day use parking/storage area. This is the winter storage area during the non-winter months. Presumably this area will be used for trailer storage, day use parking, and other vessel related storage when space is available.
The combined services area, public harbor access, and storage areas will fill about 60,000 square feet of intertidal/subtidal habitat.

Alternative Configurations of the South Village Cove Plan. Five alternatives were formulated at the proposed small boat harbor location. They are:

Alternative 1. Preferred alternative, 60 vessel, 12-foot depth harbor.
Alternative 2. 60 vessel, 10-foot depth harbor.
Alternative 3. 60 vessel, 8-foot depth harbor.
Alternative 4. 30 vessel, 12-foot depth harbor.
Alternative 5. 90 vessel, 12-foot depth harbor.

The alternatives are similar and the breakwater location is the same for all alternatives. The 30-vessel harbor does not extend to the east as far as the preferred alternative; the 90-vessel harbor extends farther to the east than the preferred alternative. Table 1 compares the physical dimensions of the harbor features.

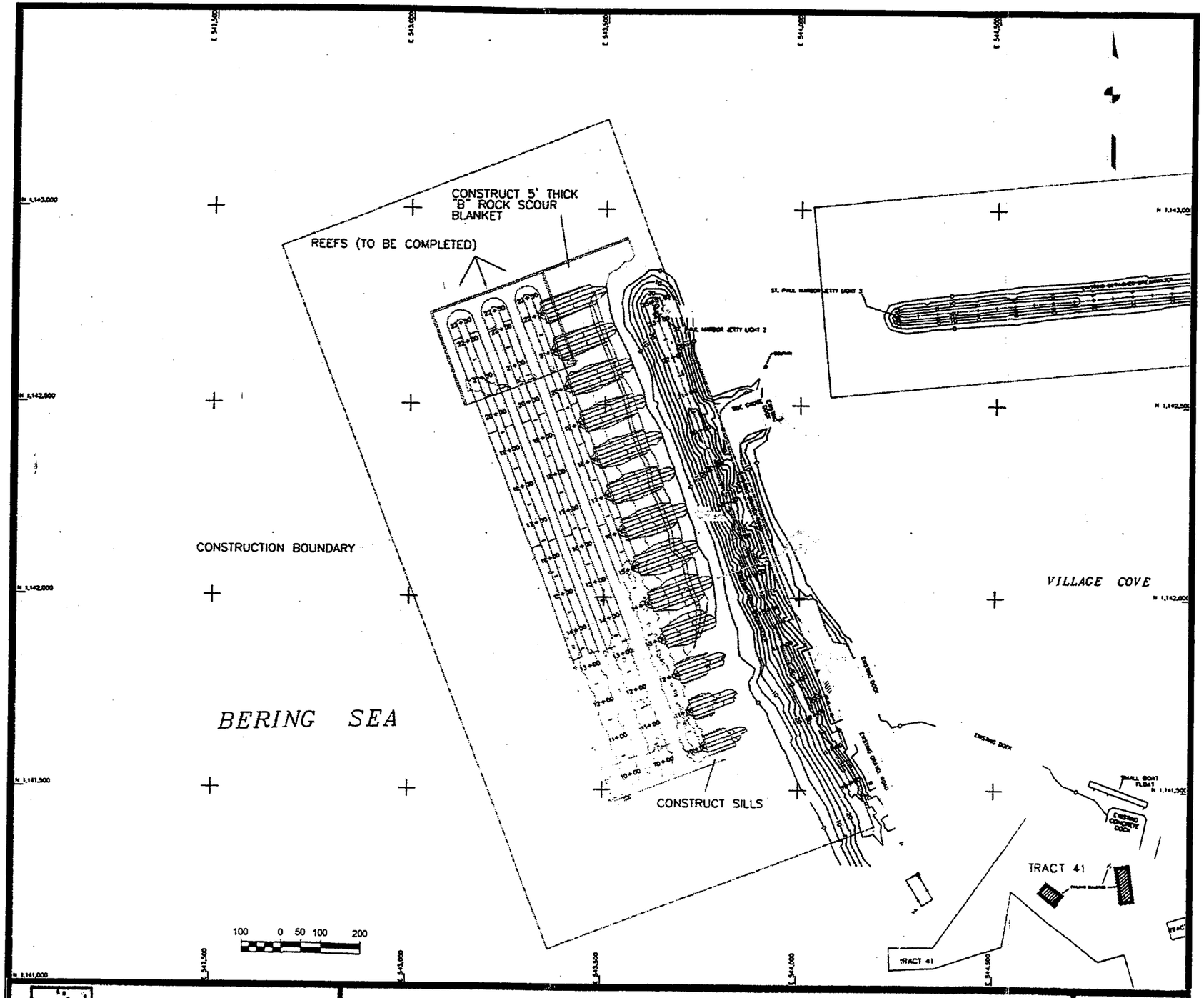
Table 1. Comparison of project features of the South Village Cove Alternatives.

ITEM	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Dredging, Federal (yd^3)	99,000	88,470	77,814	99,000	99,000
Dredging Local (yd^3)	41,000	32,000	22,800	35,500	80,500
Floats (ft^2)	13,438	13,438	13,438	9,700	18,860
Walkway (ft^2)	960	960	960	960	960
Boat Launch Ramp (ft^2)	7,000	7,000	7,000	7,000	7,000
South Side Dock (ft^2)	8,000	8,000	8,000	8,000	8,000
Breakwater dock (ft^2)	7,800	7,800	7,800	7,800	7,800
Breakwater (yd^3)	12,650	12,650	12,650	12,650	12,650
Service Fill and Revetment (yd^3)	53,600 2,625	53,600 2,625	53,600 2,625	53,600 2,625	53,600 2,625
Erosion protection (yd^3)	6,500	6,500	6,500	6,500	6,500
Circulation Berm (yd^3)	27,300	27,300	27,300	27,300	27,300
Boat Lift Trailer	1	1	1	1	1

The proposed harbor layout was selected because it meets the needs of the local community, has the greatest net benefits, and is not environmentally damaging.

2.3 Emergency Action

Two basic concepts were tested to reduce flow between the breakwater and reef structures. The first concept was the use of submerged weirs to both reduce flow and to raise the flow above bed levels so contact and or bottom velocities were reduced to non-transport conditions. The second concept used the principal of a change in direction of the current's momentum with the placement of a dike at the southern end of the reefs. The dike moved rip currents to an offshore nondestructive location.



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Emergency Breakwater Protection Plan

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Twenty-five tests were conducted to optimize these concepts. When optimized, rough calculations were made to assess constructability within the limited conditions deemed available at the site.

The constructed plan (plan 1) involved 13 weirs connecting the main breakwater to the most shoreward reef (figure 5). The weirs were 100 feet apart and constructed to elevations of -12 feet. As tested, the weirs had a 20-foot top width. The plan included a bedding layer of 20- to 500-pound stone beneath the weirs at an elevation of –22 feet. When examined for constructability, the weirs of plan 2 required more volume of stone than could be placed during this construction season. The weirs were reduced in crest width from 20 feet to 5 feet to reduce stone volumes. The difference in weir widths was not extreme but was noticeable. The width of 5 feet accomplishes the task in the model, but a finished width of 15 feet is safer, more stable, and hydraulically better. To further test options to reduce stone volumes, the northernmost weir was removed and the potential for scour evaluated. Velocities increased and reattached to the bottom within about 75 feet of the most northern remaining weir. This test indicated that all the weirs would need to be constructed.

An alternative was the optimized dike plan. It involved a dike structure connecting the main breakwater and the seaward most reef at the reef's southern end. The dike was constructed to an elevation of +7 feet from the main breakwater to the shoreward most reef and to 0 feet from the shoreward most to the seaward most reef. Stability analysis indicated that the dike of this alternative would require 25-ton stone. These stone sizes are not immediately available on the island and could not be imported on short notice. The plan was considered as not being constructible during this season, and as breakwater failure was highly probable if the breakwater was left without protection through another winter, this option was not executable.

The Corps became aware of the problem in mid-May 2001. In June, preliminary design and physical modeling were started and finished, and the contractor was given a Notice to Proceed. Design was completed in July. In August, the contractor completed the base contract work (reef construction), began quarrying rock for sills and upgrading the breakwater road for the ringer crane, and placed the northernmost sill and scour blanket rock from a barge. A shore-based crane arrived at St Paul in September. Shore-based placement of rock began in November 2001. This action is scheduled to be completed during phase two of the construction contract.

Table 2 is a timeline of significant actions to demonstrate the procedures and circumstances associated with the emergency action.

Table 2. Timeline of significant actions associated with the emergency action.

Date	Action
5/11/01	Construction contractor provides Alaska District with the preliminary copy of the 2001 condition survey.
5/15/01	Procedures were established to address increased reef and bedding rock quantities due to scour.
6/7/01	Partnering conference with contractor. Includes discussion of scour adjacent to breakwater. The first meeting with the contractor to discuss the problem and to establish the contractor's capabilities to fix the problem.
6/18/01	Project delivery team meeting to discuss scour. Repair funding requests and WES modeling startup underway. Project delivery team decided that the existing physical model should be used to assure the potential actions would be a long-term fix of the problem.
6/19/01	Engineering Division issues preliminary repair drawings and specifications. Forwarded to contractor the same day.
6/25/01	Model testing begins at Waterways Experiment Station to develop a viable and economic solution.
6/26/01	Corps issues contract modification to the contractor to begin preparations for sill and scour blanket work.
6/29/01	Model testing complete.
7/2/01	Engineering Division issues plans and specifications of sills, toe protection, and scour blanket based on modeling results.
7/6/01	Contractor receives preliminary electronic copy of drawing files of repair proposed.
Aug 01	Contractor begins quarrying rock for sills, toe protection, and scour blanket. Quarrying continues through November 1, 2001.
8/4/01	Contractor completes base contract work.
8/14/01	Contractor begins placing bedding rock for northernmost sill.
8/26/01	Contractor begins upgrading breakwater road for crane. Completes road 9/19/01.

Table 2. Timeline of significant actions associated with the emergency action (continued)

Date	Action
9/7/01	Ringer crane arrives at St Paul. Corps receives contractor proposal for sills, toe protection, and scour blanket work.
9/8/01	Contractor finishes placement that can be done by barge. Remainder to be placed by shore-based ringer crane
Sep-Oct 01	Contractor preparing ringer crane
11/1/01	Contractor begins placing sill bedding rock with ringer crane.
To Date.	Contractor placing rock, process is slow because of down time of the crane.

The timeline demonstrates that the decision to begin the emergency work as soon as possible was essential. Waiting for the routine preparation of an environmental assessment would have added an additional 3 months to the process. All agencies were notified of the emergency action in October 2001.

Approximately 9,600 yd^3 of material was required to construct the road along the breakwater for moving the crane. The fill created about 20,600 square feet of finished fill. This road will be removed with the completion of the project. The city of St. Paul has shown some interest in retaining the road. Since the Federal government will not need the road after completion of the emergency work, the road must be removed. The city of St. Paul can apply for a permit through the Alaska District Regulatory Branch to keep the road. The city has been advised.

2.4 Dredging and Disposal Operations Alternatives

2.4.1 Upland Disposal

The 1996 EA recommended the upland disposal of the dredged material. The EA indicated that approximately 350,000 yd^3 of sand, gravel, and boulders would be removed to reach the project depth and width. The material's grain size excludes use of a cutterhead suction dredge. Instead, a crane-mounted bucket dredge, a barge-mounted excavator, or a similar bucket dredge would remove the material. The dredged material would be placed in a barge and taken to one of the dock facilities in the harbor. The material would then be loaded in dump trucks and taken to the city's landfill where it would be stockpiled. The city would use the dredged material in their landfill operations (layering, capping, etc.). The city of St. Paul agreed with the State of Alaska, Department of Natural Resources, the owner of a portion of the dredged material, that it would be used only for public projects. The landfill, which is about 20 acres, would have to be mounded to at least 15 feet high. With the addition

of the small boat harbor, the mound would approach 20 feet in height. Another problem associated with this upland disposal is the distance from the harbor area to the landfill. The material would have to be transported by truck; a city ordinance restricts trucks to a 15-yard maximum capacity, which means it would take approximately 30,000 round trips to dispose of the material. The trucks would have to travel on the major roadway (from the village to the airport), which would cause traffic congestion and require continuous road maintenance and dust control. Of the approximately 520,000 yd^3 (table 3), 41,000 would be used for the construction of the spending beach. The material from the Salt Lagoon is almost entirely sand; the city of St. Paul has requested the material be stockpiled for future use for road repair.

Table 3. Excavation and Beneficial Uses of Dredged Material.

Excavations	Cubic Yards
Maneuvering Basin	180,000
Mooring Area	40,000
Entrance Channel	130,000
Channel (Salt Lagoon)	29,000
Boat Basin (small boat harbor)	41,000
Entrance Channel (small boat harbor)	99,000
Spending Beach (fill)	-42,000
Salt Lagoon Sand (upland disposal)	-29,000
Service Fill Area	-54,000
TOTAL	394,000

The City of St. Paul has indicated that several federal, state and city projects are anticipated for the near future and may use some of the dredged material. They include:

- Federal projects such as the new clinic.
- Federal Aviation Administration and National Weather Service housing project at the National Weather Service site.
- City and other local Capital Projects
- Public Safety and Village Fire and Water Station
- Two landfill projects.
- Four-acre site at airport
- Fill in abandoned scoria borrow pit

The National Oceanic and Atmospheric Administration (NOAA) is performing several landfill closures.

The Alaska District has been working with the city and NOAA to determine the feasibility of the potential use of the dredged material for their projects. Several problems arise with the coordination of the dredged material use:

Material Compatibility. The dredged material is made up of sand, gravel and boulders. Most of the uses mentioned prefer sand or sand and gravel. The potential recipient of the material would have to sort the material and then find a disposal site for the undesirable boulders and rocks. The potential recipient of the dredged material would have to pay the difference between the least costly Corps of Engineers approved disposal alternative and the cost to provide them the material. The difference between deep-water disposal and upland disposal is appreciable; the costs include double handling of the material, the associated dock fees, and the trucking costs. This added expense might make it more desirable for the potential recipient to purchase the material for their needs from an upland source.

Timing. The potential recipient of the dredged material must be prepared to accept the material when the Corps of Engineers construction contractor is dredging.

Land Ownership. The potential recipient of the material would have to obtain all lands, easements and right-of-ways for upland transportation and upland disposal.

The Alaska District will pursue upland disposal with the potential users. If agreements are reached, some or all of the dredged material will be conveyed to the potential users. If, for one of the reasons stated above, the Alaska District cannot dispose of the material upland, the material will be barged to a deep-water site for disposal.

2.4.2 Ocean Disposal

A Section 103 Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 evaluation has been completed and is in Appendix 2. MPRSA requires that all transportation of dredged material with the intent to dispose of the material in ocean waters be evaluated for environmental effects prior to making the disposal. The site is about 10 nautical miles from the north shore of St. Paul Island in water with a depth of 32 fathoms (figure 6). The location of the site was established through the resource agencies, the local fisherman of St. Paul Island, and the community. The proposed disposal site would be used only one time as all maintenance dredged material (mainly sand) would be taken upland and used for road sanding and other public projects. The detailed site selection, environmental analysis, and conclusions are in the 103 Evaluation in appendix 2.

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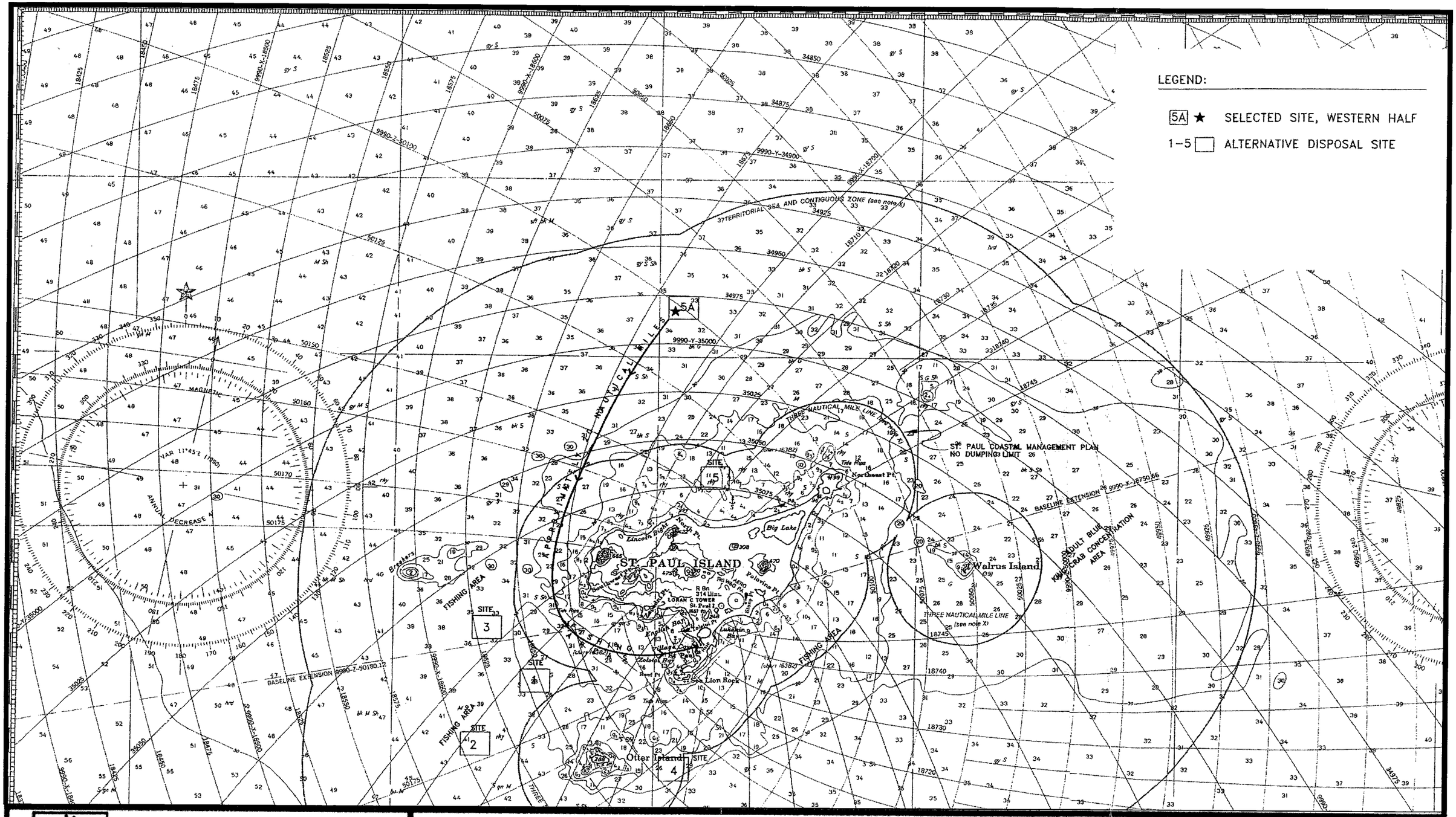

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Ocean Disposal Site

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3.0 EXISTING CONDITIONS AND ENVIRONMENTAL CONSEQUENCES

3.1 Physical Environment

3.1.1 Climate

St. Paul Island is at latitude 57° 10' North and longitude 170° 15' West in the central southeast Bering Sea. The community is on the shore of Village Cove on the south side of the island. It has a typically maritime climate with cloudiness, heavy fog, high humidity, and relatively narrow daily temperature ranges. The difference between the average daily maximum and minimum temperatures for the entire year is only slightly more than 7 °F, and the greatest monthly variation (March) is slightly less than 12 °F. Temperatures remain cool even during the summer; the highest temperature on record is 64 degrees. Although the record low temperature is below zero, such extremely cold temperatures are rare. Temperatures fall below zero an average of only 5 days per year.

3.1.2. Tides, Currents, and Storms

Tide levels at Village Cove are shown in table 4. Extreme high tide levels result from the combination of astronomic tides and rises in local water levels due to atmospheric and wave conditions.

Table 4. – St. Paul tide levels (feet)

Highest Tide (Estimated)	+6.0
Mean Higher High Water (MHHW)	+3.2
Mean High Water (MHW).	+3.0
Mean Sea Level (MSL).	+2.0
Mean Low Water (MLW)	+1.0
Mean Lower Low Water (MLLW)	0.0
Lowest Tide (Estimated)	-2.5

Source: NOAA Tide Tables, 1980.

Village cove is directly exposed to deep-water waves approaching from the west and southwest sectors, with an exposure window bounded by azimuths 210° and 294°. There is some wave refraction with storms from the other directions, but the refraction is not significant enough to cause high waves within Village Cove.

Current patterns in Village Cove were simulated in the three-dimensional model for -32 feet MLLW dredging depths and stated channel width and for all the spending beach alternatives. The results of these simulations are in Appendix A, Hydraulic

Design, which is available upon request. The water's current pattern is to enter Village Cove through the harbor entrance channel and the gap between the boulder spit and the detached breakwater. Sediment (simulated using coal dust) mainly enters through the gap between the detached breakwater and boulder spit, where it encounters an eddy created by the inverted shape of the spending beach. This eddy allows the majority of the suspended material to fall out within the spending beach indentation. The remainder of the material follows the spending beach shoreline where the material settles out in the middle of Village Cove, away from both the entrance to Salt Lagoon and the local Native corporation's dock facilities (figure 4).

Water column circulation is simulated using dyes. This is the best representation of water circulation throughout the water column. The current was strongest through the gap between the detached breakwater and boulder spit. The dye followed a clockwise direction once past the spending beach. There were no "dead areas" within the harbor. Tidal velocities were relatively low during normal wind and wave action. High wind and wave action increased water velocities as expected. The areas of highest velocities occurred at either end of the detached breakwater (figure 5).

3.1.3 Water Quality

Water quality is a primary determinant of the biological use of an area, and it is likely that the distribution of water quality characteristics may be reflected in the biota distribution. The harbor contains three fish processing facilities, three fuel docks, and no other industry. The processors discharge all their wastes through a pipeline to East Landing, where the pipes daylight about 900 feet off shore at a water depth of -26 feet MLLW. Crab is processed at all the facilities, with some snail and halibut processing at the Unisea facility. All three facilities take their processing water from Village Cove.

The fuel docks distribute diesel fuel only; no bunker fuel is available. To date, there have been no major fuel spills; less than 100 gallons have been lost since the breakwaters were built.

Oil pollution is a general name for a variety of hydrocarbon compounds having widely differing physical and chemical properties. At St. Paul, the main concerns would be with diesel fuel and oily bilge water. Oily substances harm fishes and other aquatic organisms. The adverse effects of oil on aquatic life are as follows:

1. Oil and its emulsions adhere to the gills of fishes and interfere with normal respiration. Under conditions of relatively mild pollution, the mucus produced by fishes may wash away the oil. However, with heavy pollution, the oil cannot be washed away and tends to accumulate on the gills.

2. Oil and emulsions of oil and water can coat algae and other plankton and thus destroy them. These plants are a source of food for fish. The destroyed organisms tend to clump together, settle to the bottom, and decompose.

3. Oil and oily substances that settle may coat the bottom of a natural body of water. Benthic organisms are destroyed and potential fish and invertebrate spawning habitat is destroyed.

4. Fish may eat oils, which contain soluble materials along with emulsified components. The flavor of the fish flesh may become tainted and thus not marketable.

5. If there is significant oil pollution, it acts like any other organic substance and tends to deoxygenate the waters; if deoxygenation is severe, fish will be killed.

6. If the oil coating is fairly thick on the water surface, it can interfere with aeration of the body of water at the air-water interface. The coating may also interfere with photosynthesis. Tests have indicated that light films of oil are not detrimental to aeration or photosynthesis.

7. All oils, even those that are highly purified, contain water-soluble materials that can directly poison fishes or fish-food organisms. In some instances, the materials are toxic enough or in large enough amounts to cause immediate death. With other oily materials, slow death or disability may result. Chronic toxicity implies an effect over a long period of time. This effect may result from cumulative action of the toxicant or from subthreshold changes in the environment. This type of effect is extremely difficult to document and is probably more injurious than a larger spill, which causes immediate kills.

The St. Paul small boat harbor would contribute to oil pollution. The sources would be the refueling operation, oily bilge wastes, outboard motors, and other petroleum-related uses. The amount of pollution that occurs in a harbor is directly related to the types of regulations in place and their enforcement. Even with strict enforcement of stringent regulations, accidental fuel spills occur. This is evident at any existing boat harbor, where periodically a visible oil sheen coats the water surface. The water exchange between Village Cove and the Bering Sea appears to be adequate to keep the harbor area clean in conjunction with enforcement of regulations.

The capstones on the spending beach could serve as an anchor for an oil boom, which could attach to the boulder spit. A boom would help reduce the amount of oil that would enter Village Cove and Salt Lagoon from a spill outside the harbor.

Sewage and garbage (foodstuffs) that could enter the harbor would be from either boats or servicing boats. This form of organic pollution tends to deplete the oxygen of receiving waters, both in the immediate vicinity and (in this case) possibly in Salt Lagoon. This enriched productivity could overload the natural assimilative capacity of the environment, and a zone of degradation, decomposition, and low oxygen conditions would be created. While primary productivity may be extremely high under these conditions, secondary productivity is often low because the kinds of algae

(primary productivity) are often unsuitable as food for grazing animals. As with oil pollution, the enforcement of regulations would be the deciding factor in determining to what extent pollution would occur.

In summary, the small boat harbor could increase traffic into Village Cove. The project has been designed to provide the best flushing possible, using outflow from Salt Lagoon to increase circulation through the harbor, deepening portions of the entrance channel to improve water exchange and verifying the changes using the physical model at the Vicksburg facility. The city of St. Paul, through the harbormaster's office, will dedicate itself to ensure that the harbor is maintained in a clean and efficient manner through enforcement of the regulations. The additional model studies on the proposed action improved the design for water quality even over those designs permitted in Village Cove 1 and 2. Both Village Cove 1 and 2 plans went through agency and public review and received Clean Water Act permits (Sections 404 and 401).

3.1.4 Sediment Quality

Dredged Material. Test borings driven for the North Dock dolphins did not appear to encounter bedrock. The borings encountered black/gray with red poorly graded sand, with a fines content of about 5 percent, to their limit (approximately –50 feet MLLW). These soils are dense to very dense and contain random gravels, cobbles, and boulders. The boulders encountered had dimensions up to about 4 feet and others in the deposit may be larger. The pile driven records for the dolphins indicate similar conditions. Two seismic profiles were taken within Village Cove, extending from the proposed small boat harbor to past the tip of the main breakwater. The two seismic profiles indicate the sediment deposits in the basin to be underlain by a very dense material (previously interpreted as bedrock).

Golder Associates (1998) describe the sediments from the proposed small boat harbor location "*consisted of gray-brown, fine-to-medium sand with numerous cobbles and boulders. Fine-grained sediments and gravel were generally absent or only present in trace amounts.*"

Golder Associates were hired by TDX to sample for the presence of diesel range organics (DRO) in the proposed small boat basin upon the request of the Alaska Department of Environmental Conservation. Golder Associates concluded "*The results indicated that sediments underlying the proposed dredged area are generally free of non-biogenic DRO, although very low concentrations of petroleum-derived DRO are present in a small portion of the proposed dredged material near the mouth of the salt lagoon.*" Only one of the seven samples indicated a fuel pattern on the chromatogram, which is estimated to be between 30 mg/kg to 50 mg/kg DRO. Similar material quantities from the exact location have been approved have been approved for dredging in Village Cove 1 and 2 permit actions.

Dredged Material Disposal. The Marine Protection, Research, and Sanctuaries Act (MPRSA) at 40 CFR Part 227 regulate the disposal of dredged material in open waters (ocean dumping). Although some similarities exist between MPRSA and the Clean Water Act, they are different, each with its method of evaluation. *Evaluation of Dredged Material Proposed for Ocean Disposal, (Testing Manual)* is the guidance manual that contains procedures applicable to the evaluation of potential contaminated-related environmental impacts of ocean disposal of dredged material. The manual uses a tiered approach to testing, and evaluation allows the use of a necessary and sufficient level of testing for each specific dredging operation. The initial tiers (Tiers I and II) use existing information and relatively simple, rapid procedures for determining the potential environmental impact of the dredged material in question. For certain dredged materials with readily apparent potential for environmental impact (or lack thereof), information collected in the initial tiers may be sufficient for making decisions.

The purpose of Tier 1 is to determine whether a decision on compliance with limiting permissible concentrations can be made on the basis of existing information. For a Tier I evaluation, the information collected on the proposed dredged material is first compared to the three exclusionary criteria in paragraph 227.13(b) Title 40, Code of Federal Regulations, Subchapter H—Ocean Dumping. The first exclusionary criteria is "Dredged material is composed predominantly of sand, gravel, rock or any other naturally occurring bottom material with particle sizes larger than silt, and the material is found in areas of high currents or wave energy..." The material in the proposed boat harbor site contains minimal amount of particles of silt or smaller. The borings indicated less than 5 percent fines while the material taken for the DRO sampling indicated fine grained material was either absent or only trace amounts were present. Applying the exclusion criteria, the proposed dredged material is suitable for open water disposal as per MRSDA.

3.2 Socio-Cultural Environment

3.2.1 Cultural Resources

During the Wisconsin glaciation, which ended 10,000 years ago, the Pribilof Islands were covered with ice. The islands would have been part of the Bering Land Bridge, the 500-mile-wide corridor that made initial settlement of the New World possible. However, they have long been considered devoid of prehistoric remains because they were uninhabited when Gerassim Pribilof discovered them in 1787. Following their discovery, the Russians relocated groups of Aleuts to the islands to work in the fur trade. American military history on both St. Paul and St. George Islands begins in 1870, when a detachment from Fort Kodiak was sent to enforce fur seal harvest regulations. St. Paul was home to a Signal Corps facility beginning sometime before 1880. During World War II, Aleuts were evacuated to Admiralty Island, while a small military contingent remained behind to establish a LORAN station and to mine the village in case of enemy attack.

The potential for cultural remains predating 1787 is low, for reasons mentioned above. Parts of the islands have been surveyed over the years, beginning with the finding of 13 sites on the two islands (Bryan 1966). The Alaska District surveyed parts of St. Paul twice, in 1979 and 1985, in conjunction with the small boat harbor and with the World War II cleanup project. The 1979 survey located a few house pits near the small boat harbor site, but they were not close enough to be affected by harbor construction. The 1985 survey located an inland site and took note of the Kaminista Ridge quarry site, which had already been established. Copies of both survey reports are on file with the State Historic Preservation Officer (SHPO) and with Alaska District personnel.

The Pribilof Islands together constitute the Fur Seal Rookeries National Historic Landmark and are therefore listed in the National Register of Historic Places. Through consultation with the SHPO, a finding of No Effect to the Landmark has been reached. In the unlikely event that additional cultural resources were located during the construction of the project, they would be evaluated in consultation with that office.

3.2.2. Public Participation

A public scoping meeting was held on St. Paul Island on January 10, 1996. The meeting participants generally accepted the project, but they were concerned with the development of Village Cove and the rate at which the village is growing. Both children and adults use the beach at the head of Village Cove on sunny, relatively warm days.

The fill behind the detached breakwater (not the spending beach) was part of the proposed action at the time of the public meeting. A concern that direct access from the mainland to the fill would eventually be constructed was discussed at length. As with the resource agencies, the public expressed concern about potential impacts to the lagoon entrance channel and the boulder spit if a bridge or causeway were constructed. All other comments supported the project. The overtopping of the breakwater by storm waves was a major concern. Other comments included the need for a small boat harbor for local vessels and positive benefits of the offshore reefs for subsistence fishing.

A second public scoping meeting was held in Anchorage on January 24, 1996. The spending beach design was completed and presented at the meeting. Preservation of Salt Lagoon and the Village Cove area was a concern. The local Native corporation was concerned with the potential for increased wave heights at their dock facilities and with the project-induced currents carrying material into their newly dredged basin. There were no comments opposing the proposed harbor improvements from an environmental or a cultural perspective.

A public meeting was held on September 19, 2000, at St. Paul Island to discuss the formulation and design of the harbor. Present at the meeting were representatives

from the Central Bering Sea Fisherman Association, TDX Corporation, the Aleut Community (IRA), City of St. Paul, and the general public. The meeting mainly revolved around the harbor design, land issues, different harbor uses, and easements and rights-of-way. All participants were in favor of the harbor and the location. There were no comments opposing the harbor from an environmental or a cultural perspective.

3.2.3 Government-to-Government Coordination

No formal government-to-government coordination was associated with the project. The IRA has been involved with the planning and design as well as the environmental and cultural aspects of the St. Paul Harbor since its inception. The Alaska District believes there has been sufficient input from the IRA to deem the proposed action would not significantly affect a tribal right or protected resource. The IRA has not indicated that a government-to-government meeting is necessary.

3.3 Coastal Zone Management

St. Paul, Walrus, and Otter Islands are the three most northerly of the Pribilof Islands, and comprise the land area within the Saint Paul Coastal District. The city of St. Paul finalized the St. Paul Coastal Management Program (CMP) in 1988. The district boundaries enclose all territory contained within the perimeter of a 3-mile line surrounding the mean low water line around Saint Paul, Walrus and Otter Islands. All land and water within the district is within the coastal zone, as described in *Biophysical Boundaries of Alaska's Coastal Zone* (Department of Fish and Game).

The CMP restricted future development on Saint Paul Island to the Village Area, Harbor District, and the Development Corridor. The proposed action is within the Harbor District. The goals established in the CMP for the Harbor District are:

1. To provide land within the harbor district for water-dependent uses.

2. To provide access and use of landing areas for local residents' small-boat day fishery.

3. To adhere to a harbor development plan to the extent feasible and prudent.

4. To provide infrastructure to support services required to meet existing and future harbor development.

5. To provide a safe harbor of refuge for the fisheries industry within the central Bering Sea.

6. To accommodate the needs of both the day fishery and the larger commercial fishery.

7. To the extent feasible and prudent, assist private enterprise in economic development within the harbor area that results in increased employment for local residents.

The CMP also established environmental goals and objectives. The environmental goals are:

1. To ensure protection, maintenance, and enhancement of the natural environment by establishing high quality standards for soils, vegetation, air and water quality, sound, sight and wildlife, and with appropriate surveillance and enforcement procedures.

2. To protect wildlife and habitat resources.

3. To protect areas traditionally used for subsistence activities.

4. To protect reindeer grazing areas.

5. To protect Walrus and Otter Islands from land use or development other than those related to resource management and enhancement or subsistence use rights.

The proposed small boat harbor and the emergency action are within the Harbor District and are totally water related. The dredged material would be taken to the landfill where it would be used for layering and capping of the solid waste generated on the island or placed in an ocean disposal site. The proposed Federal action is consistent, to the extent practicable, with the Saint Paul Coastal Management Plan and the State of Alaska Coastal Management Program.

3.4. BIOLOGICAL ENVIRONMENT

3.4.1 Intertidal/Subtidal Marine Habitat in Village Cove

The proposed action would impact approximately 2 acres with intertidal fill. The emergency work has already placed 9,600 yd^3 adjacent to the breakwater to provide access for the emergency repair project. This fill will be removed upon the completion of the emergency action and the impacts should be fairly short term. It will probably take several years for the habitat to return to its productivity prior to the fill.

The intertidal and shallow subtidal habitat adjacent to the proposed boat harbor would be lost to the marine environment. This habitat was fairly productive prior to the construction of the breakwater. The quality of the habitat has probably decreased with the physical changes to the water quality, circulation, and sedimentation patterns. The intertidal area would further degrade with the construction of a small boat harbor. With the proposed fill, there would be a complete loss of aquatic habitat.

The portion of the boulder spit outside the breakwaters is a high-energy open coast environment usable only by marine life with the best attaching mechanisms. The 1982 EIS discussed two species of algae and one periwinkle species as being almost exclusive along the spit. It further stated that the decrease in wave climate caused by the construction of the breakwaters could change species abundance and possibly species composition. No subsequent surveys have been performed to substantiate the prediction.

Village Cove is a productive system, especially with the nutrients being supplied by Salt Lagoon. Villagers have reported that there is an abundance of small herring-like fishes in Village Cove near the mouth of Salt Lagoon during the summer months.

The bottom substrate of Village Cove from the head to the proposed entrance channel is composed of sands and gravel with large round rocks interspersed. The round rocks make dredging difficult. Local interests have dredged approximately 200,000 yd^3 from Village Cove in the last 4 years. The material appears to be homogenous vertically; the bottom composition is the same after dredging 10 feet down. The proposed dredging of the entrance channel, maneuvering basin, and the 5-acre (bottom footprint) fill would have only minor adverse effects to the subtidal habitat in Village Cove.

The footprint for the proposed harbor and the harbor plans reviewed for Village Cove 1 and 2 are almost identical. Village Cove 1 and 2 both went through public and agency review with no objections.

3.4.2 Disposal Site Habitat

See 103 Evaluation in Appendix 2.

3.4.3 Potential Impacts on Resources of Concern

Seabirds. Eleven species of seabirds return to the Pribilof Islands annually to nest and rear young. The majority of the world's population of red-legged kittiwake nest in the Pribilofs. An estimated 250,000 seabirds are found on St. Paul Island, nesting on cliffs and in burrows (USFWS 1996).

The proposed harbor improvements project could directly affect the least auklet nesting habitat on boulder spit and indirectly affect all seabirds on the island if rats were introduced to the island by freighters and other large vessels.

Least Auklet/Boulder Spit Habitat. Resource agencies and some island residents were concerned about creating an island behind the detached breakwater. The original design of the proposed project included a 5-acre fill behind the detached breakwater. The fill was planned to be at +12 feet MLLW, and mainly would have been used for storing fishing and fishing-related equipment. Access to the island

would have been by boat only; a dock was planned on the west side of the fill. However, with the shortage of waterfront harbor space, the resource agencies believed a commercial facility would have been constructed on the 5-acre fill in the near future. The commercial facility would have required utilities and direct access to the shore. The only feasible access would have been a fill or bridge across the Salt Lagoon entrance channel, a connecting road parallel to boulder spit, and a bridge or fill from the boulder spit to the island. The road would have impacted the boulder spit and least auklet nesting from the Salt Lagoon entrance channel to the bridge or fill access to the island. The road also would have provided access to the now fairly inaccessible boulder spit. Access to the boulder spit now is by boat, by walking across the tidelands, or by a long walk after a several mile drive on a two-rut road.

Redesigning the spending beach diminished the probability of the beach being developed for commercial use. The slopes of the spending beach and the exclusion of any vertical surfaces in the harbor would make boat access difficult. It would require a 200-foot-wide pile supported dock to reach water depths sufficient enough to dock vessels. The spending beach design has reduced the usable area from 5 acres to less than 3 acres. Also, the area, except for the perimeter, would be either subtidal or intertidal. This not only would add to the expense of developing an island, but would require public review of the proposed action. The construction of the boat harbor at the proposed location would completely separate harbor related development from the spit and to some extent, Salt Lagoon.

Seabirds/Rat Introduction. The Pribilof Islands are rat free. Introducing rats to St. Paul Island could have severe adverse impacts to seabird populations throughout the island. Rats would be able to climb the seabird nesting cliffs, destroy the nests, and eat the eggs. Rats could also maneuver through the small voids on boulder spit where least auklets nest.

Several mechanisms are in place (both natural and planned) to combat the establishment of rats on the islands. The Pribilof Islands are at the northern range for rats. Russian explorer Gerassim Pribilof discovered the islands in 1787. Russian and other traders have visited the Pribilof Islands regularly since their discovery. The U.S. military, the Signal Corps, U.S. Coast Guard, and NMFS have occupied St. Paul Island through some part of the island's history. The shipping of goods to the island and the export of fur seal pelts have occurred throughout the occupation of St. Paul Island. The fishing industry has used St. Paul for staging for the past few decades. Many of these vessels must have contained rats. However, large vessels did not dock on St. Paul Island until the construction of the breakwaters and docks. Although rats can swim, it is unlikely they could swim from a vessel anchored over one-quarter-mile off shore in the cold Bering Sea waters and survive. The most likely mode of rat introduction to the island would be from lightered cargo or shipwrecks. Several vessels have gone aground on or near St. Paul Island. If these vessels had contained rats, access to the island would either come directly from the ship to shore or on vessel wreckage washed ashore.

Since there are no rats on the island, either the rats have never made it to shore, or they have not survived once on shore. There could be many reasons for their absence, and it is possible that rats cannot survive on the island, which is out of their habitat range. Another strong possibility is predation by arctic fox. Arctic fox are abundant on the island and could be a natural defense against rat establishment. Arctic fox have colonized the main breakwater and may assist in eliminating rats that come ashore from vessels at the docks. Again, this is only speculation.

Due to contact between large vessels and the local fleet, there is potential for rat introduction to the island to occur at the small boat harbor. The city of St. Paul has agreed to establish a rat protection plan with the U.S. Fish and Wildlife Service to reduce the likelihood of rats coming off larger vessels that would call at the harbor if the proposed action were constructed. Since only three or four freighters would be entering the harbor yearly, an active rat protection program should be established for every freighter that uses the docks. The vessels could be watched while an inspection of the vessel is performed. The harbormaster could turn away rat-infested vessels or could require 24-hour watch while the vessel is loading. The potential for freighters to introduce rats to the island is serious, and the city of St. Paul, with the guidance of the USFWS, will take every practical measure to ensure this does not happen. The city of St. Paul already has a rat protection program that consists of more than 150 rat traps in the following locations:

Harbor Area:	114
Trident Plant	10
Old Unipak Plant	11
Arctic Star	Several
Garbage Dump:	10 stations
POS Camp:	8 stations

The Unisea barge had several stations on board. Since the Unisea departed, the total number of stations has probably decreased.

Vessels are also turned away from docking if the presence of rats is suspected. The new protection plan may use more active rat protection, such as inspections, for freighters and catcher processors.

There could be a potential for rats to enter St. Paul through the proposed boat harbor. The USFWS and the city of St. Paul have been successful working together to keep rats off the island. The Harbor Management Plan will be revised and the USFWS and the city of St. Paul will initiate rat control measures at the small boat harbor.

Fur Seals. Seventy-five percent of the world's population of northern fur seals establish harems and pup on the Pribilofs at established rookeries scattered around the islands (USFWS 1996). Several fur seal rookeries are near the harbor but appear to be far enough away so that no direct harbor activities would impact them.

The number of fur seals using the harbor has increased since the construction of the breakwaters. An estimated 300 fur seal pups were observed in the harbor in the summer of 1995. They are mainly observed at the back of the harbor near the entrance to Salt Lagoon. They exit the water on the beaches adjacent to boulder spit.

Construction of a spending beach with slopes and composition similar to the other fur seal rookeries on the island, coupled with Village Cove being an historical rookery, may lure additional seals into the harbor. Additional use of the harbor by fur seals would increase the fur seal-human conflict. It would be better to prevent fur seals from becoming established on the spending beach than to try to implement a change later if fur seal-human conflict became intense. The Alaska District has changed the design of the spending beach to discourage use by fur seals by limiting beach habitat. The proposed spending beach would be an intertidal structure except for the 1\2-ton cap stone that would be placed on the beach to +4 feet MLLW. Inside the spending beach footprint also would be intertidal, with an elevation of +0 feet MLLW. The spending beach would be available for fur seals to haul out on for only a limited time.

The city and NMFS agreed to jointly develop a management program for fur seal use of the harbor area during the last phase of the St. Paul navigation project. The status of this agreement is not known, since only the reefs portion of Phase II have been started, the entities may not have seen a need to initiate the management program. The management program will include the small boat harbor with the other features.

Salt Lagoon. Salt Lagoon, with its associated intertidal areas and wetlands, is the only salt lagoon on St. Paul Island and in the central Bering Sea area. A species of dune grass and a member of the parsley family are the dominant vegetation along the lagoon's periphery.

Polychaetes and grammarus amphipods are the most abundant species of the intertidal and subtidal organisms of Salt Lagoon. These invertebrates are a food source for many species of fish and for water-oriented birds. Salt Lagoon provides primary and secondary productivity, which is probably important to the biota even outside the immediate area. Migrating waterfowl and many species of shore birds use Salt Lagoon during the summer months. USFWS observed approximately 300 red- and black-legged kittiwakes roosting on the Salt Lagoon mudflats in September 1995 (USFWS 1996).

The city of St. Paul had Salt Lagoon monitored as part of the Harbor Management Plan associated with the construction of the breakwaters. The studies from 1988 to 1991 did not indicate a significant change in Salt Lagoon environs. The "Russian Study" (Flint and Rybnikov 1994) indicated that water circulation and flushing in Salt Lagoon were insufficient to maintain the present ecosystem. The report discussed several chemical pollutants that generally indicate eutrophication. The study further stated that immediate action should be taken to reestablish the water quality in Salt Lagoon. The study recommended widening and deepening the entrance channel to prevent further degradation.

The numerical model performed with the original project indicated that only a 4 percent decrease in tidal flow between Village Cove and Salt Lagoon would occur with the construction of the breakwaters. Although no tidal studies have been performed since construction of the breakwaters, the model appears to be fairly accurate (results of the model tests are available upon request). Construction of the breakwaters has almost eliminated movement of water into the lagoon from storm-generated waves. Although enlarging the entrance channel would increase circulation in Salt Lagoon, the magnitude would be small, 4 percent at best. The wave energy channel would introduce a large amount of water into the system in a relatively short period of time. With wind setup, complete water exchange would occur. This would happen on an average of five or more times per year.

The USFWS requested that portions of the historic entrance channel to Salt Lagoon be excavated to receive marine tidal water. When the entrance channel was reformed after a storm in the 1980's, the area began to slowly accumulate sand until the elevation was above high tide. Several variations for inundation of the area with tides were modeled in Vicksburg. The model demonstrated that portions of the area can be excavated and a tide pool can be constructed without interfering with the flows in and out of Salt Lagoon. The model also indicated that the entrance between the tide pool and Village Cove would remain open in high wave conditions. The Alaska District agrees with the USFWS that inundating portions of the historic entrance channel has merit and the action will be added to the project. However, there is a jurisdictional dispute associated with this area that has not been resolved. The Alaska District will pursue land ownership and jurisdiction during the next plans and specifications phase of the proposed action. If the area of concern is free and clear of title, the historic entrance channel action will become part of the Federal project.

3.4.4 Essential Fish Habitat

The species addressed for essential fish habitat were obtained through the National Marine Fisheries Service personnel and the National Marine Fisheries Service web page. General life history information associated with the species is also from the web page. Table 5 shows the species of concern and the life history requirements for each of the species at the life stages the species may inhabit the project waters.

TABLE EA-5 ESSENTIAL FISH HABITAT

Species	Life Stage	Known Concentrations	Present	Location						Substrate					Present at Village Cove	Present at disposal site
				Intertidal	1 - 50 m	50 - 100 M	>100 M	Bay/Esturine	Not Known	Mud/Clay/Silt	Sand/Gravel	> Cobble	Not Applicable	Vegetation		
Walleye Pollock	A	X					X								X	X
	J		X		X	X	X									
	L		X				X									
	E		X				X									
Pacific Cod	A	X			X	X	X			X	X				X	X
	LJ	X			X	X	X			X	X					
Yellowfin Sole	A	X		X	X	X	X	X			X				X	X
	LJ	X			X	X	X	X			X					
Greenland Turbot	A		X				X			X	X					X
	LJ		X		X	X	X			X	X					X
Arrowtooth Flounder	A		X		X	X	X	X		X	X					X
	LJ		X		X	X	X			X	X					X
Rock Sole	A	X			X	X	X				X				X	X
	LJ	X			X	X	X	X			X					X
Alaska Plaice	A	X			X	X				X	X					X
	J	X			X	X				X	X					X
Sculpins	A		X	X	X	X	X			X	X				X	X
	J		X	X	X	X	X								X	X
Skates	A		X			X	X									X
	J		X			X	X									X
Red King Crab	M		X		X	X	X			X	X	X				X
	LJ		X	X	X	X	X			X	X	X				X
	EJ		X	X	X	X	X									X
	L		X												X	X
	E		X	X	X	X	X	X		X	X	X				X
Blue King Crab	M	X			X	X	X			X	X	X				X
	LJ	X			X	X	X			X	X	X				X
	EJ		X	X	X	X									X	X
	L		X							X	X	X			X	X
	E	X			X	X									X	X
Tanner Crab	M	X			X	X	X			X	X	X				X
	LJ	X			X	X	X			X	X	X				X
	EJ		X		X	X	X			X	X	X				X
	L		X													X
	E	X			X	X	X			X	X	X				X
Snow Crab	M	X			X	X	X			X	X	X				X
	LJ	X			X	X	X			X	X	X				X
	EJ		X		X	X	X			X	X	X				X
	L		X													X
	E	X			X	X	X			X	X	X				X

Dredging of the proposed boat harbor location would have little to no effect on essential fish habitat. The substrate type will be the same after as before the dredging. Drill logs indicate the material to be dredged is of the same composition as the material at project depth. The area of the proposed fill would be lost to the species that presently use it. Yellowfin sole (adults), sculpins (adults and juveniles), red king crab (emerging, early and late juveniles) and early juvenile blue king crab have been known to use the intertidal habitat. However, this area is not known to be a high use area by these species and probably is not used by emerging red king crab as this area is outside the normal ocean current pattern. The proposed fill would extend to about –5 feet MLLW at the deepest. The next category for location (table 5) is 1 to 50 meters. The majority of the fill would be placed in water less than 1 meter deep. Several species of fish and shellfish are known to use the area from –1 meter to –1.6 meters MLLW, but the amount of habitat is extremely small. No appreciable amount of essential fish habitat would be lost with the proposed fill.

The disposal site is in water depths of about 200 feet with a rocky substrate (Armstrong et. al. 1990). This substrate type excludes several species of fish and shellfish as indicated on Table 5

Walleye Pollock (juveniles). Spawning occurs pelagically around mid March and eggs develop throughout the water column in water from 70 to 80 meters deep. Egg development is water temperature dependent and can take about 17 to 25 days to develop. The species goes through a larval stage (approximately 60 days) that is distributed in the upper 40 meters of the water column. Early juveniles are found both pelagically and on the bottom, and feed on naupliar stages of copepods and small euphausiids. Strong year classes are found from the outer to inner shelf, while weak year classes are found only on the outer continental shelf. Juveniles occur on the outer shelf, upper slope, and basin. Juveniles and their food resources may occur in the project area, but the construction of a boat harbor at the head of the bay would not likely affect the distribution or abundance of the species.

Pacific Cod (adults and late juveniles). Pacific cod is a transoceanic species, occurring at depth from shoreline to 500 meters and associated with mud/silt/clay to gravel substrate. Adults are demersal and form aggregations during the peak spawning season, which extends approximately from January through May. Eggs are demersal and adhesive and hatch in about 15 to 20 days. The next life stage is larval, which undergoes metamorphosis at about 25 to 35 mm. Small cod mainly feed on invertebrates, while the large adults are mainly piscivorous. The most important dietary items are euphausids, miscellaneous fishes, and amphipods. Adult Pacific cod are not likely to inhabit the harbor footprint; however, juveniles might.

Yellowfin Sole (adults and late juveniles). This species exhibits a benthic lifestyle. They spawn between May and August in shallow water and feed primarily on sandy bottoms, on polychaetes, bivalves, amphipods, and echiurids, as do late juveniles. Juveniles are separate from the adult population, remaining in shallow areas until they

reach approximately 15 centimeters. Adults migrate to deeper waters of the shelf margin in winter to avoid extreme cold water temperatures. Yellow fin sole would be temporarily displaced from the project area during construction and would likely return to use the area for feeding after construction.

Rock Sole (adults and late juveniles). This species exhibits a benthic lifestyle and occupies separate winter (spawning) and summertime feeding distributions on the continental shelf. Feeding on bivalves, polychaetes, amphipods, and miscellaneous crustaceans occurs primarily on sandy substrate. After spawning rock sole begin actively feeding and commence a migration to the shallows of the continental shelf. Surveys have indicated that most of the population can be found at depths from 50 to 100 meters in substrates of gravel, mud, and sand. Newly hatched larvae are pelagic and remain so until they are about 20 mm in length, when they assume their side-swimming, bottom-dwelling form. Juveniles are separate from the adult population, remaining in shallow areas until they reach age 1. Rock sole would be temporarily displaced from the project area during construction and would likely return to use the area for feeding after construction.

Alaska Plaice (adults and late juveniles). Adults and late juveniles occur within the inner, middle, and outer shelf zone on mud/sand/gravel habitat. Plaice return to the middle and inner shelf zone for feeding in spring, summer, and fall. They feed on polychaetes, amphipods, and echiurids..

Sculpins (adults and late juveniles). Sculpins are a large circumboreal family of demersal fishes inhabiting a wide range of habitats in the North Pacific Ocean and Bering Sea. Habitats range from tide pools to water depths of 1,000 meters. Adult and juvenile sculpins are mainly known to be associated with substrates from mud/silt/clay to gravel. Most sculpins spawn in the winter. All species lay eggs, but some general fertilization is internal. Eggs are generally laid amongst rocks and are guarded by the males. The larval stage is found across broad areas of the shelf and slope. Sculpins generally eat small invertebrates. Sculpins are present at the proposed harbor site, and placing a harbor at the proposed site would displace them during construction. They would re-establish themselves after construction and little overall habitat loss is expected.

Skates (adults and late juveniles). Adults and juveniles are demersal and feed on bottom invertebrates (crustaceans, mollusks, and polychaetes) and fish. Adults and late juveniles primarily occur between 50 and 200 meters on the Aleutian Islands shelf. Little is known of their habitat requirements for growth or reproduction, or of any seasonal movements. Project activities are unlikely to impact adult and late juvenile skates because of the great depths they inhabit.

Red King Crab. Adult red king crab typically inhabit depths less than 300 meters within the inner continental shelf zone. They molt multiple times per year through age 3, after which molting is annual. Shallow inshore areas (less than 50 meters) are very

important to king crab reproduction as they move inshore to molt and mate. Larval stages are distributed according to vertical swimming abilities, and the currents, mixing, or stratification of the water column. Generally, the larvae occupy the upper 30 meters of the water column, often in the mixing layer near the sea surface. After several molts, the crabs settle to the bottom. Settlement on habitat with adequate shelter, food, and temperature is imperative to survival of the first settling crabs. They prefer high relief habitat such as boulders, cobble, and shell debris. Young-of-the-year require near shore shallow habitat. Late juvenile stage crabs are most active at night when they feed and molt. The habitat at the head of the bay is poor for supporting any red king crab life cycle.

Tanner Crab (larvae). Larvae are typically found in the water column from 0-100 meters in early summer. They are strong swimmers and perform diel migration in the water column, i.e., they at are depth at night. Information is not available to define essential habitat for the larval stage in the project area.

3.5 Threatened and Endangered Species.

Threatened and endangered species coordination was conducted during the 1982 EIS, the 1987, 1988 and 1996 environmental assessments, and with the proposed action.

Although several species of endangered whales are present in the Bering Sea, none occur with the near shore waters of St. Paul Island. The threatened Stellar's sea lion hauls out on other islands in the Pribilofs, but is not present on St. Paul Island. The proposed action would not affect these species or their critical habitat.

Stellar's eiders are classified as threatened under the Endangered Species Act. They have been observed in the Pribilof Islands area. Sightings of this species have not occurred in the Village Cove area.

Red-legged kittiwakes, the Pribilof shrew, and one plant species, *Artemisia globularia lutea* are listed as Species of Concern. A Species of Concern is one that is declining in numbers, but there is not sufficient biological information to warrant consideration for listing.

The proposed harbor improvements are concentrated in the Village Cove area. Neither the plant species nor the Pribilof shrew have been identified in the Village Cove area. The red-legged kittiwake is regularly seen in Village Cove and Salt Lagoon. The proposed action, including the construction phase should have little effect on this gull species. None of the habitat used by the kittiwakes would be destroyed.

4.0 SECONDARY AND CUMULATIVE IMPACTS

The 1996 EA addressed the small boat harbor as a potential cumulative impact and discussed the implications. The proposed action is in the same location and has many of the features described in the 1996 EA Cumulative Impacts Section.

The local Native Corporation has conceptual plans for Village Cove. These plans include the beach area at the head of the cove and along boulder spit. The proposed harbor improvements would assist the Native Corporation in reaching their goals. However, even if the proposed action were not completed, the Native Corporation probably would still pursue their goals.

Other cumulative impacts include establishing a multi-species processor within Village Cove. Since the local fishing fleet would engage in several finfish as well as shellfish fisheries, the need for a processing facility appears to be valid. The city of St. Paul and State of Alaska's planning process includes the establishment of a multi-species processor. The need for the processor is discussed in depth in the Economics Appendix of the Reevaluation Report. It appears the multi-species processor may occur with or without the construction of a small boat harbor for the local fishing fleet.

Impacts associated with a multi-species processor are mainly associated with the wastes and outfall. Since much of the waste product contains fish oil, there is a concern that the oil may impact fur seals. Fur seals maintain their body warmth because their fur is thick enough to not allow water to touch their skin. Oil may cause the fur to lose some of its insulating properties comprising the fur seals heat retention. However, if there was to be a multi-species processor in Village Cove, it would occur whether or not a small boat harbor was constructed.

5.0 COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

Table 6 shows the project's compliance status with environmental laws and statutes.

Table EA-6. – Status of project with applicable laws and statutes

Federal Statute	Compliance/Status
Archaeological and Historic Preservation Act	*Full
Clean Air Act of 1977, as amended	Full
Clean Water Act of 1977, as amended	Full
Coastal Zone Management Act	Full
Endangered Species Act of 1973, as amended	Full
Estuary Protection Act	Full
Federal Water Project Recreation Act, as amended	Full

Table 6. – Status of project with applicable laws and statutes (continued)

Federal Statute	Compliance/Status
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act, as amended	Full
Marine Protection, Research and Sanctuaries Act, as amended	N/A
National Environmental Policy Act of 1969, as amended	Full
National Historic Preservation Act of 1966, as amended	Full
Rivers and Harbors Act	Full
Watershed Protection and Flood Prevention Act, as amended	N/A
Wild and Scenic Rivers Act, as amended	N/A
Executive Orders, Memorandums, Etc.	
Floodplain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	Full
Environmental Effects Abroad of Major Federal Actions (E.O. 12114)	N/A
Analysis of Impacts on Prime and Unique Farmlands (CEQ Memo Aug. 11, 1980)	N/A
Protection and Enhancement of Environmental Quality (E.O. 11514 and 11991)	Full
Protection and Enhancement of the Cultural Environment (E.O. 11593)	Full
Environmental Justice (E.O. 12898)	
Protection of Children (E.O. 13044)	

* Full compliance signifies after the proper documents are signed after public review. All applicable laws and regulations listed would be fully complied with upon completion of the environmental review, issuance State water quality certification, and concurrence with our determination on cultural resources and coastal consistency.

6.0 QUARRY POLICY

The Alaska District policy is to not designate rock quarries for civil works projects. The construction contractor is responsible for providing rock for the project. The rock must meet physical requirements, and quarry operations and expansion must follow environmental criteria. If the construction contractor selects a quarry that is not defined as existing, all environmental analysis must be accomplished before any quarry work is started. Once the construction contractor selects a quarry, a quarry development plan is submitted to the Alaska District. Copies of the quarry development plan are provided to the Alaska Department of Governmental Coordination and the USFWS for their review as per Letters of Agreement between the agencies. The determination of "existing" is accomplished between the Alaska District and resource agencies as well as any requirement for additional environmental evaluation or stipulations.

7.0 MITIGATION

When Phase 2 was being designed, the potential that a small boat harbor was going to be built at the south cove location was high. At that time, the Alaska District did not have the authority to study a small boat harbor, but several Phase 2 features were designed to accommodate a small boat harbor. These features mainly have to do with water circulation and water quality associated with Salt Lagoon. These features include the sediment basin between the detached breakwater and boulder spit and the splitter breakwater. The sediment basin directs water from the north side of Village Cove into Salt Lagoon and the splitter breakwater diverts water through the proposed boat harbor for flushing. These features were designed for a harbor and the costs and effects should be attributed to the small boat harbor.

The USFWS recommended that the original Salt Lagoon entrance channel be excavated to form a tidal pool of this area. The Alaska District agreed with this recommendation and will incorporate a design in the plans and specifications. The ownership of this area is in dispute; if the area is public land (city, state or Federal ownership) the Alaska District will proceed with the mitigation feature. If the property is privately owned, the Alaska District will negotiate with the landowner and may or may not continue with the construction of the tidal pool.

The Alaska District and the local sponsor will follow all the Special Conditions of Permit No. 2-981089, Village Cove 1, the stipulations from the Alaska Department of Environmental Conservation, the Certificate of Reasonable Assurance issued to the City of St. Paul on March 15, 2000, and the stipulations of the Final Consistency Determination dated March 14, 2000.

8.0 CONCLUSION

Construction of the preferred alternative, as discussed in this document, would not cause significant environmental impacts. The proposed small boat harbor and emergency action are consistent with the State of Alaska and St. Paul Island Coastal Management Programs to the maximum extent practicable. The State of Alaska Department of Governmental Coordination and the Regulatory Branch of the Alaska District have issued permits (Village Cove 1 and 2) for similar small boat harbors in the exact location as the proposed harbor project in this document. Village Cove 1 and 2 went through a public review and were both deemed consistent with the Coastal Management Programs and had no associated significant environmental impacts. This assessment supports the conclusion that the proposed project does not constitute a major Federal action significantly affecting the quality of the human environment; therefore, a finding of no significant impact will be prepared.

9.0 REFERENCES

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APPENDIX 1
Evaluation Under Section 404 (b) (1)
of the
Clean Water Act

Section 404(b)(1) Guidelines for the Evaluation of the Disposal of Dredged or Fill Material 40 CFR Part 230

SUBPART A - GENERAL

Dredged or fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact, either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.

The Guidelines were developed by the Administrator for the Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army acting through the Chief of Engineers under Section 404(b)(1) of the Clean Water Act (33 U.S.C. 1344). The Guidelines are applicable to the specification of disposal sites for discharges of dredged or fill material into waters of the United States (U.S.).

In evaluating whether a particular discharge site may be specified, the following steps should generally be followed: (a) review the restriction on discharge, the measures to minimize adverse impacts, and the required factual determinations; (b) examine practicable alternatives to the proposed discharge; (c) delineate the candidate disposal site; (d) evaluate the various physical and chemical components; (e) identify and evaluate any special or critical characteristics of the candidate disposal site and surrounding areas; (f) review factual determinations to determine whether the information is sufficient to provide the required documentation or to perform pre-testing evaluation; (g) evaluate the material to be discharged to determine the possibility of chemical contamination or physical incompatibility; (h) conduct the appropriate tests if there is a reasonable probability of chemical contamination; (i) identify appropriate and practicable changes in the project plan to minimize the impact; and (j) make and document factual determinations and findings of compliance.

SUBPART B - COMPLIANCE WITH THE GUIDELINES

The proposed removal action will involve discharges of fill material into navigable waters of the U.S. (i.e., below the high tide line) to construct a rubblemound breakwater, a flow splitter breakwater and create uplands in an intertidal area. A description of the proposed action and alternatives considered can be found in section 2.2.7 of the attached environmental assessment. There are no practicable alternatives to the proposed discharge (proposed action) that would accomplish the project's purpose and need and not result in a discharge into a water of the U.S. or have a less adverse impact on the aquatic ecosystem. Therefore, the proposed action is the least damaging practicable alternative.

Fill material was placed into navigable waters of the U.S. associated with the emergency action for the protection of the main breakwater and the infrastructure on the breakwater. A description of the action can be found in section 2.3 of the environmental assessment. There are no practicable alternatives to the proposed discharge (proposed

action) that would accomplish the project's purpose and need and not result in a discharge into a water of the U.S. or have a less adverse impact on the aquatic ecosystem. Therefore, the proposed action is the least damaging practicable alternative.

As determined in Subparts C through G of this evaluation and as discussed in sections 3.1.3 and 3.1.4 of the attached document, the proposed project will not contribute to significant degradation of the waters of the U.S. including adverse effects on human health or welfare, life stages of aquatic life and other wildlife dependent on aquatic ecosystems, aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values. In addition, the discharge of fill materials associated with the proposed action complies with the requirements of the guidelines with the inclusion of appropriate and practicable discharge conditions (see Subpart H below) to minimize pollution and adverse effects to the affected aquatic ecosystems.

SUBPART C - POTENTIAL IMPACTS ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Applicable information about direct, indirect and cumulative environmental impacts of the proposed action and alternatives related to substrate, suspended particulates/turbidity, water, current patterns and water circulation, and normal water fluctuations is discussed in section 4 in the attached document. No long-term adverse impacts are expected to result from the project.

Clean fill materials (i.e., free of contaminants) will be used. For the breakwaters, materials would be obtained from an existing quarry as explained in section 6 of the attached document. The intertidal fill will be constructed from material dredged from the proposed small boat basin. The material used for the emergency action was stockpiled dredged material and clean shot rock from the St. Paul quarry. Adverse impacts to the quality of the marine waters are expected to be short term, as currents would readily disperse any suspended sediments. No appreciable adverse affects to long shore currents are expected, as the proposed action is either within the confines of the existing breakwater or, in case of the emergency action, the purpose of the material is to change the currents before they hit the breakwater.

A portion of the emergency action was to create fast lands to move heavy equipment to the area of concern. This material will be removed upon the completion of the work. Refer to section 2.3.

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SUBPART D - POTENTIAL IMPACTS ON BIOLOGICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Pertinent information about direct, indirect, and cumulative impacts of the proposed action and alternatives related to threatened and endangered species, fish, aquatic organisms, and other wildlife are discussed in sections 2.2, 2.3, 3.4, 3.5 and 4 in the attached document. Appreciable adverse impacts resulting from the discharge of dredged and/or fill materials are not expected.

At the small boat harbor site, the area supports minimal benthic organisms due to the type of substrate. The substrate and high energy climate of the emergency action area

reduces the flora and fauna concentrations and diversity. Negligible adverse impacts are expected.

SUBPART E - POTENTIAL IMPACTS ON SPECIAL AQUATIC SITES

There are no areas classified as special aquatic sites associated with the proposed action.

SUBPART F - POTENTIAL EFFECTS ON HUMAN USE CHARACTERISTICS

Human use characteristics affected by the proposed project include subsistence and site safety. Pertinent information about potential impacts of the proposed work on human use characteristics can be found in sections 3.2 and 4. No long-term adverse impacts are anticipated for the project.

The proposed small boat harbor site is used for launching and mooring of small vessels. The proposed action will add safety to vessel launching and storage. Work would be coordinated with local users so as to minimize any conflicts.

SUBPART G - EVALUATION AND TESTING

The material to be dredged has been tested for the presence of chemical compounds. The results of the analysis concluded that the material to be dredged is free of contamination. The material to be placed in waters of the U.S. is clean shot rock, also free of contamination.

SUBPART H - ACTIONS TO MINIMIZE ADVERSE EFFECTS

Actions proposed to minimize potential adverse effects for the proposed action are discussed in section 2.2.7 and 3.4.3 of the attached document. Mitigation measures incorporated into the project include (1) design of a splitter breakwater to assist in the flushing of the proposed harbor; (2) removing the access fill upon completion of the action; and (3) revising the harbor management plan.

APPENDIX 2
Section 103 Evaluation

Section 103 Evaluation
Ocean Disposal Site
St. Paul Harbor Improvements, St. Paul, Alaska

INTRODUCTION

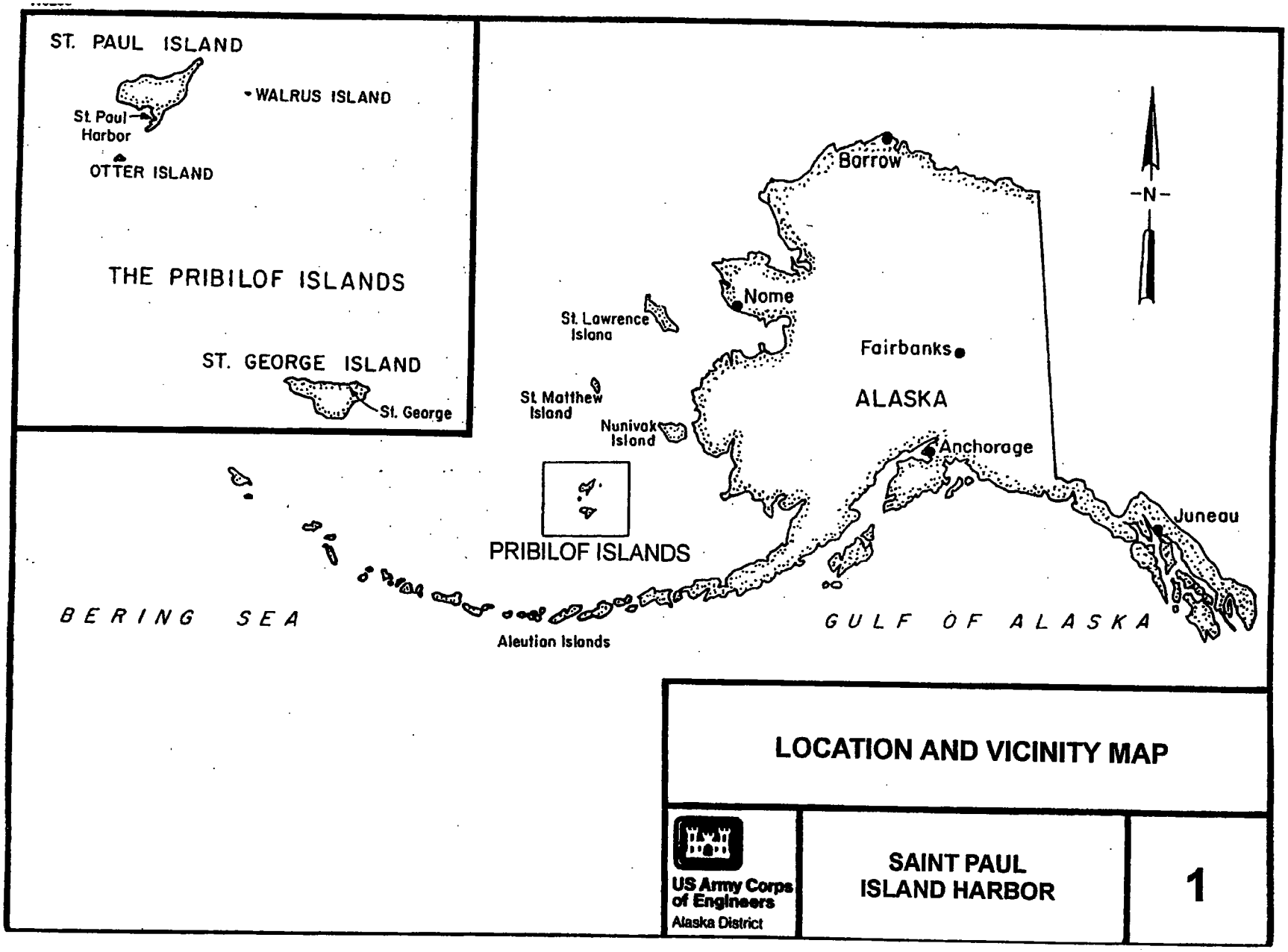
This evaluation follows Environmental Protection Agency (EPA) regulations (40 CFR 228.4(e) (2)) addressing ocean disposal of dredged material. The material to be disposed of is from deepening the maneuvering and entrance channel to St. Paul Harbor and the dredging of the moorage basin of the proposed small boat harbor (*Harbor Improvements Draft Interim Feasibility Report and Environmental Assessment, St. Paul, Alaska, May 1996, and Small Boat Harbor Feasibility Report and Environmental Assessment, 2002*). Specific actions addressed include a one time only disposal of coarse sand, gravel, cobbles, and boulders in a deep ocean site on the north side of St. Paul Island. Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA) requires that all transportation of dredged material with the intent to dispose of the material in ocean waters be evaluated for environmental effects prior to making the disposal. This evaluation assesses the effects of the discharge under the criteria set forth by the EPA under the authority of Section 103 (a) of the act.

PROPOSED ACTION

The proposed action is the transportation and disposal of dredged material (sand, gravel, cobbles, and boulders) at a deep ocean site (one-event disposal) during harbor construction at St. Paul harbor on St. Paul Island, Alaska (figure 1). The St. Paul harbor improvements would consist of dredging the maneuvering area and entrance channel of the protected harbor. A spending beach on the harbor side of the detached breakwater would be constructed to reduce wave heights inside the harbor (figure 2). A separate small boat harbor entrance channel and mooring area also would be dredged. The material would be removed by hopper or clamshell dredge and barge.

DETERMINATION OF ENVIRONMENTAL ACCEPTABILITY OF DREDGED MATERIAL FOR OCEAN DISPOSAL

Approximately 520,100 cubic yards (yd^3) of dredged material would be produced from the harbor projects. However, approximately 42,000 yd^3 of this material could be beneficially used for the creation of a spending beach for wave reduction in the harbor. An additional amount (54,000 yd^3) may also be used for harbor related activities, which could reduce the total amount being disposed of. Approximately 29,000 yd^3 would be from dredging the Salt Lagoon channel. Sand material from the channel would be disposed of in an upland site. The approximate amount requiring water disposal is 400,000 yd^3. Dredged material in the entrance, maneuvering channels, and harbor basin is composed of well to poorly sorted sand/cobble/boulder with less than 15 percent fines. Fines are characterized as sediments passing through a No.200-mesh sieve. Jet probe and core sampling of the entrance channel and turning basin indicated the bottom consisted of sand underlain with boulders. The entrance channel leading out of the maneuvering basin



LOCATION AND VICINITY MAP

US Army Corps of Engineers
Alaska District

SAINT PAUL ISLAND HARBOR

1

ENTRANCE CHANNEL

HARBOR JETTY LIGHT 3

HARBOR JETTY LIGHT 2

ATS 1375 TRACT C

NEW SPENDING BEACH
FILL TO 0' MLLW

CREST ELEVATION +4.0' MLLW

ATS 1375 TRACT B

ATS 1375 TRACT A

ATS 1375 TRACT C

NEW SEDIMENT MANAGEMENT AREA
DREDGE TO -10' MLLW

NEW MANEUVERING BASIN
DREDGE TO -28' MLLW

PORT OF ST. PAUL

NEW SALT LAGOON CHANNEL

CONC. END

CARGO GARAGE

COMBINE SHOP

ADMIN. BLDG.

STAFF QUARTERS

BLOCK 28

VENIA MINOR STREET

NEW SMALL BOAT HARBOR

BERING SEA

NEW SUBMERGED REEFS

ATS 1399 TRACT A

ATS 1472

TRIDENT PLANT

CONCRETE DOCK ATS 1375 TRACT B

TRACT 16

SERVICES SPILL RESPONSE AREA

SERVICES AREA

DELTA WESTERN FUEL

CATERC

CASCADE

REST.

TRACT 45

ANDERSON

TDX CAMP

STROY LANE

CHURCH

POST OFFICE

BLOCK 27

POLOVINA TURNPIKE

HAUL ROAD

WINTER VAN STORAGE - SUMMER BOAT TRAILER DAY USE

PROPOSED IMPROVED PUBLIC HARBOR ACCESS ROAD & ROW

SECTION A–A

SECTION C–C

SECTION B–B

SECTION D–D

JANUARY 30, 2001

ST. PAUL 60 VESSEL SMALL BOAT HARBOR – TDX/IRA SUGGESTED LAYOUT #1 – ENTRANCE CHANNEL DREDGED TO –12 TO –16 FEET

OLIVER & ASSOCIATES

Figure 2

has a deeper layer of sand. The maneuvering basin area has boulders close to the surface. The quantity of sand is roughly half of the total.

Because the dredged material to be disposed of in the ocean is predominantly coarse-grained, it has little retention capacity for contaminants. Further testing will not be conducted. The likelihood of contamination from disposal of this material onto a disposal site is low, and the exclusion from further evaluation procedures is based on the dredged material not being a carrier of contaminants and the dredged material being composed primarily of sand, cobbles and boulders, and/or inert materials. Under the Tier 1 evaluation (Evaluation of Dredged Material Proposed for Ocean Disposal Testing Manual, Chapter 4), the dredged material was compared to the three exclusionary criteria in paragraph 227.13(b) of 40 CFR Part 227 Criteria for the Evaluation of Permit Applications for Ocean Dumping of Materials.

NEED FOR OCEAN DUMPING

Ocean disposal is a necessary component of the harbor project because of the large quantity of dredged material and the high cost of transporting the material to an upland site. No upland disposal sites have been identified that meet local land use needs. The local sponsor, the City of St. Paul, has very limited land ownership. The majority of land is in private ownership. If an upland disposal site were identified, double-handling the material would increase the disposal costs by at least 100 percent. The dredged material would be placed on a barge then trucked from the St. Paul dock to the upland site. Trucking would occupy a large amount of dock time and space over the course of the project. Traffic congestion would also be considerable on the road system. The estimated load capacity of a dump truck is 15 yd^3, so about 30,000 round trips would be required if excess dredged material were to be hauled to an upland site. City roads would require maintenance during the high use period. Dust control and road damage repair would be major considerations.

Intertidal/nearshore areas are available but highly undesirable for use as a disposal site due to the high productivity of the St. Paul island coastline, notably as fur seal and seabird habitat.

All feasible and beneficial uses of the dredged material have been employed.

EVALUATION OF WATER DISPOSAL ALTERNATIVES

Zone of Siting Feasibility (ZSF)

The factors in final siting of the disposal area were the distance and cost of travel to the disposal site from the dredging site, a low incidence foraging area of the northern fur seal, avoidance of high density crab habitat, and distance from local commercial fishing areas (figure 3). The northern shoreline has a long stretch of sand dunes where rookeries do not exist.

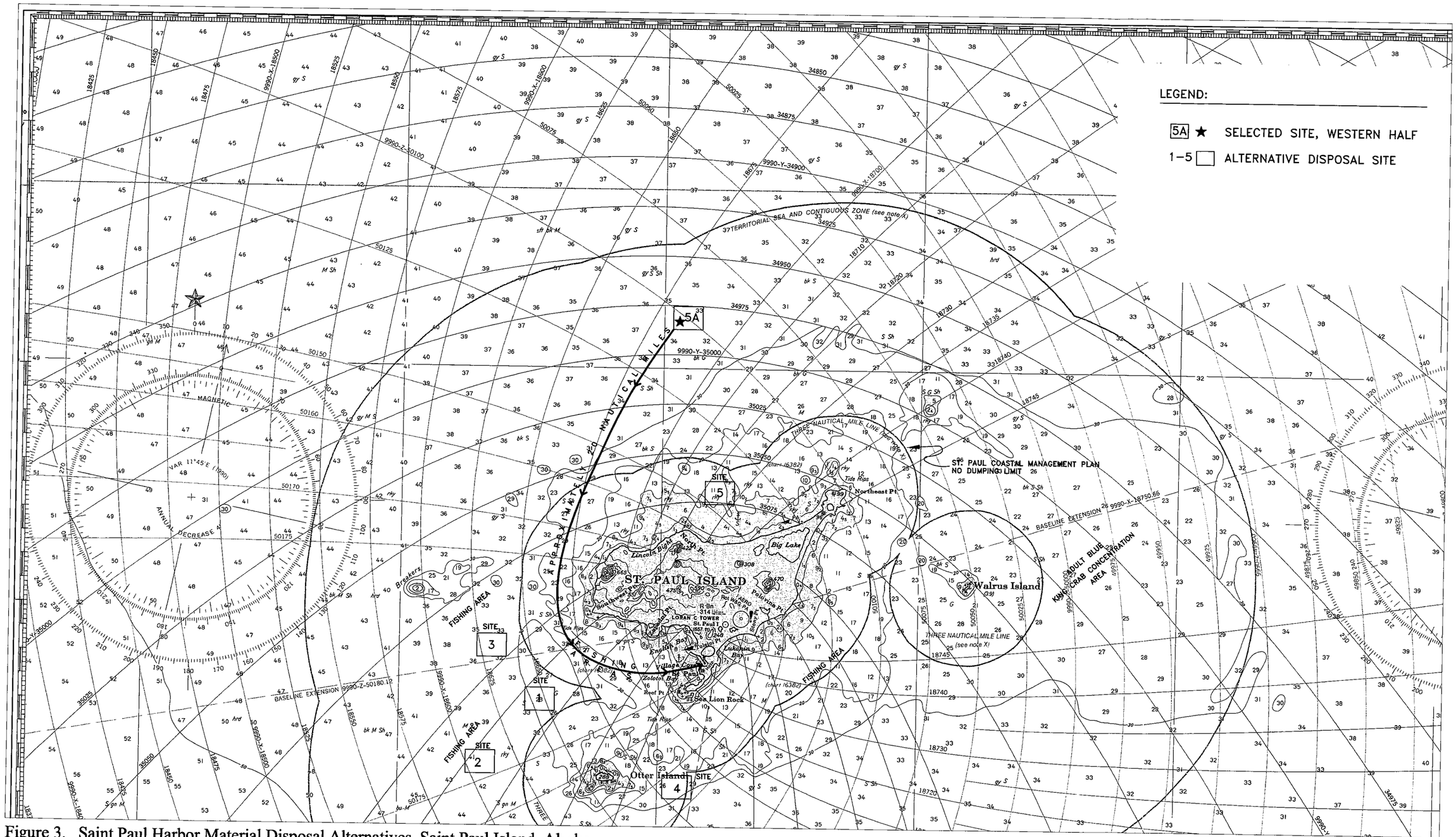


Figure 3. Saint Paul Harbor Material Disposal Alternatives, Saint Paul Island, Alaska

The cost for disposal increases with time and distance from the dredging site. Barge transport exceeding one-day travel (approximately 40 nautical miles round trip) was considered a cost-limiting factor. At least two barges would be required to work continuously loading and transporting throughout the summer, for two seasons. To add additional barges would significantly increase the costs. Another factor is the severe climate with frequent storms that could delay barge transport.

Disposal site selection was also limited by significant fish and wildlife habitat and resource use around St. Paul Island. Coordination with the Bering Sea Fishermen's Association and the National Marine Fisheries Service eliminated many areas around the island (see correspondence appendix).

The nearshore and offshore zone is actively used in the summer by foraging Northern fur seals, sea lions and seabirds. Rookeries exist along the St. Paul Island shoreline except for a long stretch of sand dunes along the northern shoreline, which has no rookeries. Two smaller islands, Otter and Walrus Islands, also have rookeries or haulouts (figure 4). The absence of rookeries and seabird colonies along the northern shoreline was a positive factor for a disposal site. The local people and the NMFS indicated that an offshore site to the north was a preferred location. Studies conducted by the NMFS indicated fur seal foraging pathways, which are shown on figure 5. A resource map shows island habitat areas (figure 6).

The blue king crab and the Korean hair crab are important commercial species. The major populations of the blue king crab are centered at the Pribilof and St. Matthew islands. Hair crab aggregate mainly around the Pribilof Islands and shallow waters along the Alaskan Peninsula from Izenbek Lagoon to Port Moller. The distribution and ecology of both crab species are similar. There is documented constancy in the location of juveniles and adults around the Pribilof Islands. The greatest abundance of adult crab was to the east and north of St. Paul Island, with few animals caught west or around St. George Island (figure 7). The depth range for adult crab is about 45 to 75 meters (25 to 41 fathoms) on a mud-sand bottom. Juvenile crab survival settlement and growth is highest when crab larvae settle to substrates that provide refuge and food. The best refuge is whole shell debris (shell hash) and secondarily small cobble covered with epiphytic growth. Shell hash can be found over rock shelves, cobble, sand, and rock beds. Gravel and rock substrates areas are found immediately adjacent to both Pribilof Islands (figure 8). Figure 9 shows the shell hash zones. Juvenile crab were restricted to nearshore areas with the bulk of the population found within 10 to 15 kilometers (5 to 8 nautical miles) from shore at the 40 to 60-meter (22 to 33 fathoms) depth. The above information on crab is derived from trawl studies, grab sampling, and side-scan sonar methods, which mapped the general distribution and association of crab to major sediment types (Armstrong et al 1987). The crab habitat limitations indicated that the disposal site should be beyond 15 kilometers (8 nautical miles) from shore on the north side.

Local commercial and subsistence fishing areas were identified and are indicated on figure 3. There is a prohibition on the commercial trawl fishery around the Pribilof

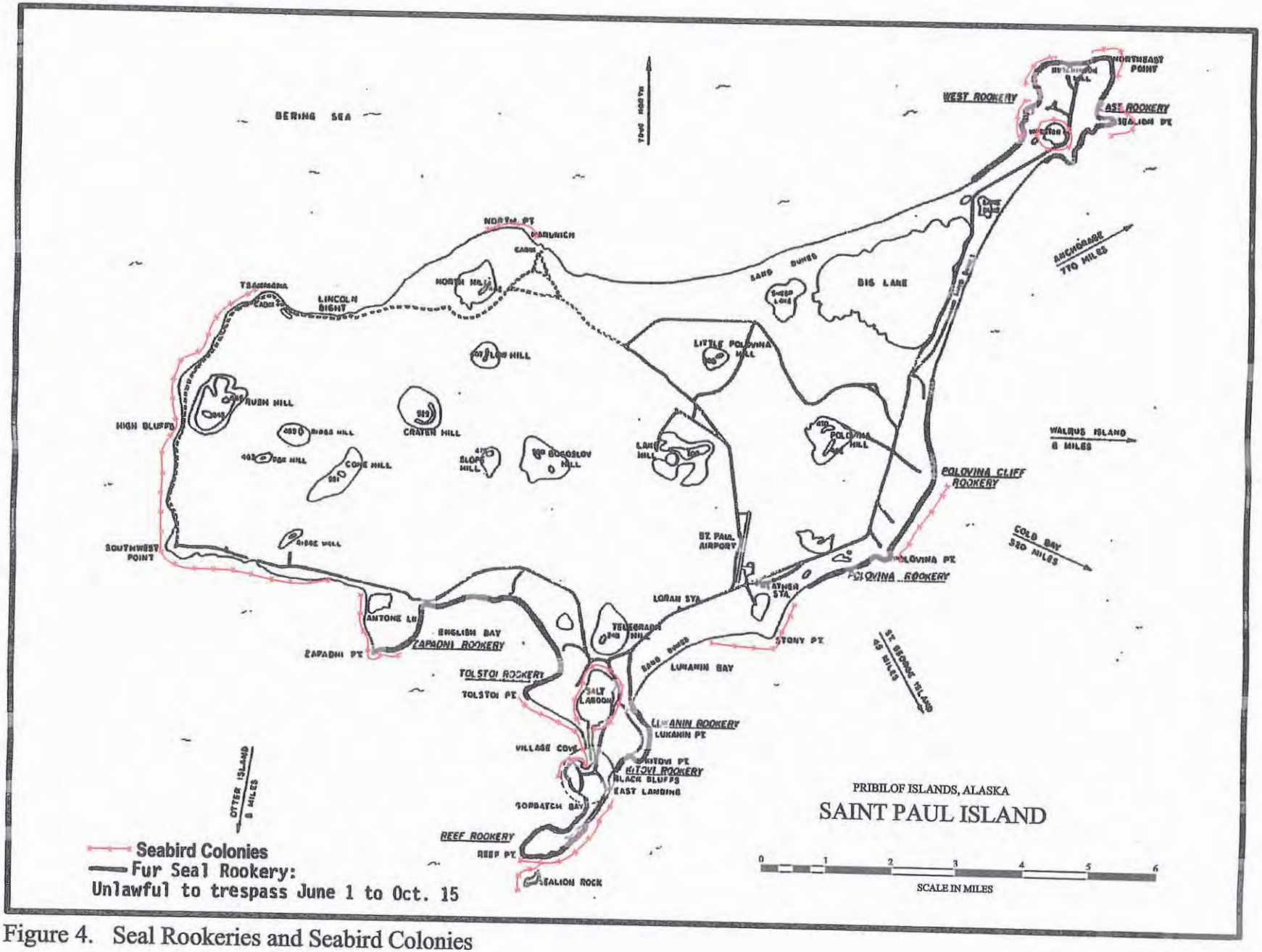


Figure 4. Seal Rookeries and Seabird Colonies

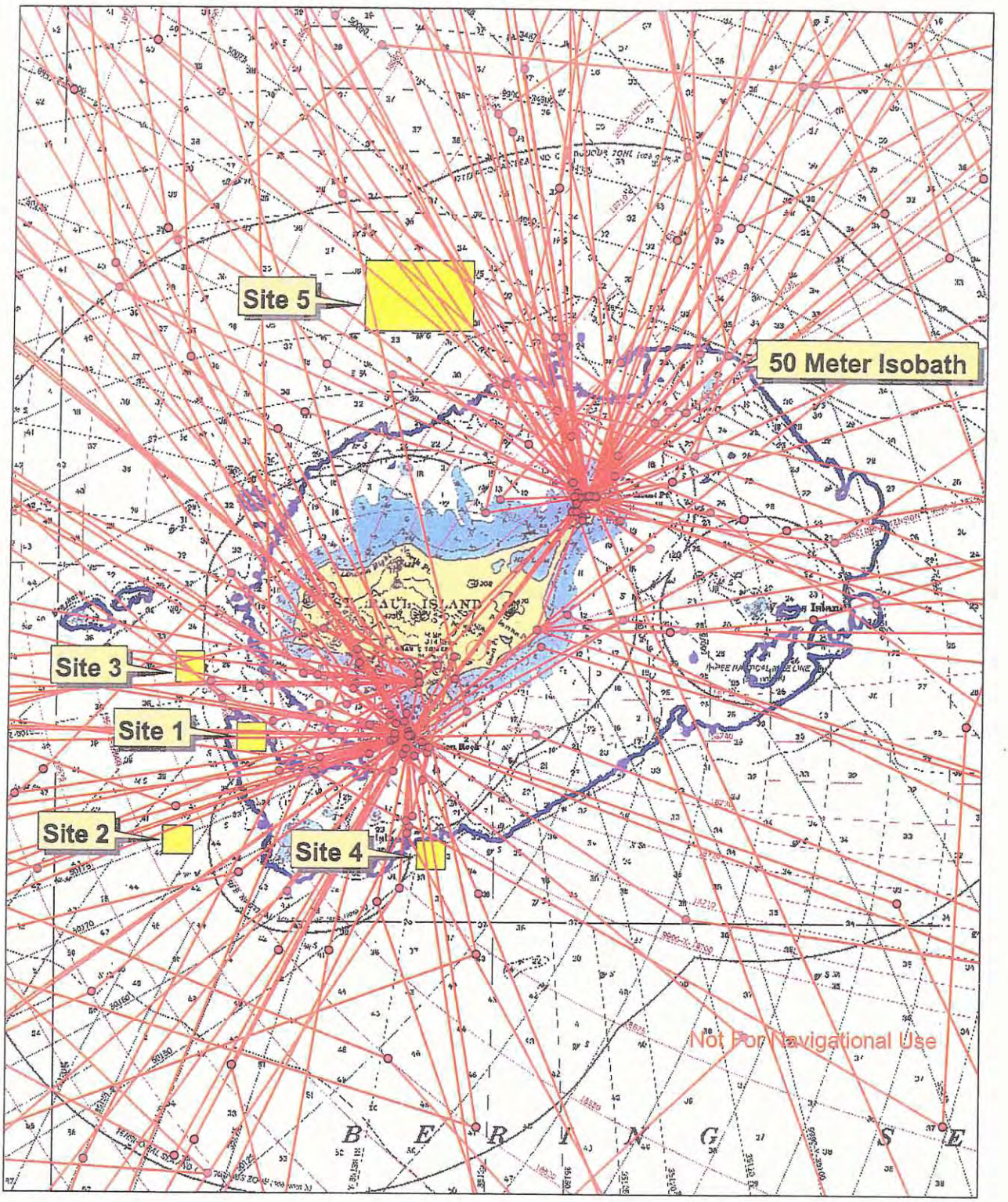
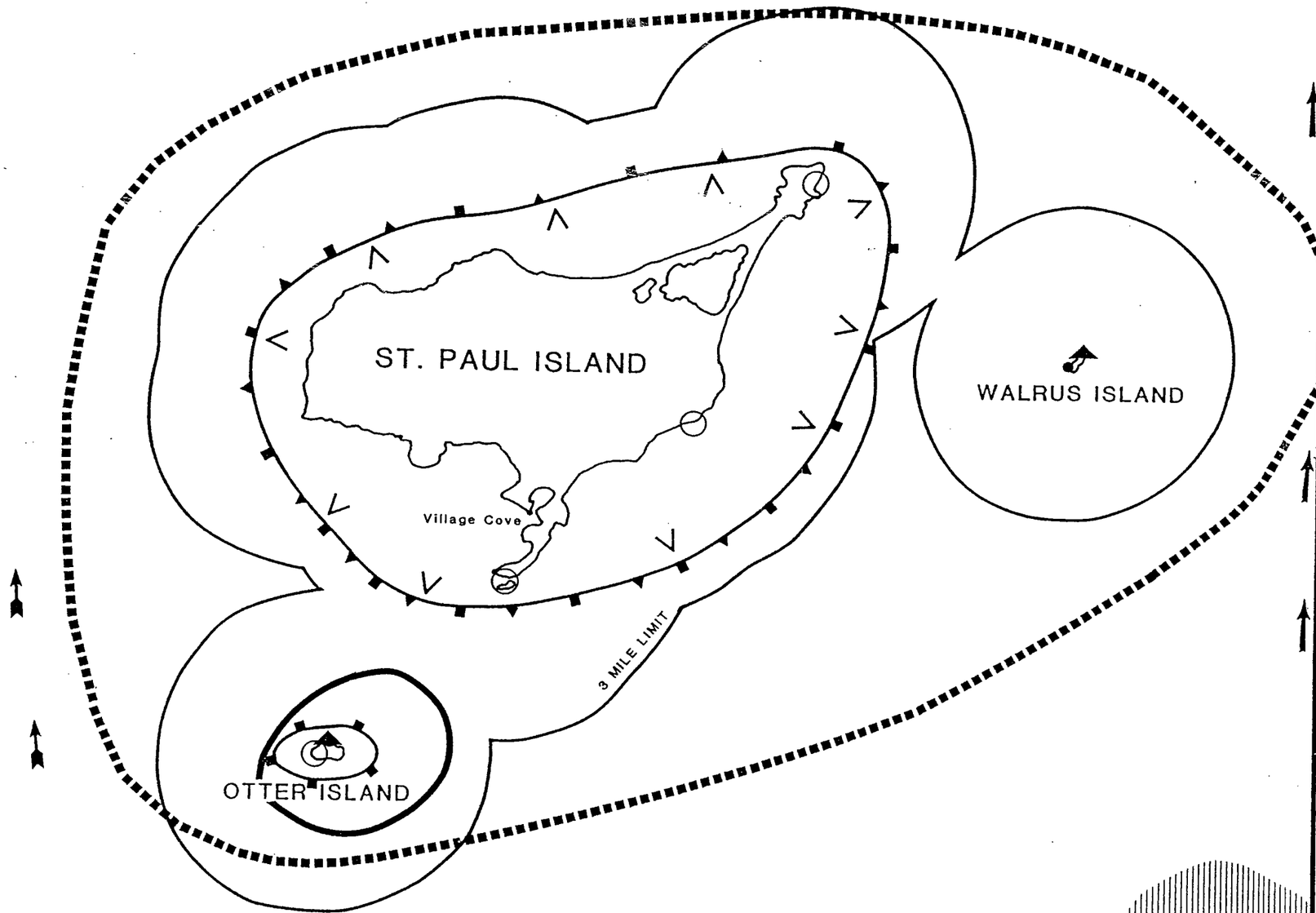


Figure 5. Movement paths of northern fur seal females on foraging trips during July through October of 1995 and 1996. Yellow boxes indicate the proposed water disposal sites for dredge material from the St. Paul Harbor Improvements.



ST. PAUL ISLAND
Coastal District

Figure 6
HABITAT AREAS

Legend*

- Individual seabird colony
- Group of seabird colonies
- General distribution of ducks
- General distribution of geese
- Walrus abundance area during spring; unpopulated sea otter habitat area; primary feeding habitat, fur seal.
- Sea Lion haul out
- Sea Lion rookery
- Probable spring–summer migration route of fin, humpback whale
- Secondary spring migration route of gray whale
- Area of frequent summer use by gray whale
- Harbor Seal, major haul out and breeding area

* Refer to Figure 14 for specific areas on St. Paul Island.

0 1 2 3 4 5
SCALE IN MILES

True North
Mag. North

KIRKWOOD & ASSOCIATES

The preparation of this document was financed in part by funds from the Alaska Coastal Management Program which is funded by the State of Alaska and the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce; and administered by the Department of Community and Regional Affairs, Municipal and Regional Assistance Division.

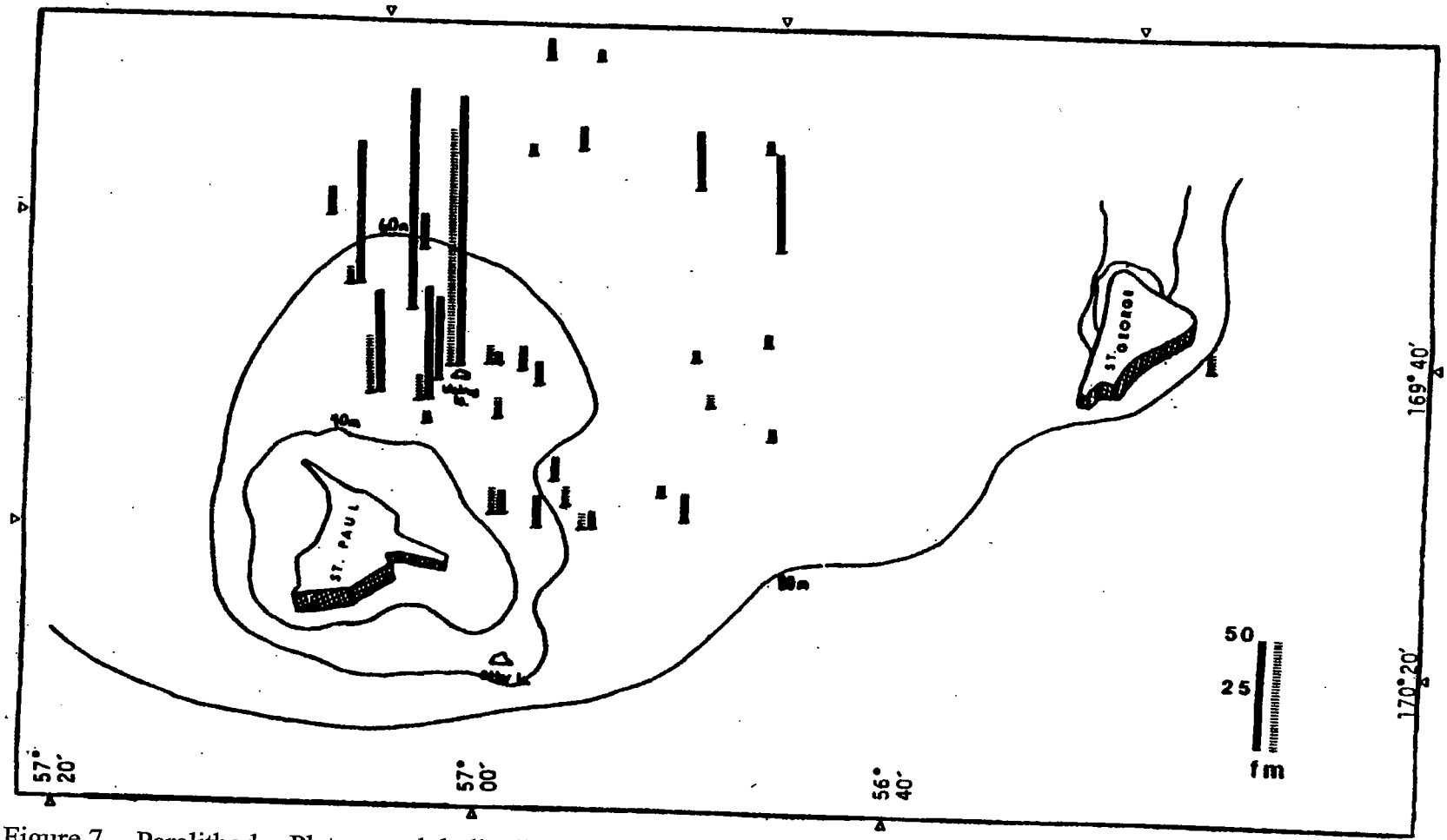


Figure 7. Paralithodes Platypus adult distribution and abundance, April 1984, expressed as number of crabs/hectare taken by beam trawls, females (solid bars) and males (striped bars) Source: Armstrong, D.A. Distribution, Abundance, and Biology of Blue King and Korean Hair Crabs around the Pribilof Islands, 1987

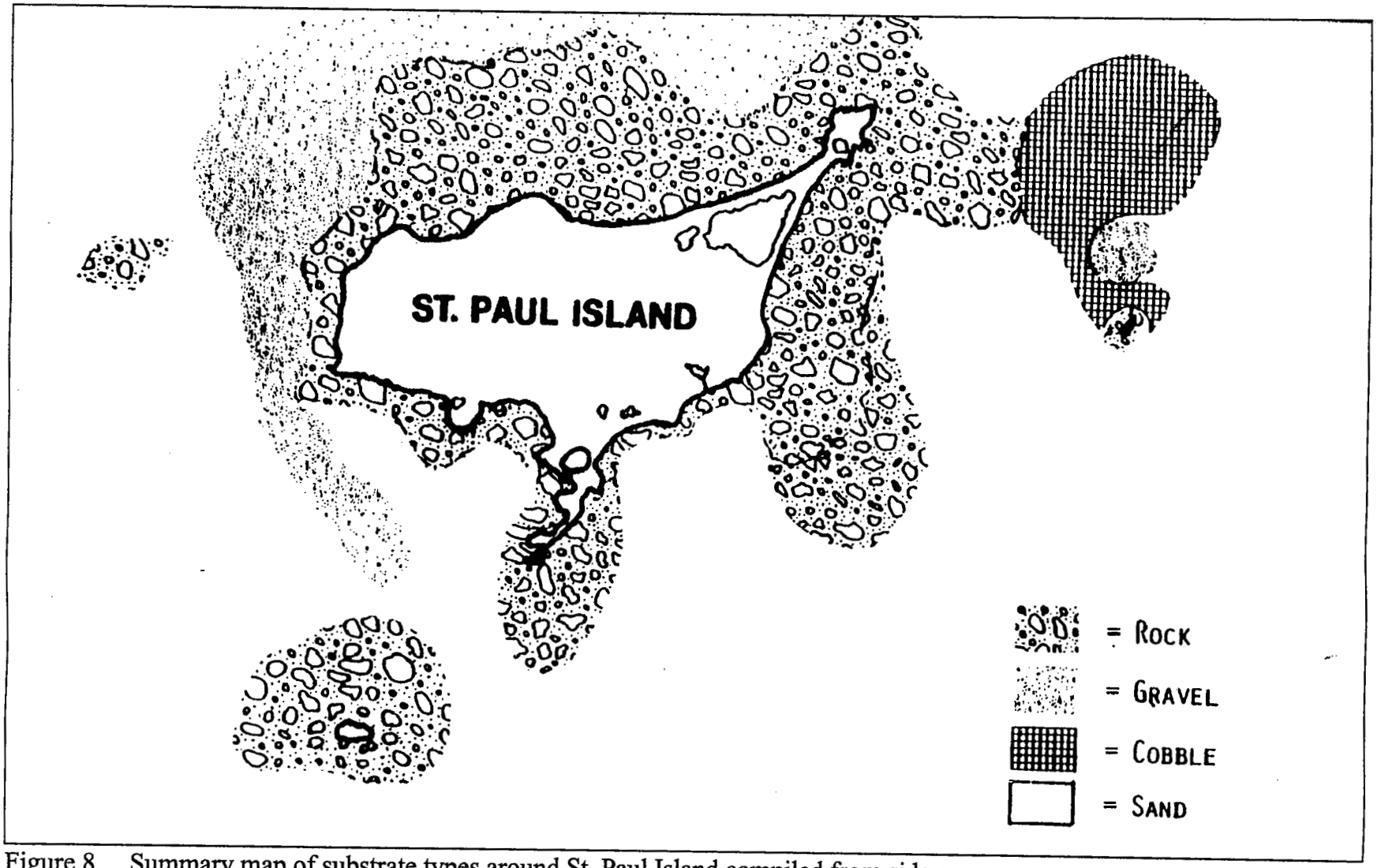


Figure 8. Summary map of substrate types around St. Paul Island compiled from side scan sonar, Shipek grabs, and rock dredge data. Source: Armstrong, D. A. Distribution, Abundance, and Biology of Blue King and Korean Hair Crabs around the Pribilof Islands, 1987

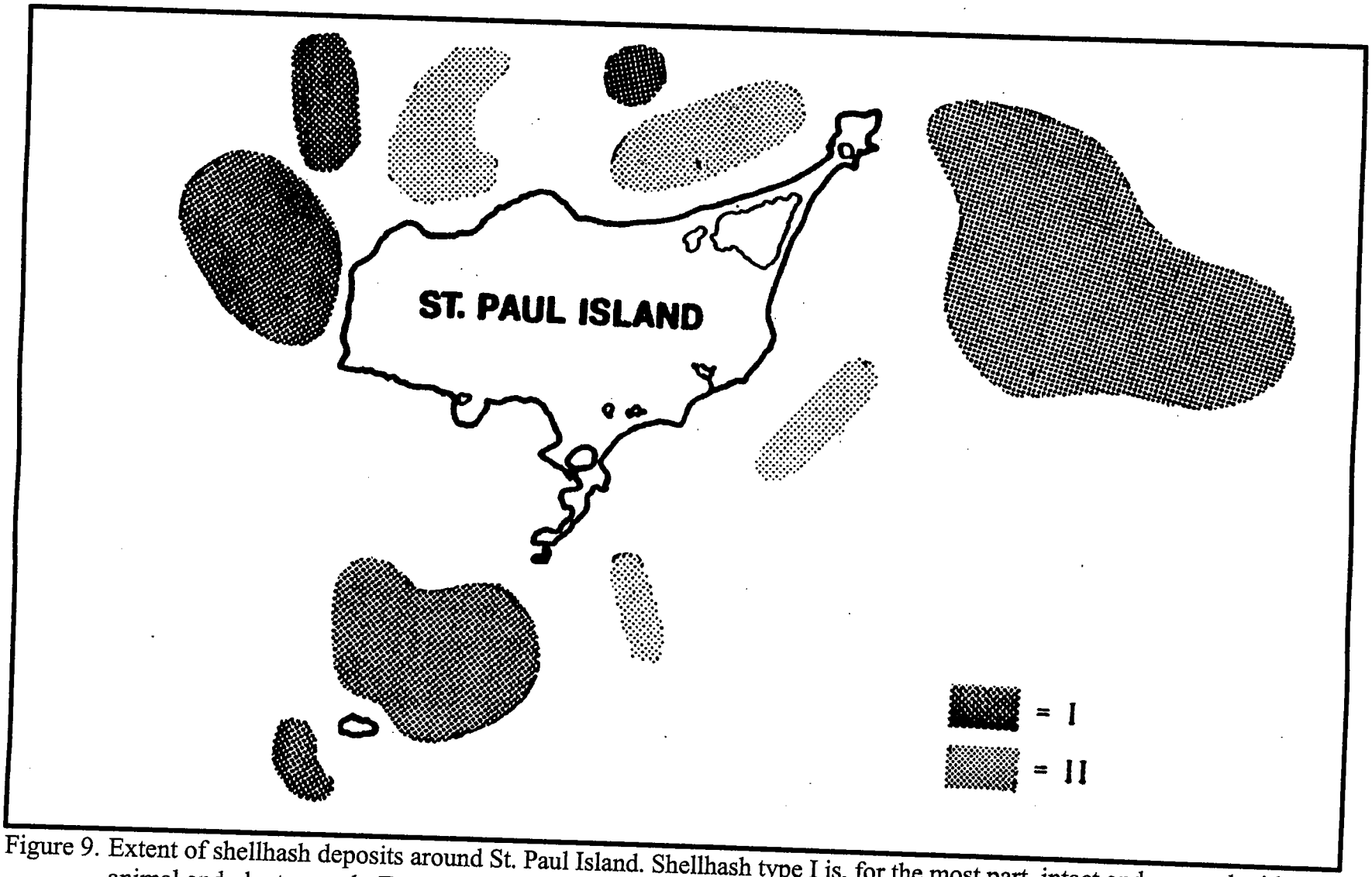


Figure 9. Extent of shellhash deposits around St. Paul Island. Shellhash type I is, for the most part, intact and covered with animal and plant growth. Type II is pulverized shellhash, very small pieces, with no epiphytic covering; typifies areas of low invertevrate numbers and biomass. Source: Distribution, Abundance, and Biology of Blue King and Korean Hair Crabs around the Pribilof Islands, 1987

Islands (figure 10). The St. Paul Coastal Management Plan restricts dumping within the 3-mile offshore zone.

Various sites offshore of St. Paul Island were investigated in this study. Two of the deep-water areas (sites 1 and 3) were explored by a remotely operated submersible video camera. One-square-mile areas were selected on a NOAA nautical chart. Each corner of the site and the middle of the site were filmed and substrate types and biota were observed. A bottom sampler retrieved sediment for use in gradation analyses (tables 1 and 2). Only two sites were explored due to equipment failures. The observations made at these two sites appear to confirm the typically rocky habitat around the islands. Uniform sand was only found in the area between St. Paul and St. George islands. There is also a correspondence between depth of water and grain size. The lower grain size or phi values were found deeper than 80 meters (44 fathoms).

The following are factors that influenced the final siting of the disposal site:

1. In comparison to upland disposal and the costs associated with double handling the material and real estate acquisition costs, ocean disposal was more economical. Upland disposal site availability is severely limited.
2. The type of dredging and disposal require clamshell dredge and oceangoing barge.
3. Navigation in the Bering Sea can be severe. The presence of an ice pack in the winter restricts dredging and disposal to the ice-free months.
4. There is a 3-mile restricted use area under the St. Paul Island Coastal Management Program.
5. The edge of the continental shelf is beyond the ZSF.
6. The dredged material is similar to the substrate at the disposal site. The dredged material is not contaminated and nuisance species are not present.
7. Geography surrounding St. Paul Island in the Bering Sea was uniform and did not present a limiting siting factor except for travel distances.
8. No existing water disposal sites are in the area.
9. The living resources surrounding St. Paul Island were the most limiting factors, as discussed above.

SITE SELECTION AND ANALYSES

Given the very limiting factors displayed in the above figures, selection of the final site became clear. Site 5A is outside the fishing zones and far enough from the island to avoid conflicts with the fur seal and juvenile crab habitat. Site 5A, the selected site, is approximately 10 nautical miles or 18.5 kilometers from the north shore of St. Paul Island. The western half of the site is further delineated as a less traveled seal foraging pathway.

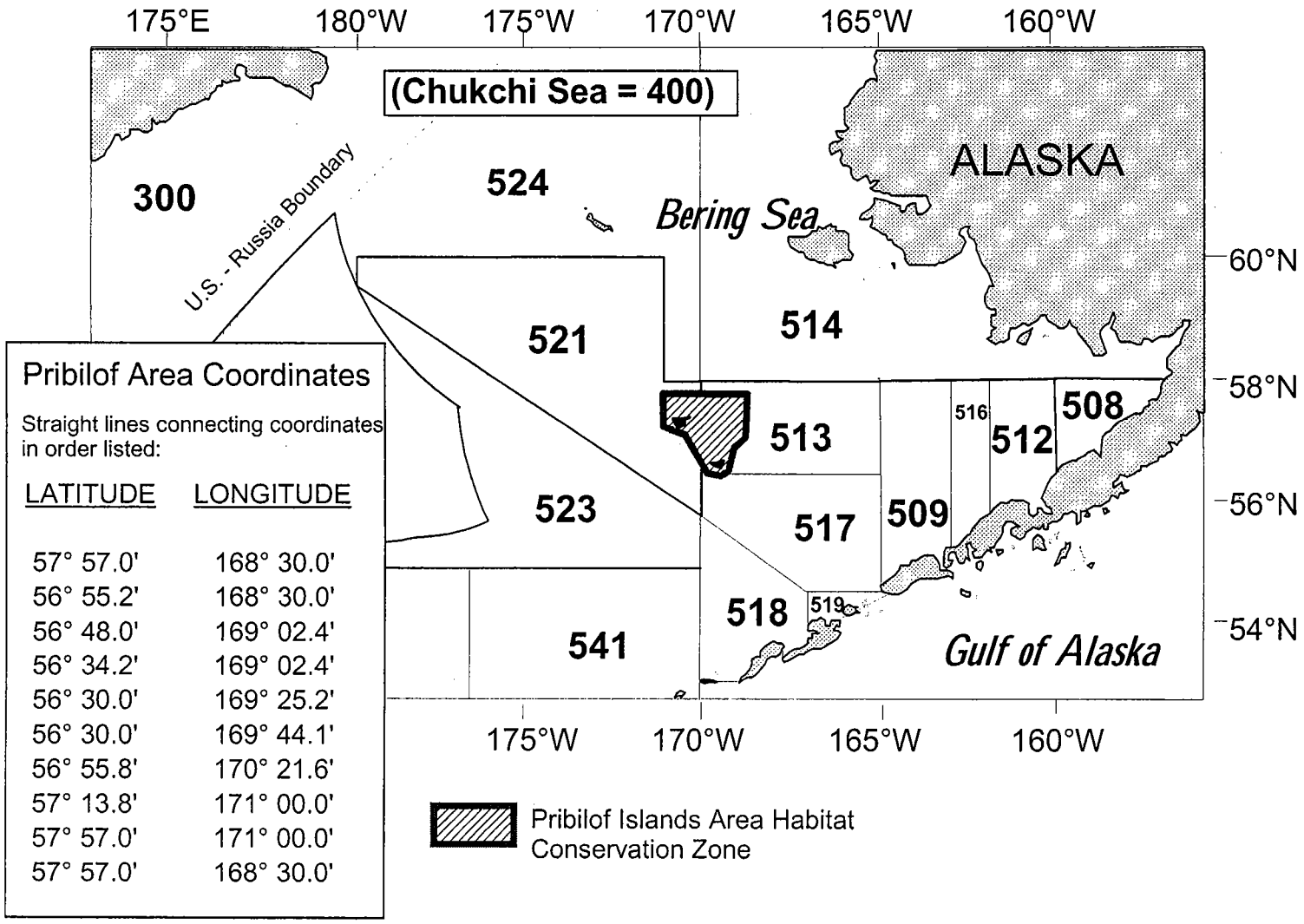


Figure 10 Pribilof Islands Area Habitat Conservation Zone in the Bering Sea

Client: U.S. Army Corp of Engineers

Project: Ocean Disposal Sites St. Paul

Location: OOSTPM01SD, Sta 1

Submitted by Client

PARTICLE-SIZE

DIST. ASTM D422

W.O. A28853

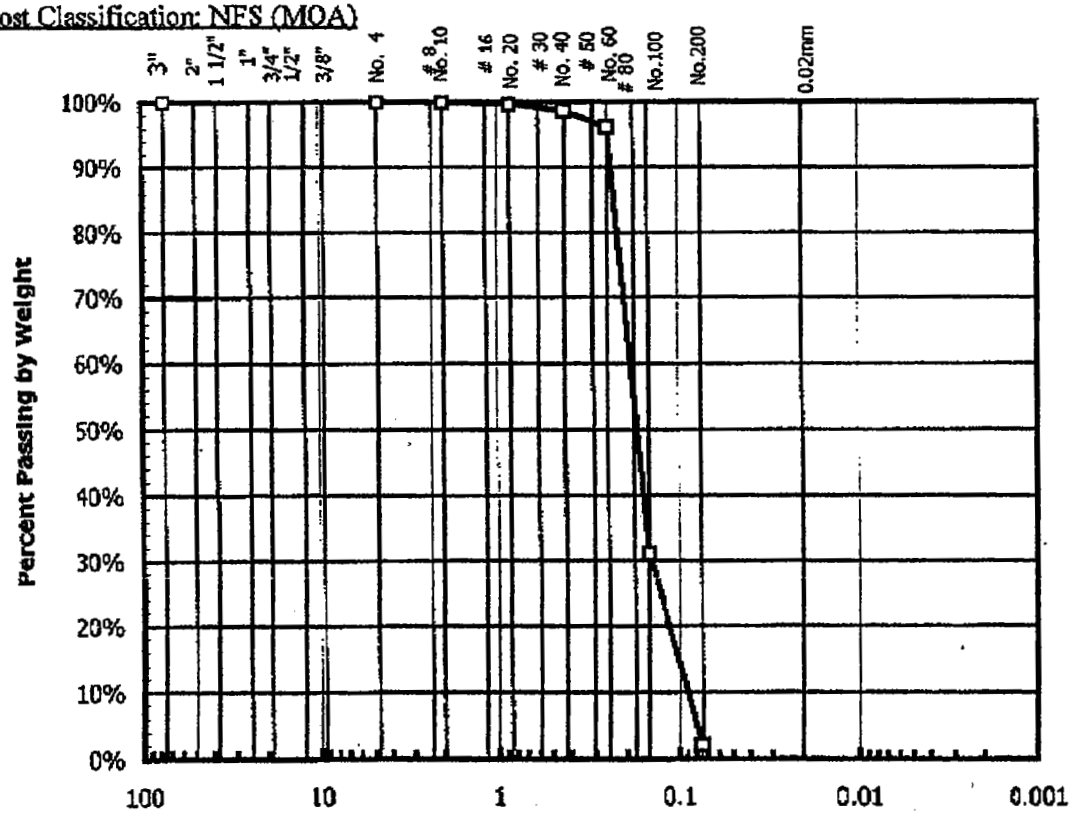
Lab No. 880

Received: 6/19/00

Reported: 6/21/00

Engineering Classification: Poorly Graded SAND , SP

Frost Classification: NFS (MOA)



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
No. 4	100%	
Total Wt. = 310.5g.		
No. 8		
No. 10	100%	
No. 16		
No. 20	100%	
No. 30		
No. 40	99%	
No. 50		
No. 60	96%	
No. 80		
No. 100	31%	
No. 200	2.1%	
Total Wt. of Fine Fraction = 310.5g		
0.02 mm		

David L. Andersen, P.E., General Manager

Client: U.S. Army Corp of Engineers

Project: Ocean Disposal Sites St. Paul

Location: OOSTPM02SD, Site 3

Submitted by Client

PARTICLE-SIZE

DIST. ASTM D422

W.O. A28853

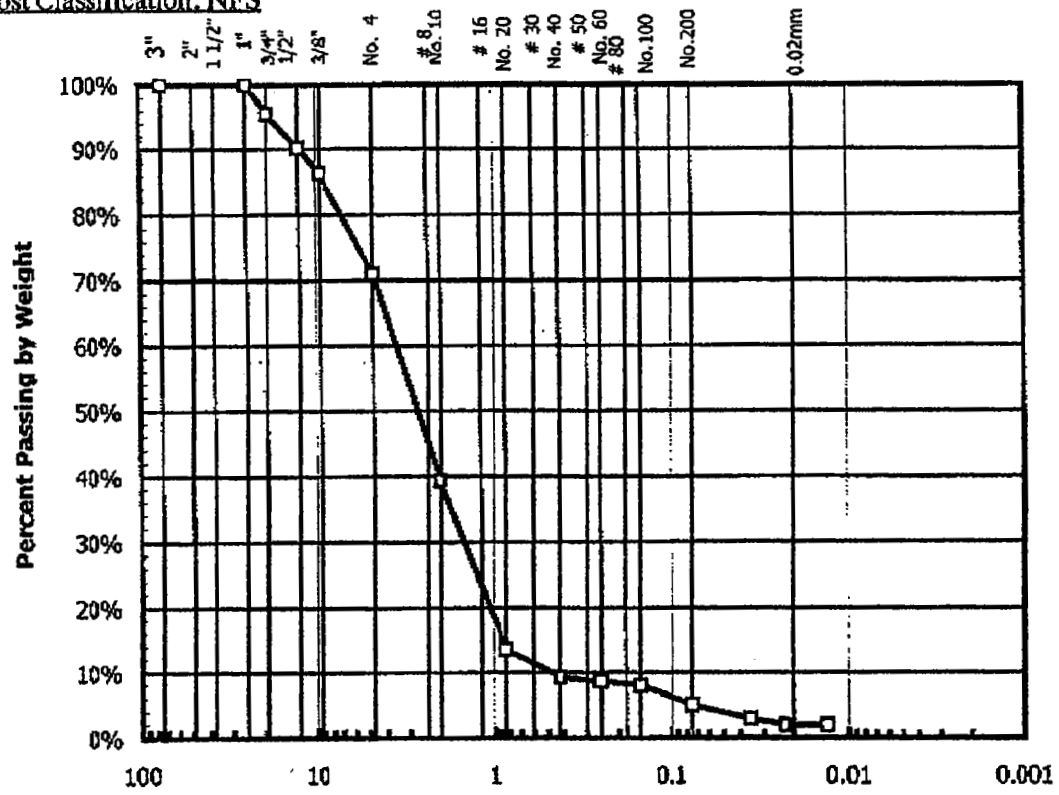
Lab No. 881

Received: 6/19/00

Reported: 6/21/00

Engineering Classification: Well Graded SAND with Silt and Gravel, SW-SM

Frost Classification: NFS



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"		
1 1/2"		
1"	100%	
3/4"	96%	
1/2"	90%	
3/8"	86%	
No. 4	71%	
Total Wt. = 1015g		
No. 8		
No. 10	39%	
No. 16		
No. 20	14%	
No. 30		
No. 40	9%	
No. 50		
No. 60	9%	
No. 80		
No. 100	8%	
No. 200	5%	
Total Wt. of Fine Fraction = 349.9g		
0.02 mm	1.9%	

David L. Andersen, P.E., General Manager

Disposal Plan Alternatives

Mounding the dredged material in one spot would affect the smallest acreage of sea bottom. The amount of sea bottom impact is dependent on the amount of deposition. 400,000 yd^3 of dredged material mounded at approximately the same location would cover 4.5 acres of sea bottom with a mound height of approximately 180 feet at the apex of the mound. This apex would be approximately 10 feet below the surface possibly creating a navigation hazard. The mound also would be less stable. Lower deposition heights scatter the dredged material over a wider area as seen in table 3.

Table 3. Deposition and seabed coverage of alternative disposal options at the Disposal Site

Deposition (feet)	Seabed (acre)
10	30
20	15
50	6
180	4.5

Larger grained materials are less likely to become significantly dispersed during and after disposal. Bottom currents would gradually move the sand. A small percentage of fines would create a plume and would be carried in the water column. Overtime, the mounds would diminish leaving the boulders. Deposition of dredged material, no matter what height, would cause an adverse affect on the benthos. Limiting bottom effects would mean higher mounding; however, a mound too high would cause navigation hazards. The compromise is to create a rock ledge interspersed with sand of moderately higher relief from the surrounding terrain that could be recolonized by benthos and used by fish. Therefore, the preferred deposition height is 20 feet covering 15 acres.

The volume of dredged material would require an estimated 200 barge loads to dispose of the material. The location of the disposal site has an estimated travel distance of 1 day per trip. The roughly 200 plus days of effort require a May through August work season for two seasons.

Evaluation of Selected Site

EPA regulations require the evaluation of ocean disposal sites based on 11 specific criteria and 5 general criteria as shown in 40 CFR 228.5 and 228.6.

Specific Criteria (40 CFR 228.6)

1. Geographic Location. The Pribilof Islands are located on the outer Eastern Bering Shelf. St. Paul Island is 81 nautical miles (150 km) from the shelf break. Site 5A is

approximately 10 nautical miles (18.5 km) off the north shore of St. Paul Island at a depth of 32 fathoms (58 meters). The disposal mound is suggested to be 20 feet high covering 15 acres of sea bottom.

2. Distance from Important Living Resources. Site-specific bottom surveys were not conducted for the selected site 5A. Surveys west of the island in similar depths and distance from shore (sites 1 and 3) were conducted and provide general information for site characterization at site 5A. Additional information was derived from trawl surveys and bottom side-scan sonar studies (Armstrong et al., Outer Continental Shelf Studies 1990). The north side of the island, as indicated by sonar studies, has a high incidence of rock substrate interspersed with cobble/gravel/sand and shell hash. The bottom elevation also is fairly uniform as indicated by the NOAA chart of the area. Epibenthic fauna associated with this type of bottom substrate are filter feeders and predatory organisms such as sea pens, borrowing anemones, tunicates, gastropods (fusitritons, neptunia, moon snails), hermit crabs, and starfish. Foraging fish include flatfish, sturgeon poacher, Pacific cod, and shrimp species. A small dredge was used to collect substrate types from the two sites investigated. The one matrix of several samples was classified as poorly graded sand and another matrix was classified as well graded sand with silt and gravel. Shell hash was also part of the sample.

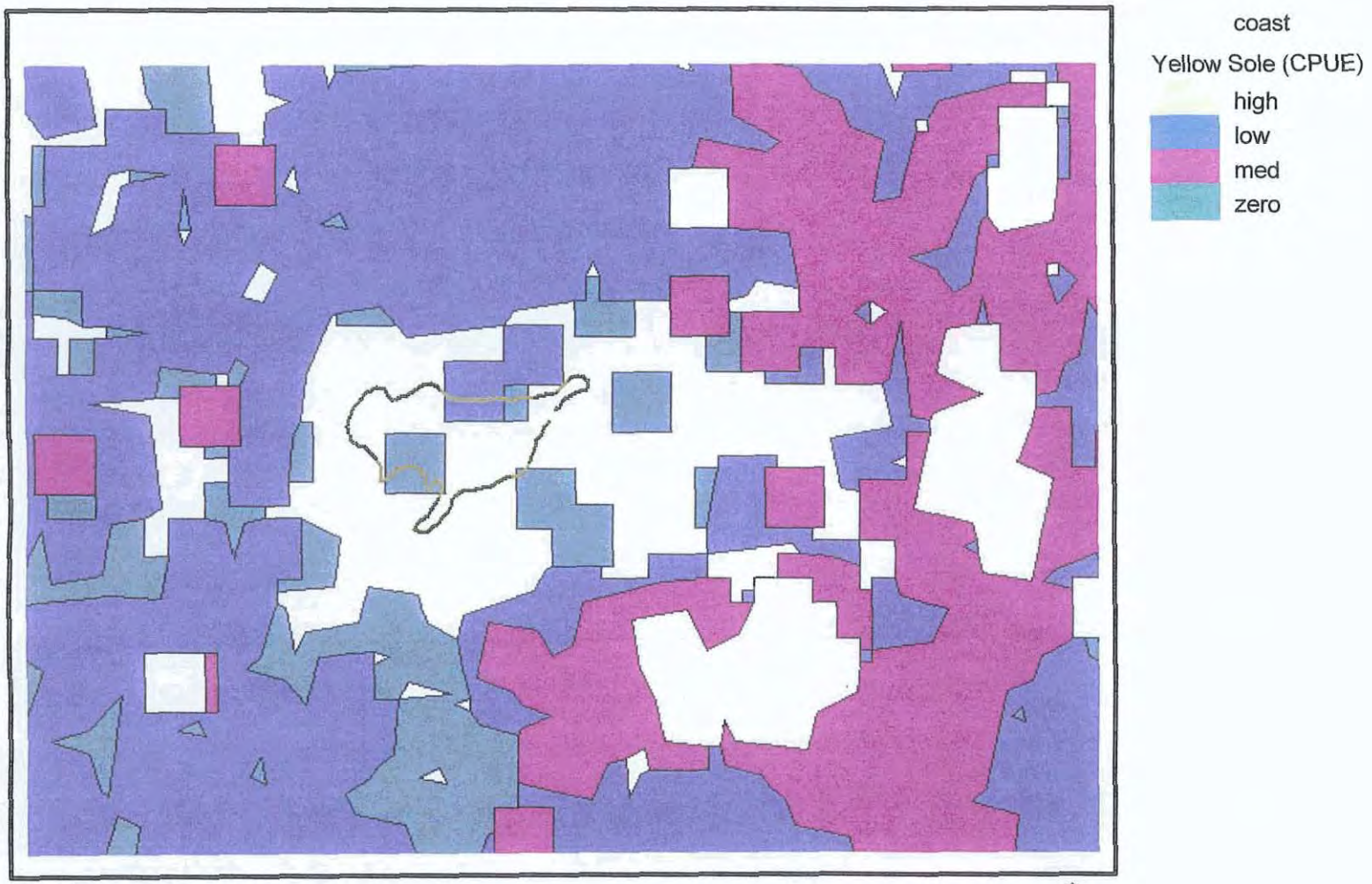
The Pribilof shelf area is noted for its high biomass of commercially exploited bottom fish, tanner crab, blue king crab, and shrimp. The area around the Pribilofs is unique for the high production and biomass of zooplankton. Seabird colonies and aggregations of Northern fur seals are ranked among the largest in the Northern hemisphere. These animals exploit the marine ecosystem foraging within 30 to 50 kilometers (16 to 27 miles) of either island. Habitat within 15 kilometers (8 miles) of shore in shell hash with epifauna was considered very productive for juvenile king crab and Korean hair crab. They need this type of habitat for refuge from predators, and they also seek prey that attaches to hard bottoms. Adult crab aggregations are generally in deeper water beyond the 60-meter isobath (33 fathoms), preferring sand/mud bottom habitat. During the spring king crab migrate toward shore to spawn. Tanner crabs were associated more with a predominantly sandy bottom (Armstrong et al., Outer Continental Shelf Studies, 1990).

Abundant stocks of commercially exploited groundfish are in the Eastern Bering Sea. Trawl studies indicate the relative abundance in catch per unit effort (CPUE) around the Pribilof Islands for certain species. Concentrations of yellowfin sole and rock sole species were examined in CPUE around St. Paul Island (figures 11 and 12). In general, there is a wide distribution over the continental shelf with no specific concentrations around the Pribilofs.

Dredged material disposed of in a deep ocean site would be less likely to disperse over time than disposal a littoral zone site. The disposal mound would be recolonized and provide reef habitat for fish. The type of bottom substrate at the disposal site would have a mix of substrate types similar to the dredged material. Crab and

ESRI ArcExplorer 2.0

Map Title Yellowfin sole CPUE St. Paul Island area



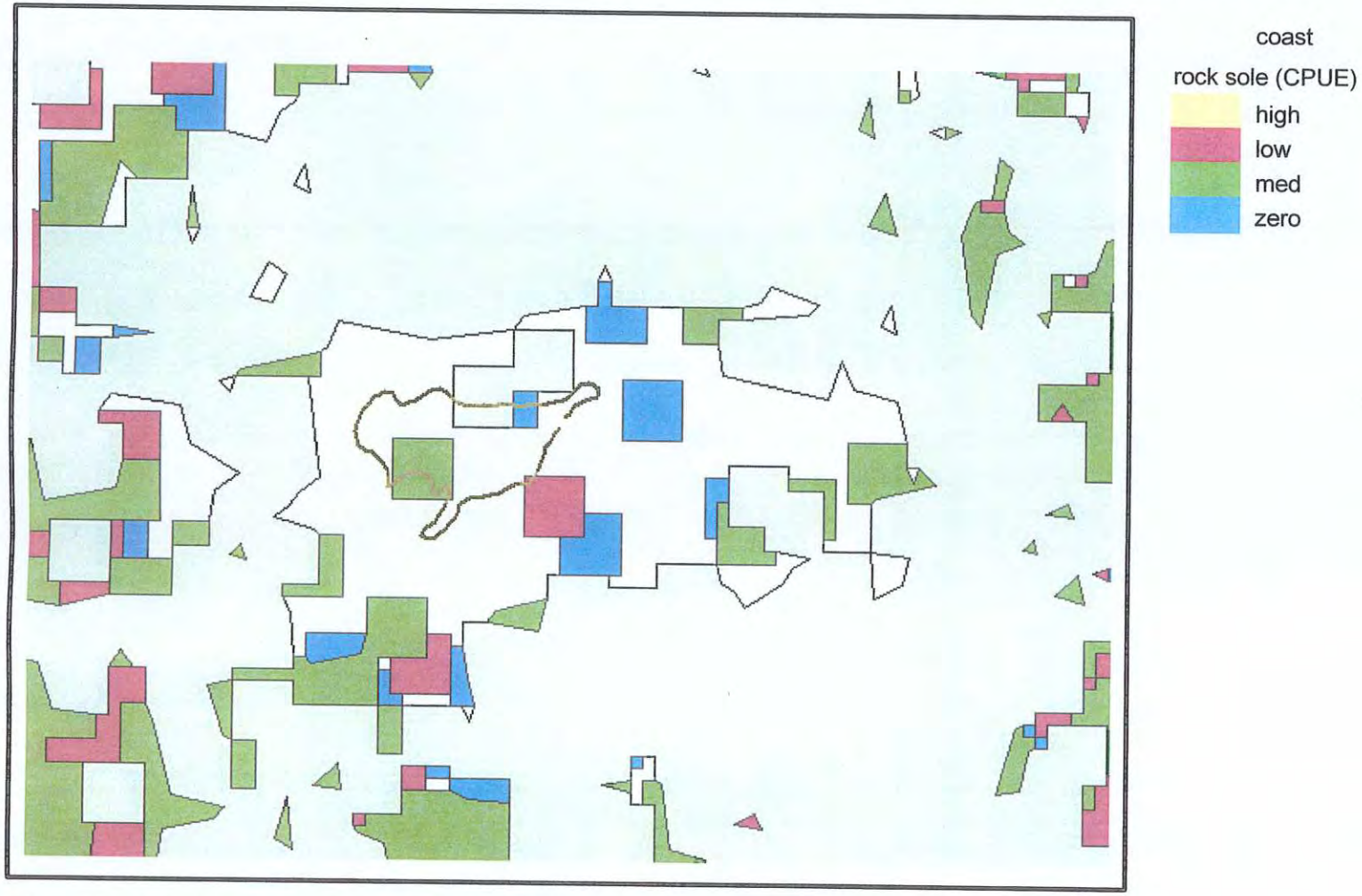
Source: http://www.afsc.noaa.gov/publications/techmemos.htm

Figure 11

#88 Fritz, L.W., A. Greig, and R.F. Reuter 1998. Catch-per-unit-effort, length, and depth distributions of major groundfish and bycatch species in Bering Sea, Aleutians Islands, and Gulf of Alaska regions based on groundfish fishery observer data. NTIS No. PB98-139298.

ESRI ArcExplorer 2.0

Map Title Rock sole CPUE in the St. Paul Island area



Source: http://www.afsc.noaa.gov/publications/techmemos.htm

#88 Fritz, L.W., A. Greig, and R.F. Reuter 1998. Catch-per-unit-effort, length, and depth distributions of major groundfish and bycatch species in Bering Sea, Aleutians Islands, and Gulf of Alaska regions based on groundfish fishery observer data. NTIS No. PB98-139298.

Figure 12

bottomfish are in a constant state of motion and would unlikely be significantly affected by a disposal action except for being directly buried.

Essential Fish Habitat (EFH). Surveys conducted to determine EFH zones (NMFS 1999) have shown that, in general, the inner shelf around the disposal site provides mating and molting habitat for the red and blue king crab and the tanner and snow crab. Several species of adult and juvenile groundfish occur in the area including walleye pollock, Pacific cod, yellowfin sole, Greenland turbot, arrowtooth flounder, rock sole, Alaska plaice, and flathead sole. Sculpins and skates also occur in the area.

Threatened and Endangered Species. Several species of great whales listed under the Endangered Species Act occur in the Bering Sea including blue, fin, right, bowhead, sei, sperm, and humpback All these species could be in the general area during the disposal activity. Whales could be encountered during disposal activities; however, disposal would be halted temporarily if whales came into the area. The endangered Steller sea lion is also present in the area. They breed on Walrus Island and haul out on St. Paul Island and Sea Lion Rock during the summer months. The closest haulout is on North East point on St. Paul Island. The disposal activity is not likely to adversely affect the whales or sea lions.

3. Distance from Beaches. Site 5A is located 10 nautical miles from the north shore of St. Paul Island. Onshore transport of the dredged material after disposal is not likely because of the distance from shore and the type of material.

4. Types and Quantities of Material to be Disposed. There are several types of material to be dredged for the harbor project. These are surface sediments composed of coarse sand, gravels and cobbles. The deeper material is composed of sand, gravel, cobbles, and boulders. The quantity of material requiring disposal is estimated at 400,000 yd^3. The percentage of boulders in this mix is approximately 50 percent. Dredged material would be transported by tug and barge. Each barge load is approximately 2,300 yd^3 cubic yards. Approximately 200 barge trips would be required.

5. Feasibility of Surveillance and Monitoring. The one event disposal action would not require surveillance or monitoring. The distant location from the island and the depth of disposal would make surveillance and monitoring unnecessary.

6. Disposal, Horizontal Transport, and Vertical Mixing Characteristics of the Area. St. Paul Island is within the middle shelf domain of the Bering Sea shelf. The middle domain or shelf, located between 50 and 100-meter isobaths, tends to be a strongly stratified two-layered structure in summer, but nearly homogenous in winter due to the vertical separation of the tidal and wind mixing and due to seasonal buoyancy input isolation and/or icemelt). The middle domain is separated from the adjacent outer domain by a weak front located in the vicinity of the 100-meter isobath in a region where the slope of the shelf deepens. The 100-meter isobath is close to the Pribilof Islands. The middle shelf has little mean current flow except near the fronts.

There are wind driven pulses but the lack of mean flow along the strong seasonal pycnocline allows the retention of the cold bottom layer through out the summer (Niebauer, in Minerals Management Service, 1987).

The fine sand component (approximately 15 percent) of the dredged material may disperse during disposal. The larger grained material would settle rapidly to the bottom with no persistent turbidity plumes. It is expected that the sand component of the dredged material would be dispersed on the bottom over time. Mounding of the boulders would persist.

Water column effects would be minor because of the large-grained material type. Sands/gravels/cobbles, boulders would quickly sink to the bottom. Minimal turbidity would result from this type of material. For example, the travel velocity in water for sand is 15 minutes in 15 fathoms of water. Gravel, cobbles, and boulders velocity rates are 3, 1.5, and 0.5 minutes respectively. Impacts to foraging seals and birds would be minimal. Bottomfish and pelagic fish species would be expected to swim out of the way of the disposal plume. No gill abrasion from suspended sediments would occur.

7. Effects of Previous Disposal. No previous disposals have occurred.

8. Interference with other Uses of the Ocean. There are no effects to commercial or recreational uses of the area.

9. Existing Water Quality and Ecology. The disposal site is a remote location. No pollution sources exist in this area of the ocean. There would be no significant contaminants in the dredged material. Petroleum spills have occurred near the salt lagoon and would be cleaned up and disposed of in an upland location. Residual petroleum in the dredged material is not expected to be significant given the low percentage of fines in the dredged material. Water quality standards would not be exceeded by the disposal action or use of the disposal site. Local monitoring of the dredging and disposal action has been recommended by the NMFS. Dredged material would not affect beaches, marine sanctuaries, shell fisheries, or other sensitive areas.

10. Potentiality of the Development or Recruitment of Nuisance Species in the Disposal Site. The dredged material is free of organic material.

11. Existence of Significant Natural or Cultural Features. No known significant natural or cultural features would be affected by the proposed disposal actions.

General Criteria (40 CFR 228.5)

1. Minimal Interference with Other Activities. The location of the ocean disposal site is based upon reasonable distance from the dredging site, depth of water, distance

from fur seal foraging areas, juvenile crab habitat, and lack of conflict with navigation and commercial or recreational fishing.

2. Minimize Change in Water Quality. The material to be disposed of consists of clean sand, gravel, cobbles, and boulders. The material would rapidly reach the bottom causing minimal dispersal or plume. Water quality perturbations or other environmental conditions during initial mixing caused by disposal operations anywhere within the site can be expected to be reduced to normal ambient seawater levels before reaching any beach, shoreline, marine sanctuary, or known geographically limited fishery or shell-fishery.

3. Interim Sites that do not Meet Criteria. No interim sites exist. This is a one-event disposal activity.

4. Size of Sites. The proposed disposal site has been delineated utilizing the smallest practicable limits necessary to meet the space needs for the given volume of disposal material. The central mounded disposal plan would allow for monitoring, if determined applicable, and limit the area of immediate adverse impacts. The potential for beneficial effect of an artificial reef also exists. The dispersion potential is low especially of the boulders.

5. Sites off the Continental Shelf. Disposal sites off the continental shelf from St. Paul Island would be operationally and economically infeasible. The operational and economic distance was judged to be one day barge travel or 40 nautical miles from the dredge site. This was also partly due to the large volume of material and the short dredging season.

ENVIRONMENTAL IMPACT

The criteria for evaluating environmental impacts (40 CFR part 227, subpart B) have been determined applicable to the proposed action. The environmental impact prohibitions, limits, and conditions have been satisfied; therefore, it is determined that the proposed disposal will not unduly degrade or endanger the marine environment and that the disposal will present:

a. No unacceptable adverse effects on human health and no significant damage to the resources of the marine environment;
b. No unacceptable adverse effect on the marine ecosystem;
c. No unacceptable adverse persistent or permanent effects due to the dumping of the particular volumes or concentrations of dredged materials; and
d. No unacceptable adverse effect on the ocean for other uses as a result of direct environmental impact.

IMPACT OF THE PROPOSED DISPOSAL ON ESTHETIC, RECREATIONAL AND ECONOMIC VALUES

As per Subpart 227.18 the following specific factors were considered in assessing he potential for impacts on the esthetic, recreational, and economic values of the proposed disposal site.

a. Recreational and Commercial use of Areas. Short-term relocation of finfish in the area would occur. Benthic organisms that are prey species for crab and finfish would be buried and the habitat altered to rock reef habitat. Subsistence, recreational or commercial fishing do not occur in this area.
b. Existing Water Quality. Ambient water quality would experience temporary turbidity during disposal.
c. Applicable Water Quality Standards Promulgated by State of Alaska, Department of Environmental Conservation beyond a reasonable mixing zone would not be exceeded.
d. Visible Characteristics and Esthetic nuisances. The proposed disposal would not result in any unacceptable esthetic nuisances to local recreational areas.
e. Pathogenic Organisms. The dredged material is not known to contain any pathogenic organisms.
f. Toxic Chemical Constituents. The dredged material does not contain any toxic chemical constituents that would be released in volumes sufficient to affect humans directly.
g. Bioaccumulated or Persistent Chemical Constituents. The dredged material is not known to contain chemical constituents that may be bioaccumulated or persistent and may have an adverse affect on humans directly or through food chain interactions.
h. Constituents Affecting Marine resources. The dredged material is not known to contain significant chemical constituents that might significantly affect living marine resources of recreational or commercial value.

Based upon the physical components of the dredged material and the likely composition of the substrate type at the disposal site, no significant long-term impacts are expected to occur as a result of project implementation.

IMPACT OF THE PROPOSAL ON OTHER USES OF THE OCEAN

No significant impacts are anticipated on other known uses of the ocean such as commercial or recreational fishing in open ocean, coastal and estuarine areas; commercial and recreational navigation; actual or anticipated exploitation of living marine resources; actual or anticipated exploitation of non-living resources, including sand and gravel and other mineral deposits, oil and gas exploration, or structural development; and scientific research and study. The single use of the disposal site for 400,000 yd^3 of dredged material from a shallow subtidal environment to a deep-water disposal site would not cause any irreversible or irretrievable commitments of resources.

DETERMINATIONS AND FINDINGS

The material to be dredged has been evaluated according to the criteria in 40 CFR 227 (b) and determined to be suitable for ocean disposal. The ocean disposal site has been evaluated using the criteria specified in 40 CFR 228.5 and 228.6 and determined to be suitable for the disposal of material dredged from the St. Paul Harbor Improvement Project.

On the basis of this evaluation, the proposed action is acceptable under the provisions of Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972.

REFERENCES

Alaska District Corps of Engineers. 1981. Harbor Feasibility Report and Environmental Impact Statement St. Paul Island, Alaska.

_____1996. Harbor Improvements, Draft Interim Feasibility Report and Environmental Assessment, St. Paul, Alaska.

Armstrong, D.A., J.L. Armstrong, G. Jensen, R. Palacios, and G. Williams. *Distribution, abundance, and biology of blue king crab and Korean hair crabs around the Pribilof Islands,* in U.S. Depts. of Commerce and Interior, 1990. Outer Continental Shelf Environmental Assessment Program Final Reports of Principal Investigators Volume 67, U.S. Dept. of Commerce, NOAA-OMA-OAD, Anchorage, Alaska.

Kirkwood & Associates. 1987. Saint Paul Coastal Management Plan Resource Inventory and Analysis, Alaska Department of Community and Regional Affairs.

Niebauer, Joseph H. 1987. *Dynamics of the Southeastern Bering Sea Oceanographic Environment,* in Forage Fishes of the Southeastern Bering Sea Conference Proceedings U.S. Dept. of Interior Mineral Management Service, Outer Continental Shelf Study 87-0017, Alaska.

List of Figures

List of Tables

SECTION 103 EVALUATION
CORRESPONDENCE

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

Environmental Resources Section

Ms. Jeanne Hanson
National Marine Fisheries Service
222 West Seventh Avenue, Box 43
Anchorage, Alaska 99513-0077

Dear Ms. Hanson:

The Alaska District Corps of Engineers is preparing a Section 103 Evaluation under the Ocean Dumping Act for the disposal of dredged material to be dredged from the St. Paul Harbor Project (Harbor Improvements, Feasibility Report, Environmental Assessment and Finding of No Significant Impact, St. Paul, Alaska, May 1996). Additional material dredged from a separate small boat harbor project is also proposed to be disposed of into the water disposal site. The proposed quantities are described in enclosure 1. The dredged material is unconsolidated and is composed of a heterogeneous mix of cobbles and boulders with some gravel and sand. The geotechnical investigation report enclosed 2 is provided for your information. No chemical characterization was conducted because a representative sample would contain primarily large-sized material in which contaminants would not be present. We have explored several alternative disposal sites, surveyed the local fishermen to determine subsistence fishing areas, and coordinated with your office to determine suitable areas to avoid fur seal habitat. The one area that appears to avoid fur seal and fishing zones is on the north side of the island ;approximately 10 miles offshore in 32 fathoms of water enclosure 3. The action would be a one-time disposal of the dredged material.

We request your assistance in identifying potential environmental impacts the proposed disposal action might cause, and we request information under Section 7 of the Endangered Species Act and the Marine Mammal Protection Act.

We are also requesting preliminary recommendations you may have concerning essential fish habitat (EFH) to be considered in our evaluation of the described work. Preliminarily, the Corps has determined the described activity may adversely effect EFH. Several species of groundfish (adults and juveniles) occur in the area north of St. Paul Island including walleye pollock, Pacific cod, yellowfin sole, Greenland turbot, arrowtooth flounder, rock sole, Alaska plaice, flathead sole, skulpins, and skates. Crab species that may use the inshore shallow habitat for molting and mating are the red and blue king crab, and the tanner and snow crab. This letter initiates the EFH consultation requirements of the Magnuson Stevens Fishery Conservation and Management Act.

Please contact Ms. Lizette Boyer of the Environmental Resources Section at 753-2637 if you need more information.

Sincerely,

Guy R. McConnell
Chief, Environmental Resources Section

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

DEC - 4 2000

Environmental Resources Section

Mr. Dave Cormany
National Marine Fisheries Service
222 West Seventh Avenue, Box 43
Anchorage, Alaska 99513-0077

Dear Mr. Cormany:

We have been seeking consensus on a water disposal site for the dredged material that will be produced from the St. Paul Harbor Improvements. We surveyed several offshore sites west of the island. There were several other sites under consideration that were not surveyed, figure 1. Information from the Central Bering Sea Fishermen's Association indicates fishermen would accept site number 1 and possibly 4 but could not accept the other sites (sites 2 and 3) because they were located in fishing areas. In conversation with Mr. John Burns of our office you indicated that the alternative sites 1 through 4 were not acceptable because of potential conflicts with foraging fur seals. Please detail your concerns and whether monitoring or methods could be effective to minimize the effects for site acceptability.

Site 5 at the north side of the island was suggested as an acceptable disposal location because no seal rookeries were in the general vicinity. This area also is noted on the NOAA chart to have sand and boulder bottom substrate. We asked the Central Bering Sea Fishermen's Association to give an assessment of site 5. The response from the polled fishermen indicated that the nearshore area was a fishing site for halibut but a site further offshore as indicated on figure 2 would be an acceptable site. We would like your opinion on this location.

For more information please contact Ms. Lizette Boyer of the Environmental Resources Section at 753-2637.

Sincerely,

Guy R. McConnell
Chief, Environmental Resources Section

Enclosures

W170°

N57°

CENTRAL BERING SEA FISHERMEN'S ASSOCIATION

Post Office Box 288 ▲ St. Paul Island, Alaska 99660 ▲ Phone (907) 546-2597 ▲ Fax (907) 546-2450

October 30, 2000

Ms. Lizette Boyer
US Army Engineering Department
PO Box 898
Anchorage, Alaska 99506

Dear Ms. Boyer;

I represent the Central Bering Sea Fishermen's Association (CBSFA) on St. Paul Island. CBSFA's membership includes virtually all of the local small boat owners; further, CBSFA has management responsibility for the local CDQ halibut fishery.

I have recently reviewed the at-sea disposal options for the St. Paul Harbor project as indicated on the attached map, provided by your office through Steve Minor.

Areas 2 & 3. The proposed sites labeled #2 and #3 on the enclosed map should be avoided. One is a current fishing area and the other is an area that was fished in recent years with some success.

I hope that this information helps move this important project forward.

Best Regards,

Phillip Lestenkof, President

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

NOV 16 2000

Environmental Resources Section

Mr. Philip Lestenkof
President, Central Bering Sea Fishermen's Association
P.O Box 288
St. Paul Island, Alaska 99660

Dear Mr. Lestenkof:

Thank-you for your letter of October 30, 2000, where you comment on the at-sea disposal alternatives for the St. Paul Harbor project. It appeared that site 1 was acceptable in terms of its bottom habitat and distance from fishing areas. However, the National Marine Fisheries Service (NMFS) voiced objections to this site because the Northern Fur seal may be affected by the dumping activities. NMFS had suggested that the proposed site on the north side of the island (site 5) would be a good site because of its distance from any rookery. I would appreciate it, if you could ask the St. Paul fishermen about their use of this area and if this may be an acceptable disposal site. The site was not specifically surveyed, but it appears from the nautical chart that the bottom habitat is boulders and sand, which is compatible with the disposal material. The 1-mile square area at site 5 indicated on the enclosed map could be moved approximately 1 mile north for better access by dump barges.

I would appreciate any further infomation you can furnish. A report will be prepared this winter. For more information, please call Ms. Lizette Boyer at 753-2637 or e-mail Lizette.P.Boyer@poa02usace.army.mil.

Sincerely,

for Guy R. McConnell
Chief, Environmental Resources Section

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services Anchorage
605 West 4th Avenue, Room 62
Anchorage, Alaska 99501-2249

WAES

Ms. Lizette Boyer
Environmental Resources Section
U.S. Army Engineer District
P. O. Box 898
Anchorage, Alaska 99506-0898

AUG -7 2000

Re: Saint Paul Harbor
Offshore Disposal Site

Dear Ms. Boyer:

We reviewed your letter dated June 29, 2000, regarding the Corps of Engineer's (Corps) proposal to dispose of material to be dredged during Phase II improvements to the harbor at Saint Paul Island. These materials would be generated from the deepening of the entrance channel and maneuvering area. Dredged materials would also be generated during the construction of a small boat harbor with mooring basin and entrance channel.

We reviewed the underwater video from two of the alternative sites. We appreciate your effort and expense in acquiring this information. Based on the footage provided for sites 1 and 3, we recommend that dredge disposal be conducted within Site 1. Our conclusion is based on Site 3 appearing to have a more varied substrate that supports a more diverse assemblage of marine organisms than Site 1. The current ridges at site 1 may also indicate that the deposited materials may be more quickly redistributed by ocean currents and are less likely to remain in a mounded pile that would smother and kill non-mobile or sessile organisms.

To the best of our knowledge, dredging for the small boat harbor has been handled under the Section 404 process, and up to this point it has not been included in the Phase II improvements to the harbor at Saint Paul. We were advised by the Corps earlier this year that mitigation for resource impacts arising from the construction of the small boat harbor would be addressed when the small boat harbor was added to the larger harbor improvements project. The inclusion of dredge material from that component of the larger Phase II project indicates to us that mitigation for the small boat harbor needs to be addressed in the near future. We mention this because we have a strong interest in having the former entrance channel to Salt Lagoon restored and/or maintained as functional intertidal habitat, the completion of which could be considered partial mitigation for impacts arising from changes to the Phase II project.

Thank you for the opportunity to review the tape and make a recommendation. We would be happy to discuss the inclusion of the small boat harbor as part of Phase II at your earliest convenience. Please telephone Mark Schroeder at 271-2797 if you have any questions.

Sincerely,

Ann G. Rappoport
Field Supervisor

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

Environmental Resources Section

Ms. Jeanne Hanson
National Marine Fisheries Service
222 West Seventh Avenue, Box 43
Anchorage, Alaska 99513-0077

Dear Ms. Hanson:

The Alaska District Corps of Engineers is preparing a Section 103 Evaluation under the Ocean Dumping Act for the disposal of dredged material to be dredged from the St. Paul Harbor Project (Harbor Improvements, Feasibility Report, Environmental Assessment and Finding of No Significant Impact, St. Paul, Alaska, May 1996). Additional material dredged from a separate small boat harbor project is also proposed to be disposed of into the water disposal site. The proposed quantities are described in enclosure 1. The dredged material is unconsolidated and is composed of a heterogeneous mix of cobbles and boulders with some gravel and sand. The geotechnical investigation report enclosed 2 is provided for your information. No chemical characterization was conducted because a representative sample would contain primarily large-sized material in which contaminants would not be present. We have explored several alternative disposal sites, surveyed the local fishermen to determine subsistence fishing areas, and coordinated with your office to determine suitable areas to avoid fur seal habitat. The one area that appears to avoid fur seal and fishing zones is on the north side of the island ;approximately 10 miles offshore in 32 fathoms of water enclosure 3. The action would be a one-time disposal of the dredged material.

We request your assistance in identifying potential environmental impacts the proposed disposal action might cause, and we request information under Section 7 of the Endangered Species Act and the Marine Mammal Protection Act.

We are also requesting preliminary recommendations you may have concerning essential fish habitat (EFH) to be considered in our evaluation of the described work. Preliminarily, the Corps has determined the described activity may adversely effect EFH. Several species of groundfish (adults and juveniles) occur in the area north of St. Paul Island including walleye pollock, Pacific cod, yellowfin sole, Greenland turbot, arrowtooth flounder, rock sole, Alaska plaice, flathead sole, skulpins, and skates. Crab species that may use the inshore shallow habitat for molting and mating are the red and blue king crab, and the tanner and snow crab. This letter initiates the EFH consultation requirements of the Magnuson Stevens Fishery Conservation and Management Act.

Please contact Ms. Lizette Boyer of the Environmental Resources Section at 753-2637 if you need more information.

Sincerely,

26 Feb 01

Guy R. McConnell
Chief, Environmental Resources Section

Enclosures

Concur:
Walters

Typed: Boyer/22 Feb. 01
G:Lizette/St. PauldisposalEFH

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

February 26, 2001

Guy McConnell, Chief
Environmental Resources Section
U.S. Army Engineer District, Alaska
P.O. Box 898
Anchorage, Alaska 99506-0898

Dear Mr. McConnell:

In response to your letter dated December 4, 2000, regarding the offshore disposal of dredge material resulting from the proposed improvements to the harbor at St. Paul Island, Alaska, we have determined that Site #5, approximately ten miles north of the island (please see enclosure), would be the most appropriate location for dredge material disposal for the following reasons:

1. The proposed site is sufficiently distant from any northern fur seal rookery or haulout area to cause any significant disturbance.

2. The proposed site is beyond the 50 meter isobath, inside of which currents tend to circulate material around and onto the island.

3. Though the proposed site experiences a moderate level of fur seal traffic to/from the island during foraging trips, we believe that properly conducted dredge disposal operations would not result in any significant adverse impact to animals passing through the area. This is particularly true in approximately the western half of the proposed site as foraging trip data (see enclosure) shows less seal traffic in that portion of the proposed site than elsewhere.

We understand drill core tests completed by the U.S. Army Corps of Engineers (COE) indicate the dredge material consists primarily of sand, large cobbles, and rock - a composition that is not normally considered to hold contaminants. However, there exists a considerable body of local and anecdotal knowledge regarding the presence of silt and possible contamination of the harbor substrate and adjacent Salt Lagoon channel.

Extensive testing in the Salt Lagoon channel has determined the presence of petroleum and other contaminants in significant but unknown total quantities. We also believe materials finer than sand may exist within the dredge area as silt (possibly from the adjacent Salt Lagoon). This has been observed by divers working in the harbor. We are therefore concerned any contaminants present could become re-suspended by dredging and disposal operations.

Since there is some doubt regarding the presence of fines and/or contamination, we are unable to conclude if this project would create potential adverse consequences for northern fur seals. However, because northern fur seals rely primarily on the integrity of their thick under-fur to maintain a viable body temperature, even small amounts of certain contaminants such as petroleum products can compromise this essential ability. Therefore, any contact with these substances, particularly by juvenile animals preparing for their first migration, would likely result in a significant adverse impact on northern fur seals.

The northern fur seal species is officially listed as "depleted" under the Marine Mammal Protection Act (MMPA). Also, under Section 119 of the MMPA, NMFS has an official government-to-government relationship and agreement with the Tribal Government of St. Paul (TGSNP) regarding the management of marine mammals (including northern fur seals) taken and used for subsistence purposes by Alaskan Natives. Thus, NMFS is obligated to consult and involve the TGSNP regarding matters such as dredging and material disposal which may affect the local marine mammal population. With this in mind, we request a qualified on-site observer be present to monitor any interaction between any marine mammal and these activities.

Unless otherwise agreed between NMFS and TGSNP, we recommend that the TGSNP Conservation Officer be designated as the onsite observer for the duration of the harbor dredging and disposal project. To recoup costs for the Officer's time, we request funds using Section III of our Interagency Support Agreement between NMFS and the COE. We will need to discuss further the exact amount of this time.

The observer would assess the onsite situation, determine if any modification of the current disposal activity is necessary, and recommend appropriate actions, such as to relocate the disposal operation to a different area within the disposal site or to suspend operations until circumstances permit their resumption. An activity would be suspended if large numbers of fur seals or concentrations of fur seals (more than 25 individuals) were within the harbor during dredging or within one-quarter nautical

mile of disposal activity. Additionally, the observer would record all observations and report any indications of contamination or significant pollution, such as surface sheen resulting from disposal operations.

We appreciate the opportunity to review and comment on the proposed disposal sites for this project and look forward to its successful completion without any significant problems or adverse impacts to the uniquely important natural assets of the Pribilof Islands and surrounding region.

Sincerely,

P. Michael Payne
Assistant Regional Administrator
for Protected Resources

Enclosure

cc: Tribal Government of St. Paul Is.
ADEC, ADF&G, ADGC, EPA, USFWS - Anchorage

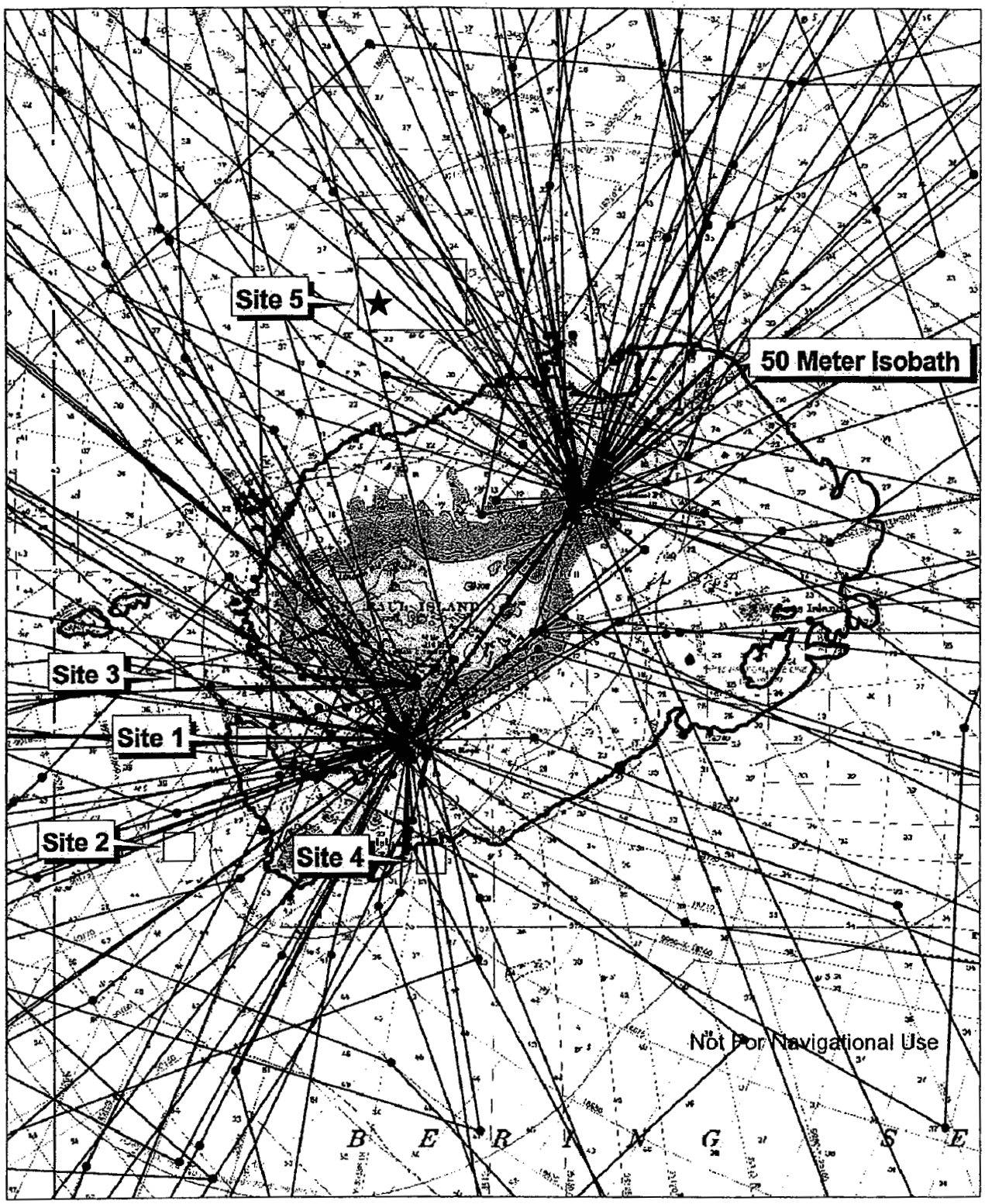


Figure 5. Movement paths of northern fur seal females on foraging trips during July through October of 1995 and 1996. Boxes indicate the proposed water disposal sites for dredge material from the St. Paul Harbor Improvements.

TDX
CORPORATION
ST. PAUL ISLAND, ALASKA

ST. PAUL ISLAND
P.O. BOX 88 ST. PAUL ISLAND, AK 99660-0088
(907) 546-2312 TELECOPIER: (907) 546-2366

Seeking A Better Tomorrow

ANCHORAGE
1500 WEST 33RD AVE. STE. 220 ANCHORAGE, AK 99503
(907) 278-2312 TELECOPIER: (907) 278-2316

1/30/98

Col. Sheldon L. Jahn
District Engineer
US Engineer District, Alaska
ATTN: CEPOA-EN-CW-ER(Boyer)
PO Box 898
Anchorage, Alaska 99506-0898

Dear Col. Jahn,

SUBJ: St. Paul Island Harbor Improvements Project
Dredged Material Disposal Site Alternative Considerations-Comments

These comments are directed toward the proposed alternatives for disposal of 324,000 cubic yards of dredged material that would come from improvements to the St. Paul Island Harbor. These are the comments of Tanadgusix Corporation which is the primary landowner on the island through entitlements under ANSCA and under the federal phaseout. TDX shareholders make up a majority of the Aleut residents of the island, and are also located off-island throughout the United States.

The volume of dredge from the project is substantial, and our understanding and experience from other dredge projects in the island's past indicate to us that material will range from large boulders, to cobble and sand. It is obvious that any reuse of material for construction of the so-called spending beach will require some sorting by the contractor. Dredge spoils from former TDX sponsored dredges are stockpiled on the island, and the Corps may wish to review these.

As a general matter, we do not believe that disposal of the dredge spoils at sea is a very reasonable or responsible method of dealing with the removals, particularly when there are onshore options available. Offshore habitat around St. Paul Island is particularly sensitive to disturbances on the bottom. There is a local halibut fishery conducted by over 35 local fishing vessels in the nearshore area around the island. Most of the nearshore area of the island is used for subsistence hunting of marine seabirds, ducks, harvest of sea urchins, sea cucumbers, and other ocean products.

Disposal in nearshore areas, such as the proposed area between North Point and Northeast point would, in our view, be unacceptable disturbances to the seabottom. Disposal of capped sand

to the south of the proposed rock reefs would present too much danger that the sand would migrate back to the area from which it was dredged. Our local Aleut observors do not confirm the observations of USFWS regarding the loss of material at Zolotoi Beach. We believe the beach would be better left alone because of the potential for disturbances to the fur seal rookeries at Reef rookery and to those using the Zolotoi Beach.

Disposal further offshore would minimize impacts to local nearshore subsistence uses, but the areas surrounding the islands of St. Paul and St. George are particularly rich in crab and bottomfish species and habitat, including Pribilof Red and Blue King Crab, Korean Hair Crab, Tanner Crabs (Opilio and Bairdi), rock sole, rex sole, yellowfin sole, halibut, Pacific Cod, etc. All of these species are commercially viable, and some of them have been in dramatic decline, as, for example, the Pribilof King Crabs which have gone from total quotas numbering over 80.0 million pounds in the early 1980's to as little as 1.2 million pounds in the most recent fishing year. We believe that the 260 or so crab fishing vessels of the North Pacific who frequent this area for fishing should be consulted before undertaking major disposals in the offshore area. The fisheries control of this area is specific enough that trawls of the bottom by fishermen is prohibited within 25 miles of the island. We believe that such dumping should be considered only after undertaking a full Environmental Impact Statement to consider the impacts. These are very important commercial grounds for Bering Sea fisheries.

The Black Bluffs Beach area suggested is an ideal disposal site. It has minimal subsistence activity because of a former shipwreck near the site. It is also an area for which there are significant community concerns which have been previously communicated to the Corps of Engineers. Because of the proximity of the Aleut community cemetery in this bluff, there is community concern regarding the erosion of the bluff. We believe that the erosion of the bluff is directly connected to the existence of the old East Landing Dock installed during the NOAA years, and its impact on the currents. Regardless of causes, this site is an area of concern for which a proper design could be easily prepared from dredge materials to stem the erosion of the beach and bluff. TDX owns the land, and would neither charge for storage nor access. This site would likely result in little community dissension, and could take a significant quantity of the dredge spoils. It is our preferred site.

Other sites on-shore, besides the above first priority site, would be acceptable to TDX, in the following order of preference:

1. The Airport site, which could use some dressing up following State of Alaska cut and fill removals for the airport expansion. The potential for bird nesting becoming a problem at the airport would be lessened by refilling this site. The site would need grading and reseeding. The property owner is the State of Alaska.

2. Kaminista Quarry Site. This is the site of former dredge spoils deposits. The site is mostly owned by the village corporation, which would not object to storage at this site, since much of the reject materia from former breakwater construction is already stored there. There would be a one time charge to the project for access and storage.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

JUL 17 2001

REPLY TO
ATTENTION OF:

Environmental Resources Section

Mr. John Malek
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Malek:

The Alaska District Corps of Engineers has prepared a draft 103 Evaluation under the Environmental Protection Agency's Ocean Dumping Criteria (40 CFR, part 228) for your review and comment. The dredged material would be generated from Phase II of the St. Paul Harbor Improvements project and additionally from a new small boat harbor project on St. Paul Island, Alaska. Coordination with the local fishermen and the National Marine Fisheries Service (NMFS) on site selection has occurred. We are sending this daft report to you and to the NMFS for technical review prior to a public review with the small boat harbor environmental assessment. We would appreciate comments within 30 days.

Please contact Ms. Lizette Boyer in the Environmental Resources Section at (907) 753-2637 for more information.

Sincerely,

Guy R. McConnell
Chief, Environmental Resources Section

Enclosure

APPENDIX 3
CORRESPONDENCE

Original

US Army Corps
of Engineers
Alaska District

Public Notice of Application for Permit

Regulatory Branch (1145b)
Post Office Box 898
Anchorage, Alaska 99506-0898

PUBLIC NOTICE DATE: 23 DECEMBER 1998

EXPIRATION DATE: 22 JANUARY 1999

REFERENCE NUMBER: 2-981150

WATERWAY NUMBER: Village Cove 2

Interested parties are hereby notified that an application has been received for a Department of the Army permit for certain work in waters of the United States as described below and shown on the attached plan, nine sheets.

APPLICANT: The Aleut Community of Saint Paul and Tanadqusix Corporation, 1500 West 33rd Avenue Suite 220, Anchorage, Alaska 99503.

LOCATION: The project is located within section 25, T. 35 S., R. 132 W., Seward Meridian within the Saint Paul Harbor, Saint Paul Island, Alaska.

WORK: The applicant proposes to construct a small boat harbor with the following components:

- Dredge 7.5 acres in Village Cove for the construction of a small boat harbor, dock and mooring facility. A total of 206,000 cubic yards of material would be dredged. The area of the small boat harbor would be dredged to a depth of -12 MLLW.
- Fill approximately 1.3 acres of tidelands for shoreline stabilization and a support area for harbor operations, dock, and mooring facilities. A total of 21,200 cubic yards of material would be placed as fill.
- Place armor rock on the newly created shoreline on the southerly and easterly boundaries of the project. A total of 17,000 cubic yards of armor rock would be placed.
- Construct a 45-foot by 180-foot steel pile supported dock.
- Construct a 350-foot long breakwater on the West Side of the project. The breakwater would be constructed using sand, gravel, and rock obtained from the dredge material, and armor rock from the Kaminista Pit. The volume of material in this structure would be 19,000 cubic yards.
- Construct a concrete launch and ramp and floating stage.

- Construct a mooring facility with eight (8) steel dolphins, five (5) steel/concrete bollards along the eastern side of the proposed breakwater and three (3) steel ramps.

- Temporarily moor an existing 200-foot long by 15-foot wide floating dock and ramp.

- The excess dredge material would be placed in the following two locations.

  1. Approximately 45,700 cubic yards of material would be placed on uplands adjacent to the HTL along the southern and eastern boundary of the project.

  2. Approximately 121,100 cubic yards of material would be placed on Kaminista Ridge.

PURPOSE: To provide a protected small boat harbor for the local residents of Saint Paul; provide a commercial dock facility for the local IRA; and provide a fishery and marine cargo staging area for TDX harbor operations.

ADDITIONAL INFORMATION: This project has been administratively renumbered by the Corps of Engineers from U-870522, Bering Sea 62 to the new number 2-981150, Village Cove 2.

The applicant proposed this project with a different layout and plans, which went out to Public Notice December 5, 1997, and again July 13, 1998. The Corps of Engineers review and evaluation of U-870522, Bering Sea 62, was administratively closed pending the receipt of the revised plans.

The Corps has also received a proposal from the City of Saint Paul for a small boat harbor for Village Cove, 2-981089, Village Cove 1. Both projects will be evaluated on their individual merits. Comment is being solicited for each project.

For additional information on 2-981150, Village Cove 2, you may contact the authorized agent, Mr. Dee High, of DHI Consulting Engineers, at 800 East Dimond Boulevard, Suite 3-545, Anchorage, Alaska 99515, or by calling Mr. High at (907) 344-1385.

WATER QUALITY CERTIFICATION: A permit for the described work will not be issued until a certification or waiver of certification as required under Section 401 of the Clean Water Act (Public Law 95-217), has been received from the Alaska Department of Environmental Conservation.

COASTAL ZONE MANAGEMENT ACT CERTIFICATION: Section 307(c) (3) of the Coastal Zone, Management Act of 1972, as amended by 16 U.S.C. 1456(c) (3), requires the applicant to certify that the described activity affecting land or water uses in the Coastal Zone complies with the Alaska Coastal Management Program. A permit will not be issued until the Office of Management and Budget, Division of Governmental Coordination has concurred with the applicant's certification.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

CULTURAL RESOURCES: The latest published version of the Alaska Heritage Resources Survey (AHRS) has been consulted for the presence or absence of historic properties, including those listed in or eligible for inclusion in the National Register of Historic Places. The project site is included within the Seal Islands National Historic Landmark. A determination of effect will be made in consultation with the State Historic Preservation Officer (SHPO). Consultation of the AHRS constitutes the extent of cultural resource investigations by the District Engineer at this time, and he is otherwise unaware of the presence of such resources. This application is being coordinated with SHPO. Any comments SHPO may have concerning presently unknown archeological or historic data that may be lost or destroyed by work under the requested permit will be considered in our final assessment of the described work.

ENDANGERED SPECIES: No threatened or endangered species are known to use the project area. Preliminarily, the described activity will not affect threatened or endangered species, or their critical habitat designated as endangered or threatened, under the Endangered Species Act of 1973 (87 Stat. 844). This application is being coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Any comments they may have concerning endangered or threatened wildlife or plants or their critical habitat will be considered in our final assessment of the described work.

FEDERAL SPECIES OF CONCERN: The following Federal species of concern may use the project area: Northern fur seal, Canada Goose, Aleutian Canada Goose, Bald Eagle, Emperor Goose, Tundra Swan, and Lesser Sandhill Crane.

FLOOD PLAIN MANAGEMENT: Evaluation of the described activity will include conformance with appropriate State or local flood plain standards; consideration of alternative sites and methods of accomplishment; and weighing of the positive, concentrated and dispersed, and short and long-term impacts on the flood plain.

SPECIAL AREA DESIGNATION: The project is located within the Seal Islands National Historic Landmark.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts, which the proposed activity may have on the public interest, requires a careful weighing of all those factors, which become relevant in each particular case. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur, are therefore determined by the outcome of the general balancing process. That decision should reflect the national concern for both protection and utilization of important resources. All factors, which may be relevant to the proposal, must be considered including the cumulative effects thereof. Among those are

conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Comments on the described work, with the reference number, 2-981150, Village Cove 2 should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact Victor O. Ross at (907) 753-2724 or toll free in Alaska at (800) 478-2712, if further information is desired concerning this notice.

AUTHORITY: This permit will be issued or denied under the following authorities:

(X) Perform work in or affecting navigable waters of the United States - Section 10 Rivers and Harbors Act 1899 (33 U.S.C. 403).

(X) Discharge dredged or fill material into waters of the United States - Section 404 Clean Water Act (33 U.S.C. 1344). Therefore, our public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

A plan, Notice of Application for Certification of Consistency with the Alaska Coastal Management Program, and Notice of Application for the State Water Quality Certification is attached to this Public Notice.

District Engineer
U.S. Army, Corps of Engineers

Attachments

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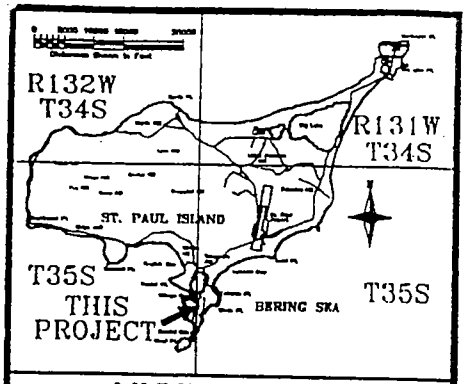


VICINITY MAP

PLAN VIEW

SCALE: NTS

DREDGE DISPOSAL SITES

BERING SEA 62

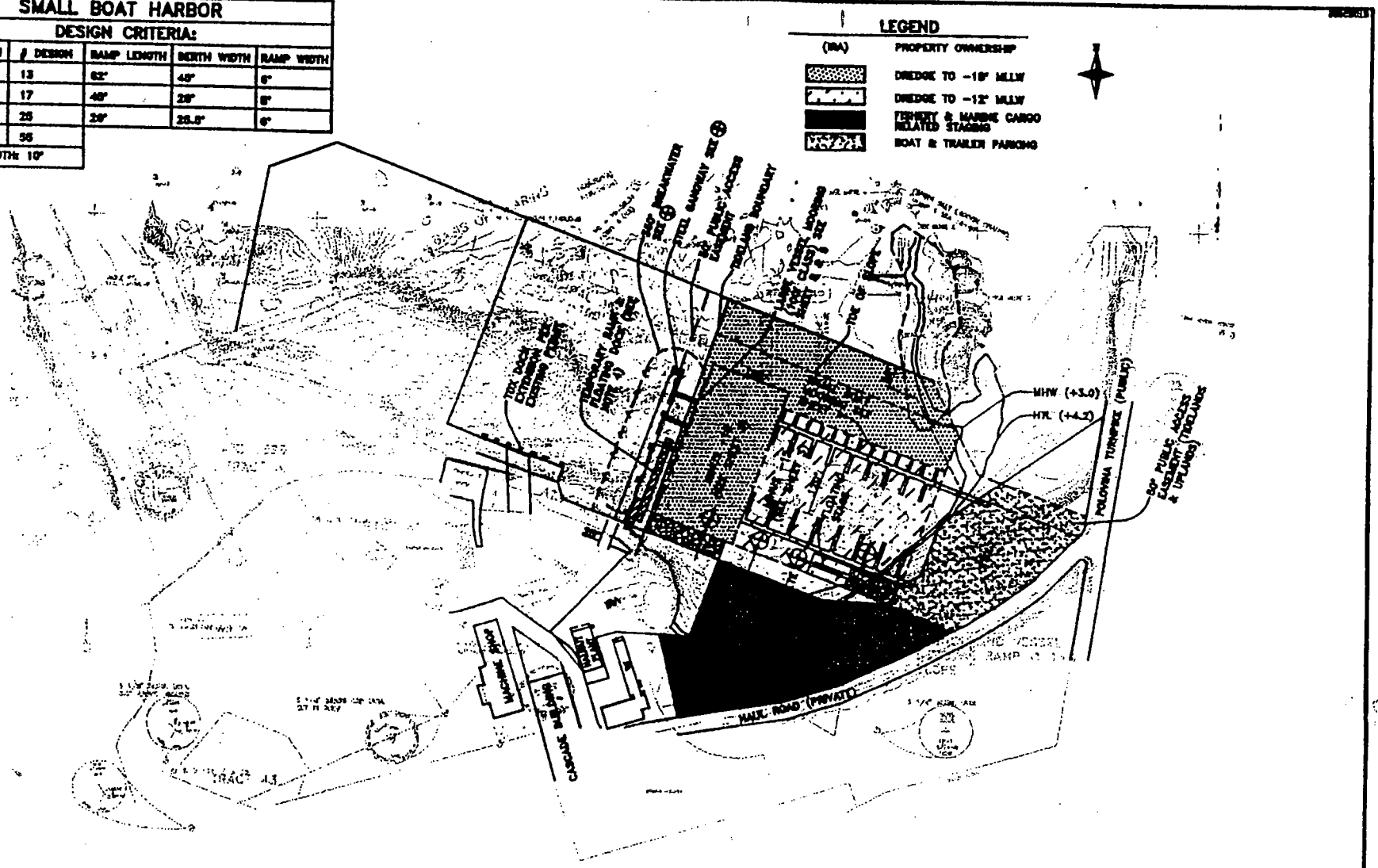
ALEUT COMMUNITY OF ST. PAUL
& TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 1 OF 9 DATE: 11/30/98

SMALL BOAT HARBOR

DESIGN CRITERIA:

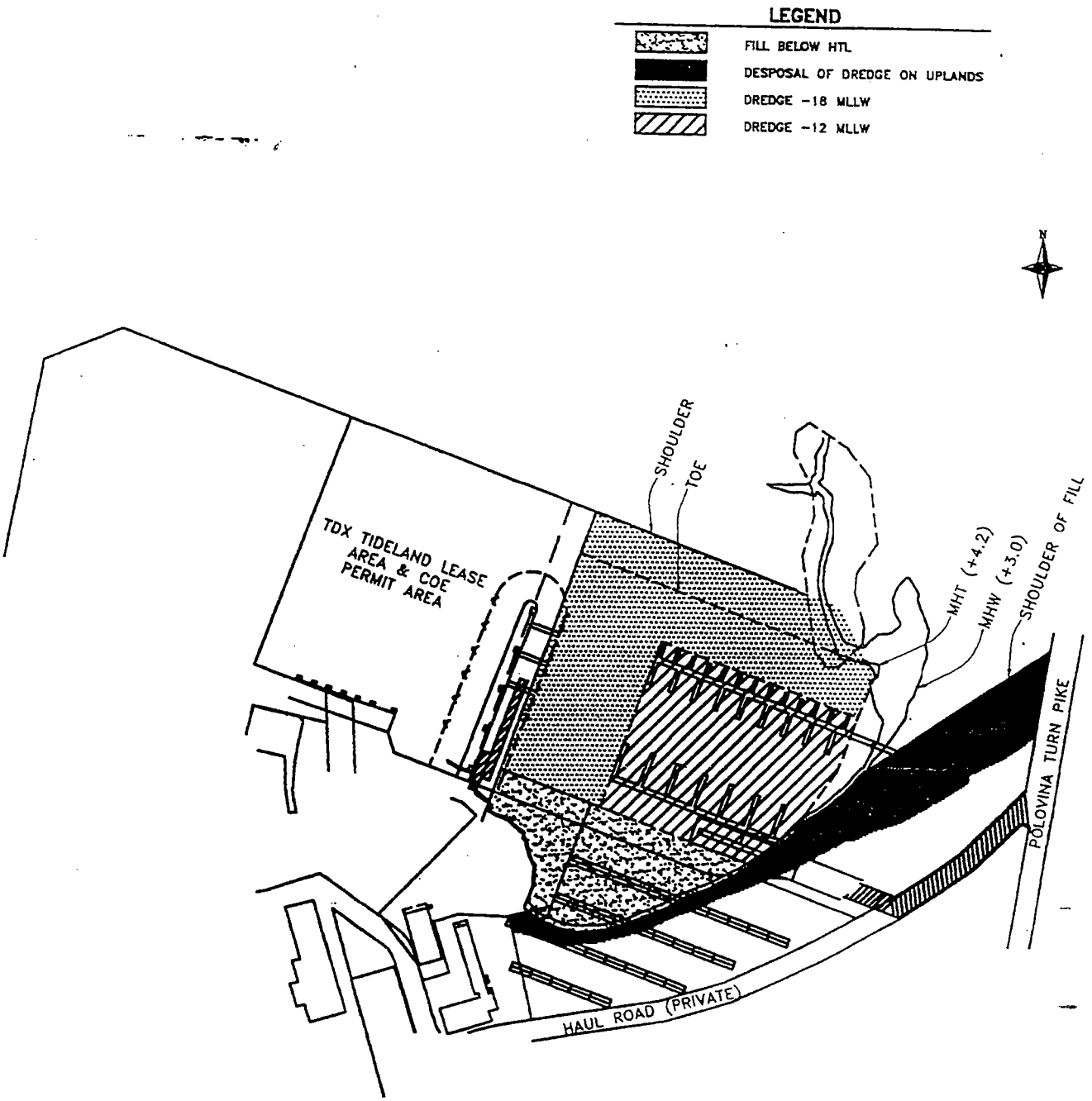
VESSEL LENGTH	# DESIGN	RAMP LENGTH	BERTH WIDTH	RAMP WIDTH
40–50'	13	62'	45'	6'
30–40'	17	40'	28'	5'
<30'	25	28'	25.5'	4'
TOTAL # SLIPS	55			
MAIN DOCK WIDTH: 10'				



PLAN VIEW

SMALL BOAT HARBOR

6



PLAN VIEW

SCALE: 1"=300'

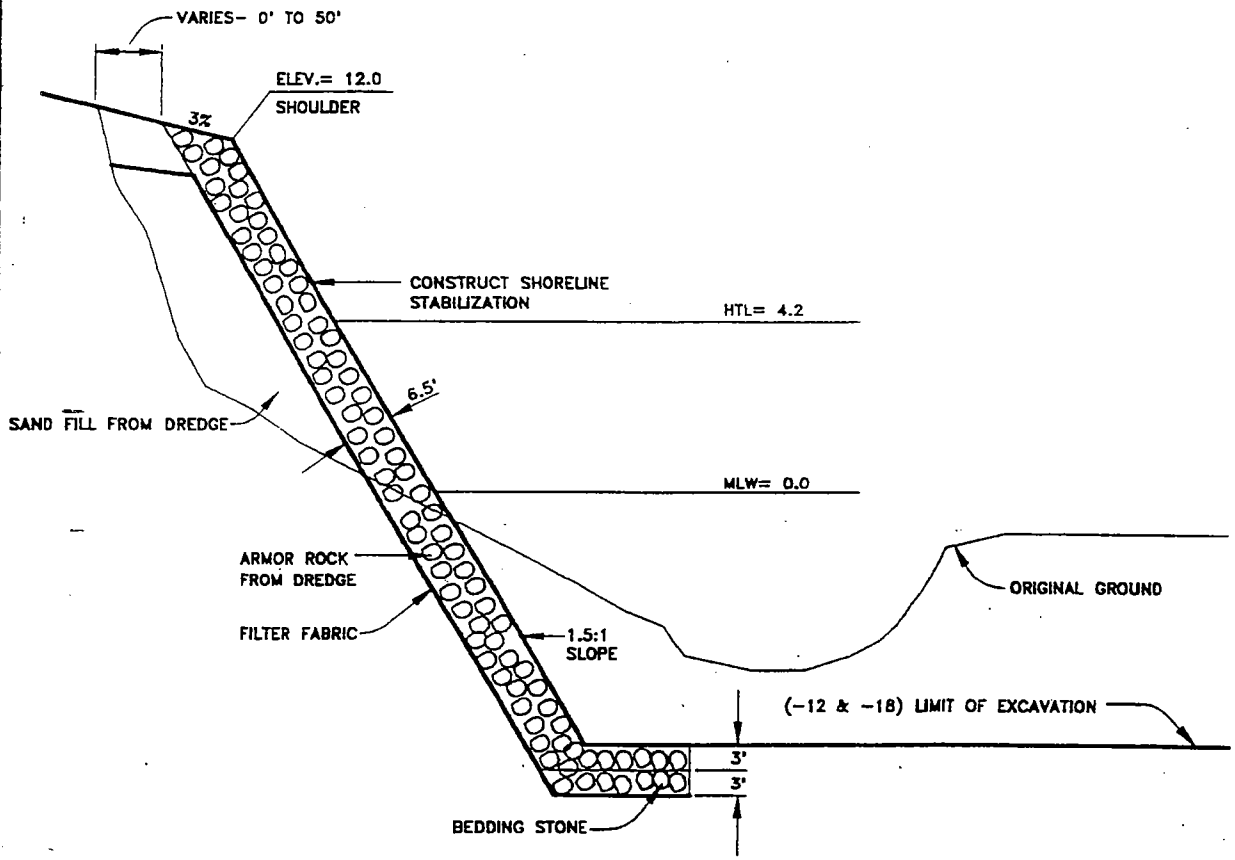
DREDGE & FILL

BERING SEA 62

ALEUT COMMUNITY OF ST. PAUL
& TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 3 OF 9 DATE: 11/30/98

303MAD5D



TYPICAL SHORELINE STABILIZATION

A

NTS

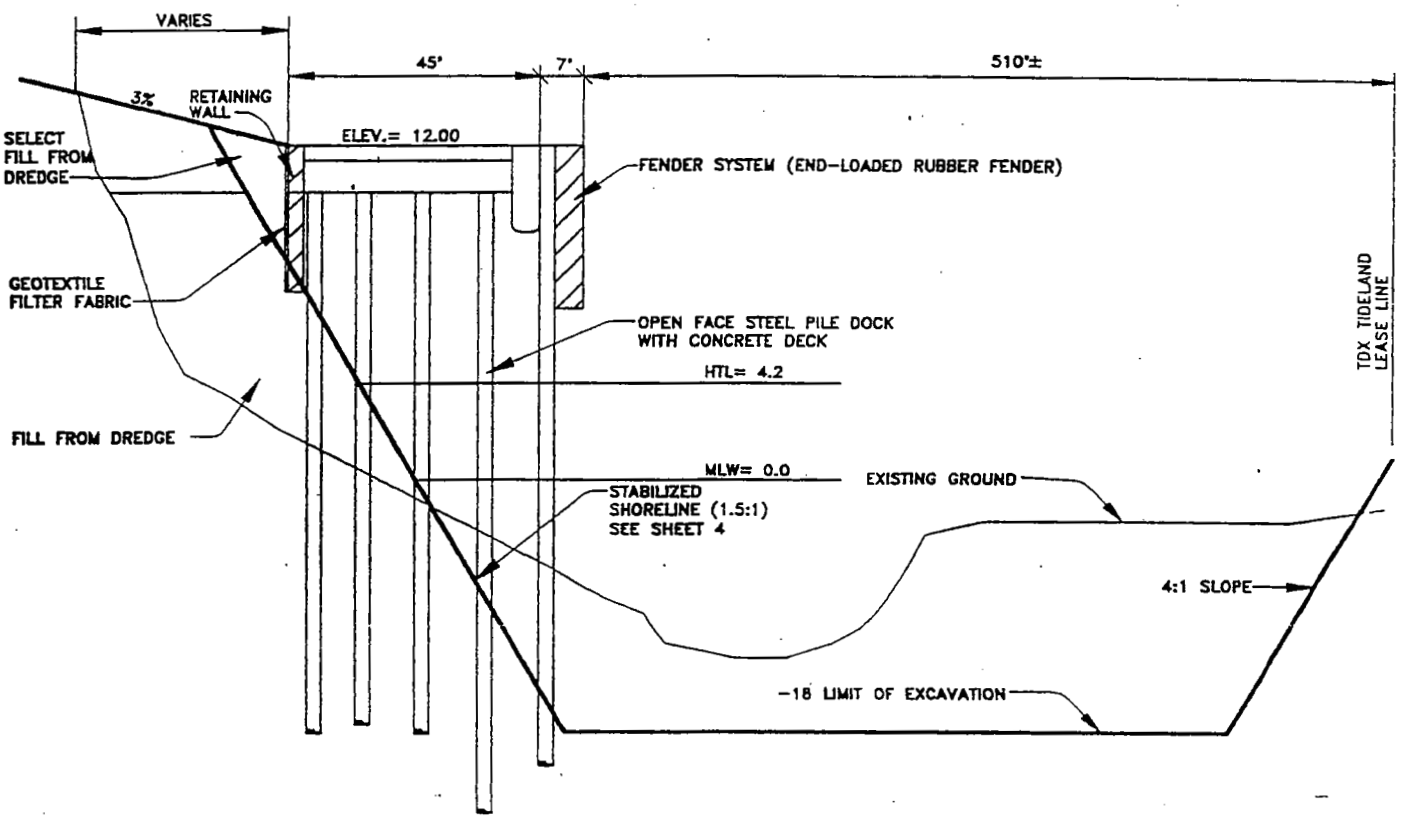
SHORELINE STABILIZATION

BERING SEA 62

ALEUT COMMUNITY OF ST. PAUL
& TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 4 OF 9 DATE: 11/30/98

303MAD40



TYPICAL PILE SUPPORTED DOCK

B

NTS

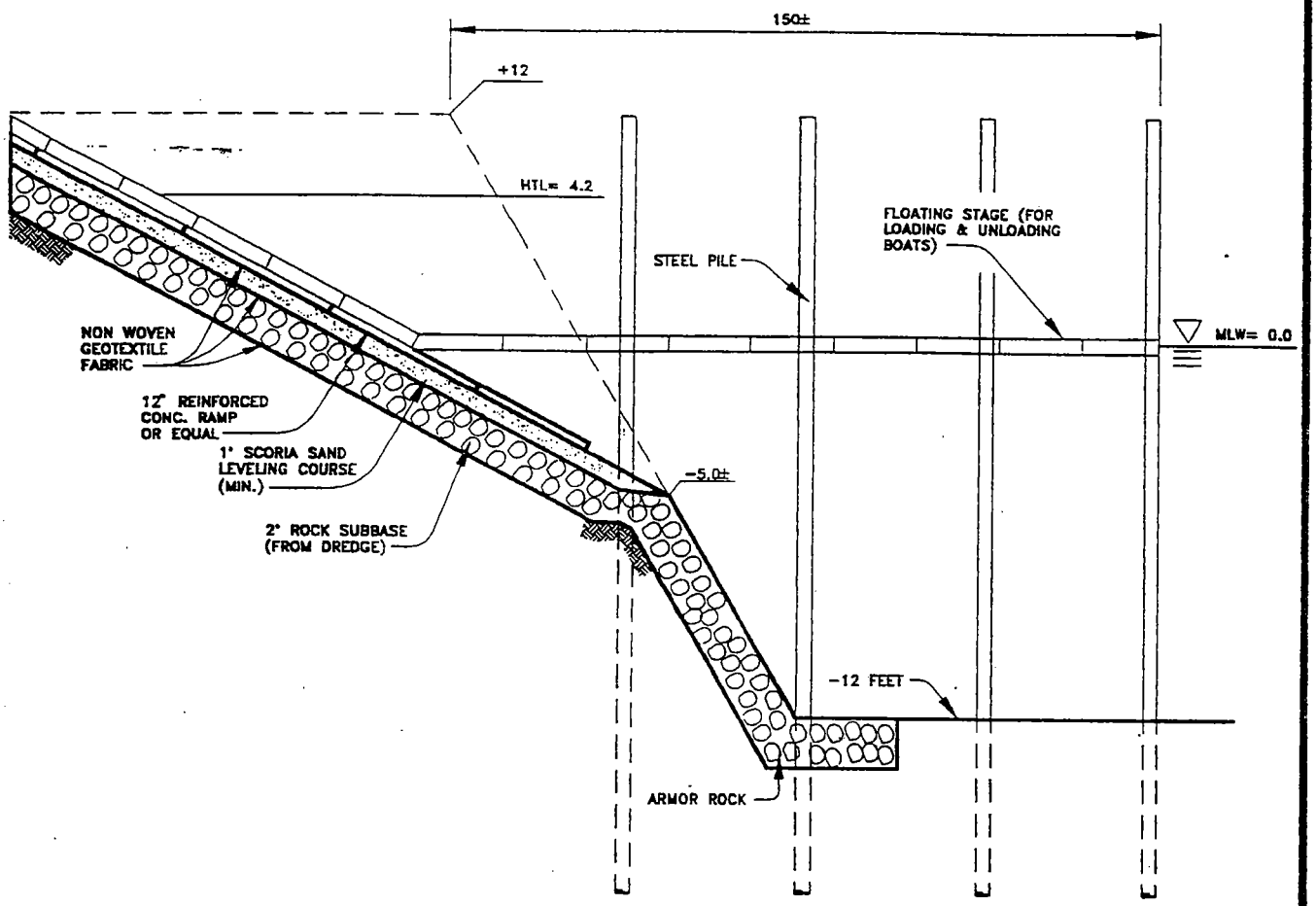
PROPOSED DOCK & DREDGE AREA

BERING SEA 62

ALEUT COMMUNITY OF ST. PAUL
& TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 5 OF 7 DATE: 11/30/98

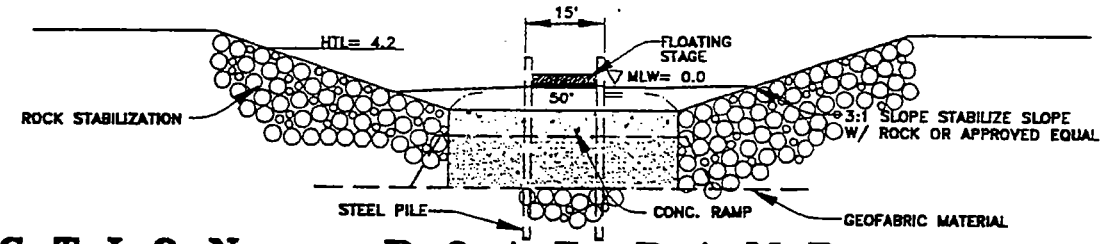
303MAD6D



SECTION - BOAT RAMP

NTS

C



SECTION - BOAT RAMP

NTS

D

REVISED 6/23/98

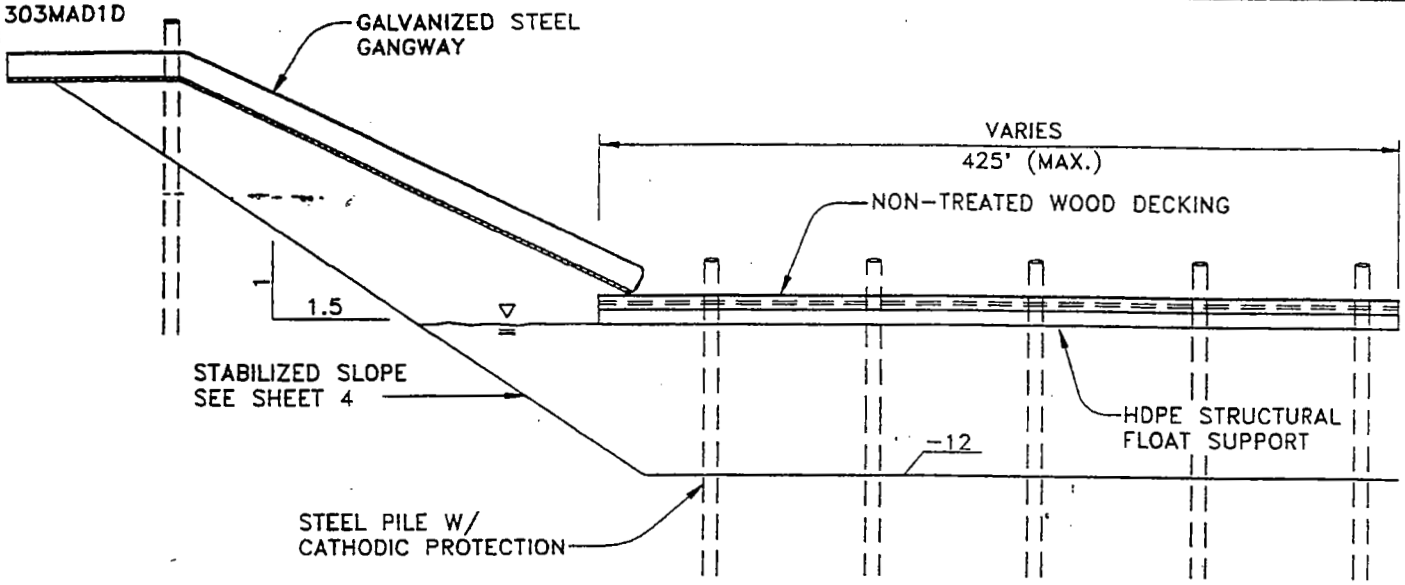
BOAT RAMP & FLOATING STAGE

BERING SEA 62

ALEUT COMMUNITY OF ST. PAUL & TANADGUSIX CORPORATION WATERFRONT IMPROVEMENTS ST. PAUL ISLAND VILLAGE COVE

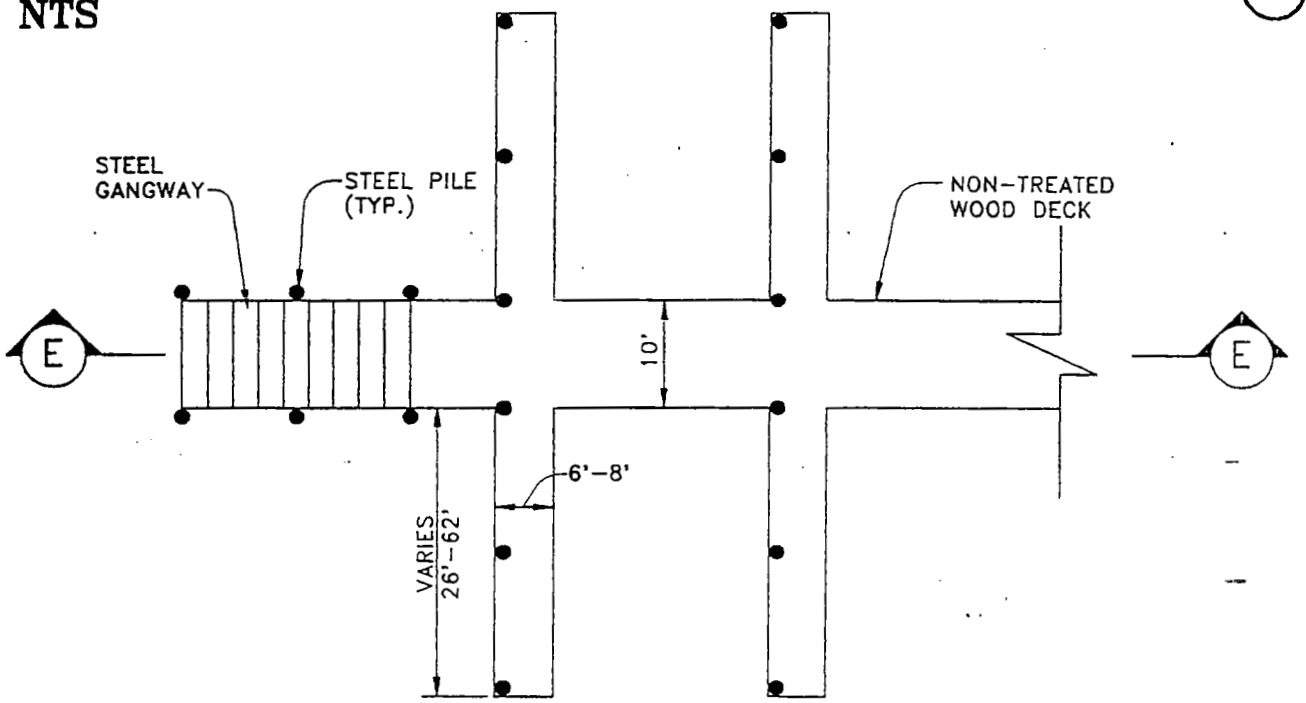
DHI CONSULTING ENGINEERS
SHEET 6 OF 9 DATE:10/26/97

303MAD1D



TYPICAL SECTION-SMALL BOAT MOORING

NTS



TYPICAL PLAN VIEW-SMALL BOAT MOORING

NTS

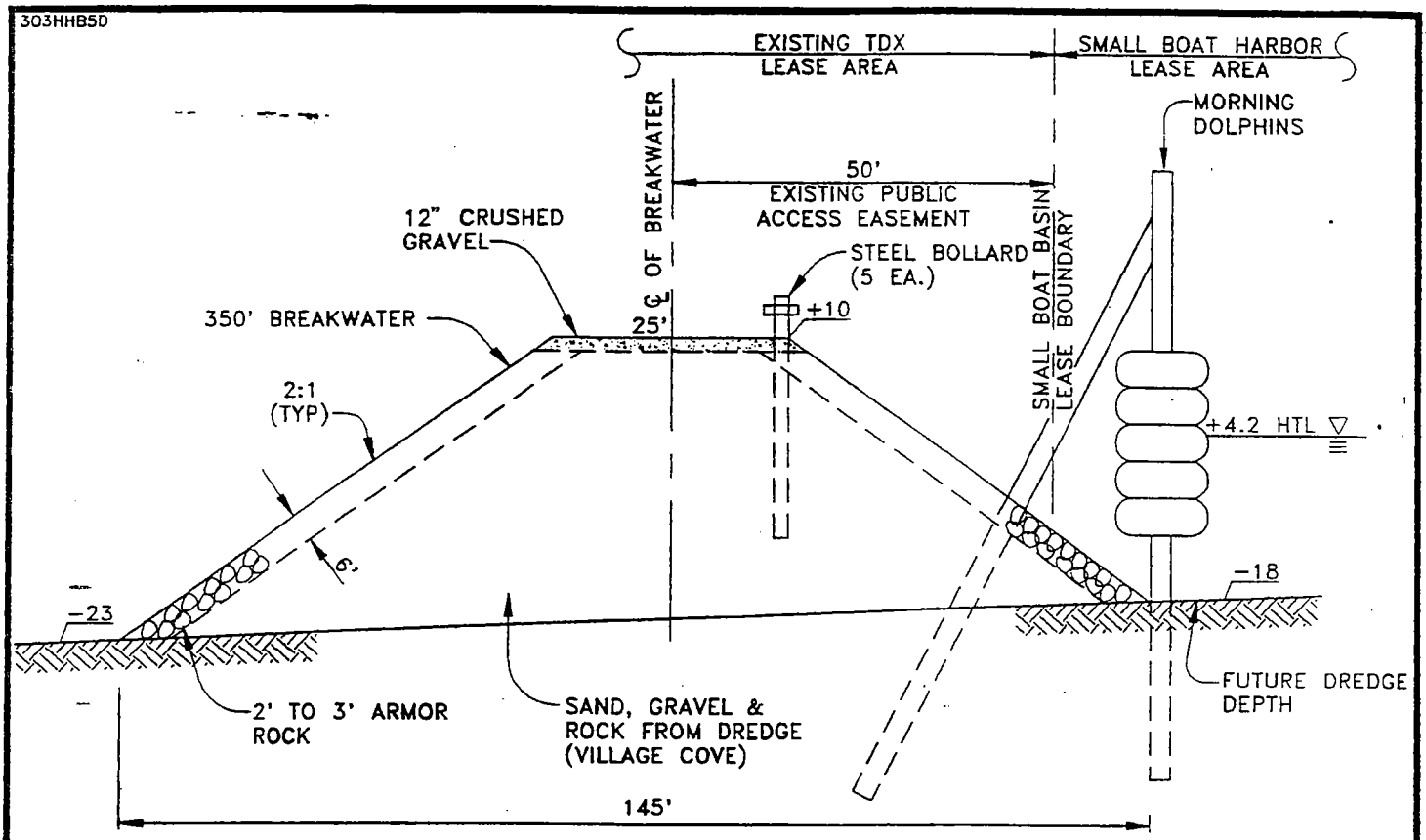
SMALL BOAT MOORING

BERING SEA 62

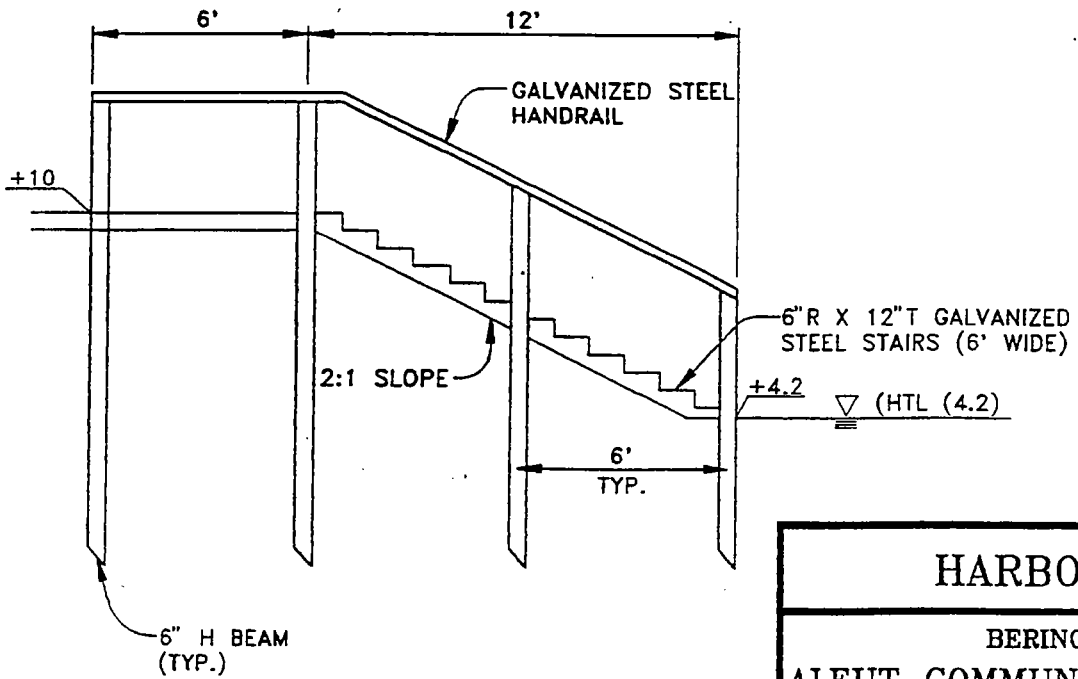
ALEUT COMMUNITY OF ST. PAUL
& TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 7 OF 9 DATE:11/30/98

303HHB5D



TYPICAL SECTION 250' BREAKWATER & MOORING FACILITY (F)



STEEL GANGWAY (G)

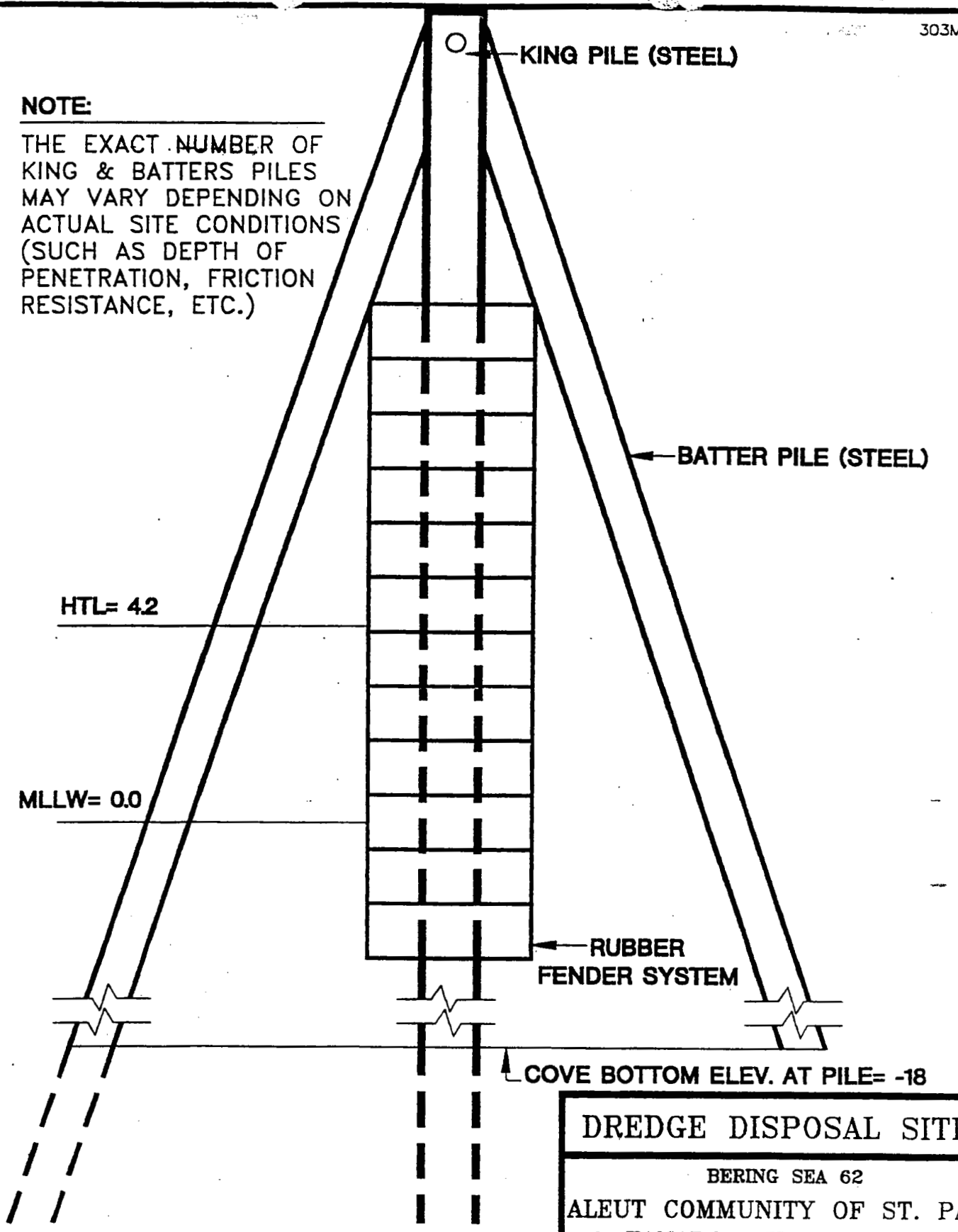
HARBOR PLAN

BERING SEA 62

ALEUT COMMUNITY OF ST. PAUL
& TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 8 OF 9 DATE:11/30/98

303MAD8D



NOTE:

THE EXACT NUMBER OF KING & BATTERS PILES MAY VARY DEPENDING ON ACTUAL SITE CONDITIONS (SUCH AS DEPTH OF PENETRATION, FRICTION RESISTANCE, ETC.)

TYPICAL SECTION MOORING DOLPHINS

NTS

DREDGE DISPOSAL SITES

BERING SEA 62

ALEUT COMMUNITY OF ST. PAUL & TANADGUSIX CORPORATION
WATERFRONT IMPROVEMENTS
ST. PAUL ISLAND VILLAGE COVE

DHI CONSULTING ENGINEERS
SHEET 9 OF 9 DATE:11/30/98

STATE OF ALASKA

TONY KNOWLES, GOVERN

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

☑ SOUTHCENTRAL REGIONAL OFFICE
3601 "C" STREET, SUITE 370
ANCHORAGE, ALASKA 99503-5930
PH: (907) 561-6131/FAX: (907) 561-6134

☐ CENTRAL OFFICE
P.O. BOX 110030
JUNEAU, ALASKA 99811-0300
PH: (907) 465-3562/FAX: (907) 465-3075

☐ PIPELINE COORDINATOR'S OFFICE
411 WEST 4TH AVENUE, SUITE 2C
ANCHORAGE, ALASKA 99501-2343
PH: (907) 278-8594/FAX: (907) 272-0690

STATE OF ALASKA

DIVISION OF GOVERNMENTAL COORDINATION

Notice of Application for
Certification of Consistency with the
Alaska Coastal Management Program

Notice is hereby given that a request is being filed with the Division of Governmental Coordination for concurrence, as provided in Section 307 (c)(3) of the Coastal Zone Management Act of 1972, as amended [P.L. 94-370; 90 Stat. 1013; 16 U.S.C. 1456 (c)(3)], that the project described in the Corps of Engineers Public Notice Number 2-981150, will comply with the Alaska Coastal Management Program and that the project will be conducted in a manner consistent with that program.

The Division of Governmental Coordination requests your comments on the proposed project's consistency with the Alaska Coastal Management Program. For more information on the consistency review process and the comment deadline, or to submit written comments, please contact the Division of Governmental Coordination, 3601 C Street, Suite 370, Anchorage, Alaska 99503-5930.

Attachment 2

TONY KNOWLES, GOVERNOR

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF AIR AND WATER QUALITY
Industrial Operations Section
401 Certification Program

NOTICE OF APPLICATION
FOR
STATE WATER QUALITY CERTIFICATION

An applicant for a federal license or permit to conduct an activity that might result in a discharge into navigable waters, in accordance with Section 401 of the Clean Water Act of 1977 (PL95-217), also must apply for and obtain certification from the Alaska Department of Environmental Conservation that the discharge will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. By agreement between the U.S. Army Corps of Engineers and the Department of Environmental Conservation, application for a Department of the Army permit to discharge dredged or fill material into navigable waters under Section 404 of the Clean Water Act also may serve as application for State Water Quality Certification.

Notice is hereby given that the application for a Department of the Army Permit described in the Corps of Engineers' Public Notice No. 2-981150 serves as application for State Water Quality Certification from the Department of Environmental Conservation.

After reviewing the application, the Department may certify that there is reasonable assurance that the activity, and any discharge that might result, will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. The Department also may deny or waive certification.

Any person desiring to comment on the project with respect to Water Quality Certification may submit written comments within 30 days of the date of the Corps of Engineers's Public Notice to:

Department of Environmental Conservation
Industrial Operations/401 Certification
555 Cordova Street
Anchorage, Alaska 99501-2617
Telephone: (907) 269-7564
FAX: (907) 269-7508

Attachment 3

DEPARTMENT OF THE ARMY PERMIT

Permittee City of Saint Paul

Permittee No. 2-981089, Village Cove 1

Issuing Office U. S. Army Engineer District, Alaska

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Construct a new small boat harbor in Village Cove. Dredge an entrance channel to the new small boat harbor to -18 feet Mean Lower Low Water (MLLW); Dredge the small boat harbor to -12 feet MLLW; Construct a 350 foot long breakwater to +10 feet MLLW; Construct a public 345 foot by 42 foot open face dock; Construct a public boat launch; Construct a floating dock with slips for 52 small boats; Deposit 33,500 cubic yards of material placed between the new harbor and shoreline.

Construct an eastern berm for harbor closure. Dredge 116,100 cubic yards of material for the entrance channel. Dredge 63,500 cubic yards of material for the small boat harbor. Place 11,300 cubic yards of dredge material and riprap for the new breakwater.

All work will be performed in accordance with the attached plans, seven sheets, dated June 1999.

Project Location:

Section 25, T. 35 S., R. 132 W., Seward Meridian, within the Saint Paul Harbor, Village Cove, Saint Paul Island, Alaska.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on October 31 2002. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The applicant shall install a silt curtain to prevent drift of material beyond the project area into navigable waters of the United States at both the dredging and discharge sites.

Continued on 2A

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(☒) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(☒) Section 404 of the Clean Water Act (33 U.S.C. 1344).

(☐) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

Special Conditions Continued

2. The applicant shall install and maintain, at your expense, any safety lights and signals prescribed by the U.S. Coast Guard (USCG) through regulations or otherwise, on your authorized facilities. Contact the USGC Commander (OAN), 17th Coast Guard District Juneau, Alaska.

3. The applicant shall establish and maintain a used oil, plastic, and fishing debris collection area in or near to the small boat harbor.

4. The applicant shall review and update the harbor management plan and oil spill contingency plan to clearly identify monitoring, maintenance, and management responsibilities for the small boat harbor. The plan must be in place prior to construction of the small boat harbor. Funding needs to be allocated for the monitoring of the plan. The plan needs to protect the Salt Lagoon. Mandatory steps need to be identified that will be taken in the event increased petroleum compounds are found during project monitoring.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Stuart Rawlings, City Manager — 11/4/99

(PERMITTEE) AND TITLE) (DATE)

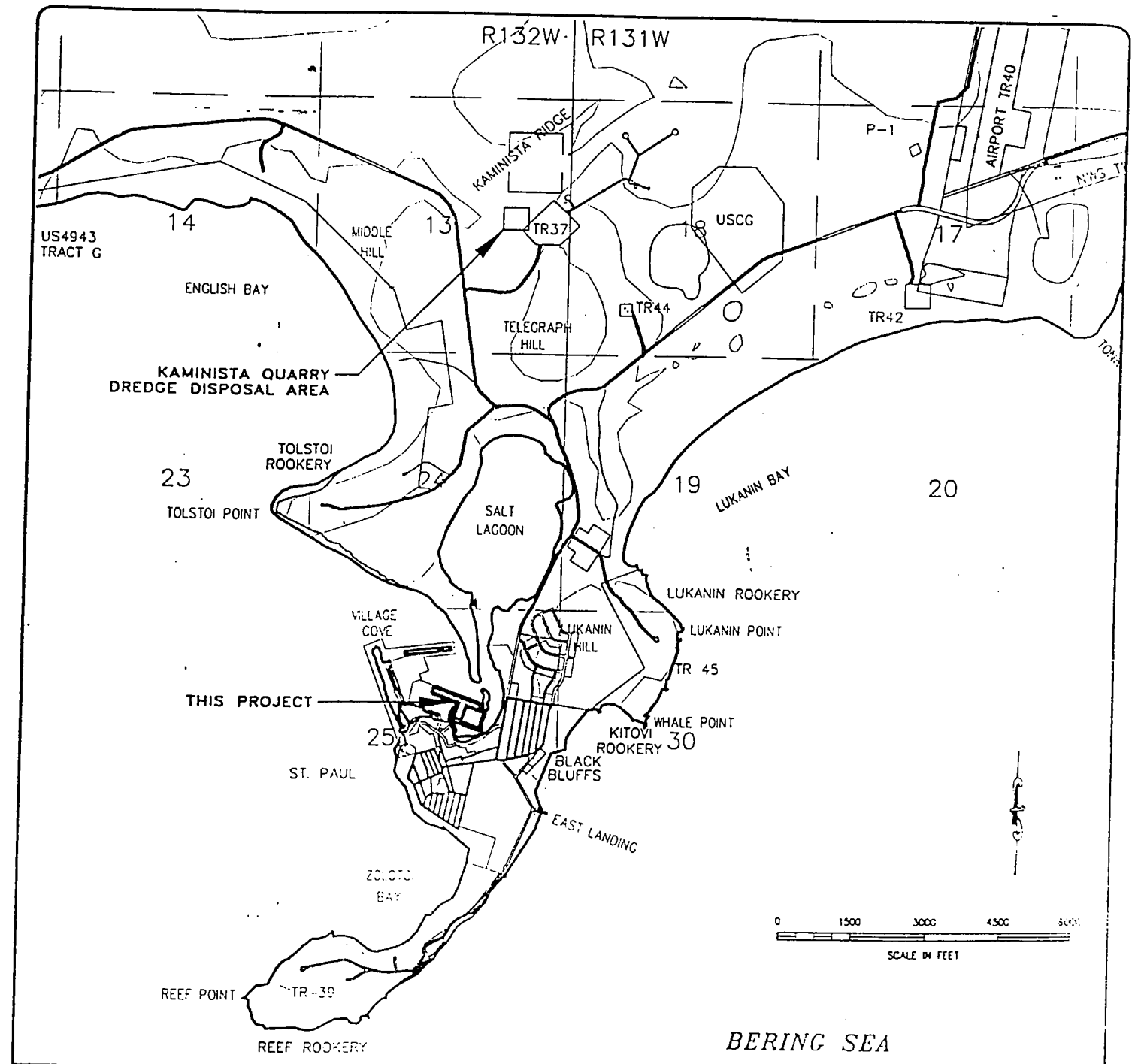
This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

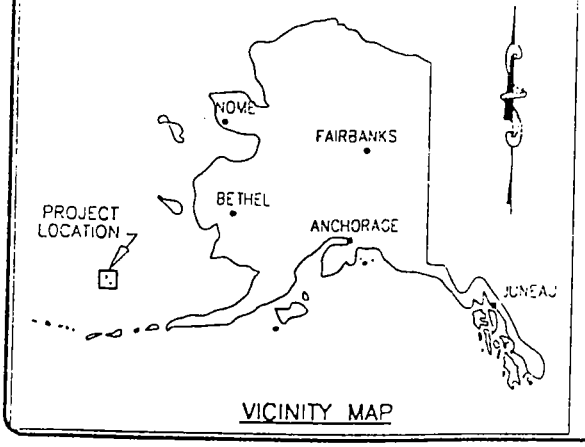
OR (DISTRICT ENGINEER) (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

☆U.S. GOVERNMENT PRINTING OFFICE: 1986 — 717-425





PROPOSED SMALL BOAT HARBOR

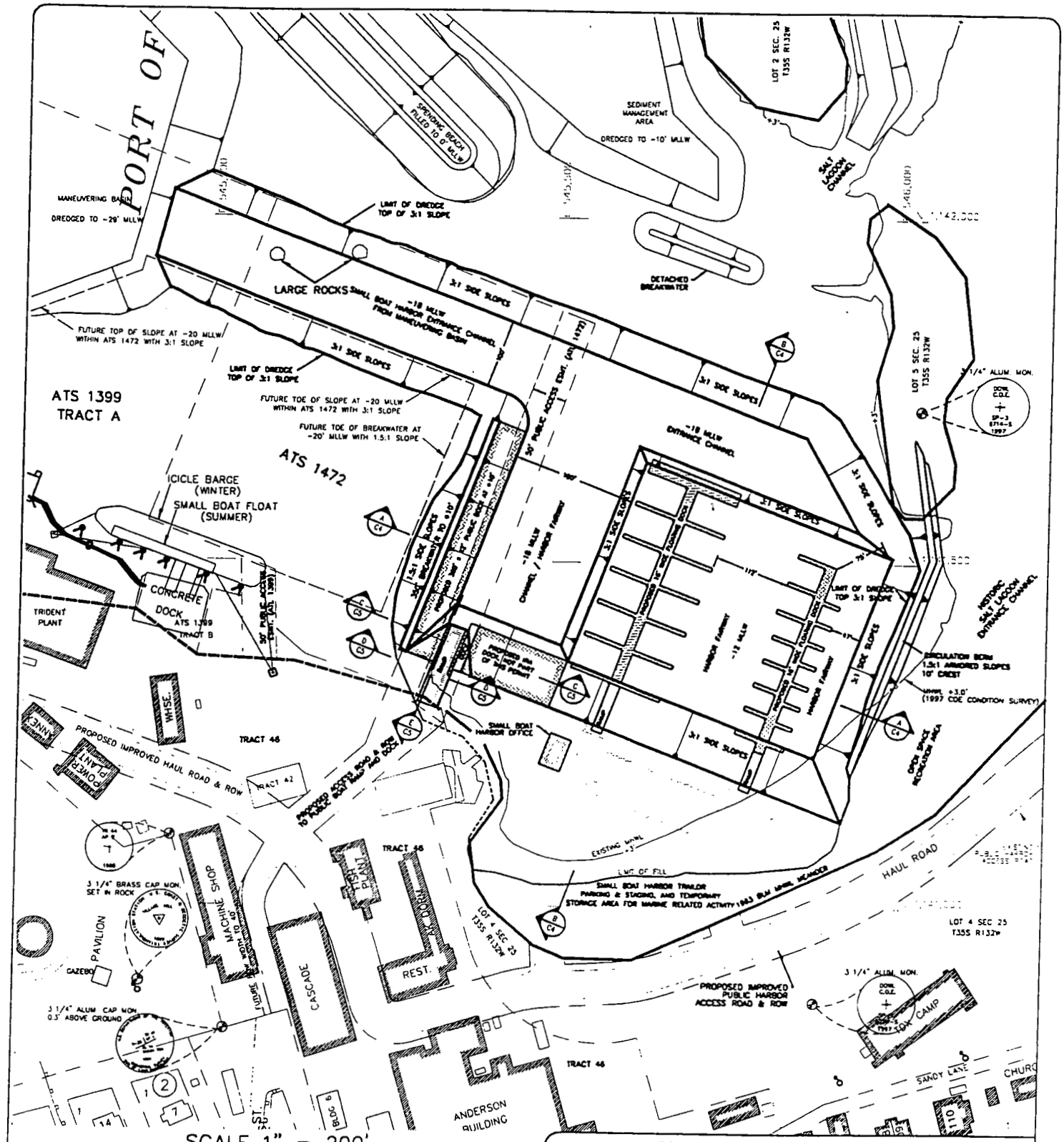
LOCATION MAP

ST. PAUL ISLAND – VILLAGE COVE
COMMUNITY: CITY OF SAINT PAUL
APPLICATION BY: CITY OF SAINT PAUL

ST. PAUL ISLAND, ALASKA

polarconsult alaska, inc.

SHEET: 1 OF: 7 DATE: 10/28/88



LEGEND		PROPOSED PROJECT	
	1983 MHWL/PLATTED PROPERTY LINE		PROPOSED WORK
	PLATTED PROPERTY		UPGRADED/NEW ROADS
	APPROX. EXISTING MHWL, +3.0'		PROPOSED ROW
	EXISTING ROAD		NEW DOCKS
	STANDARD BRASS CAP (SBC)		NEW WATER LINE
	STANDARD ALUMINUM CAP		NEW SEWER LINE
	BUILDING		NEW ELECTRIC LINE
	FENCE		

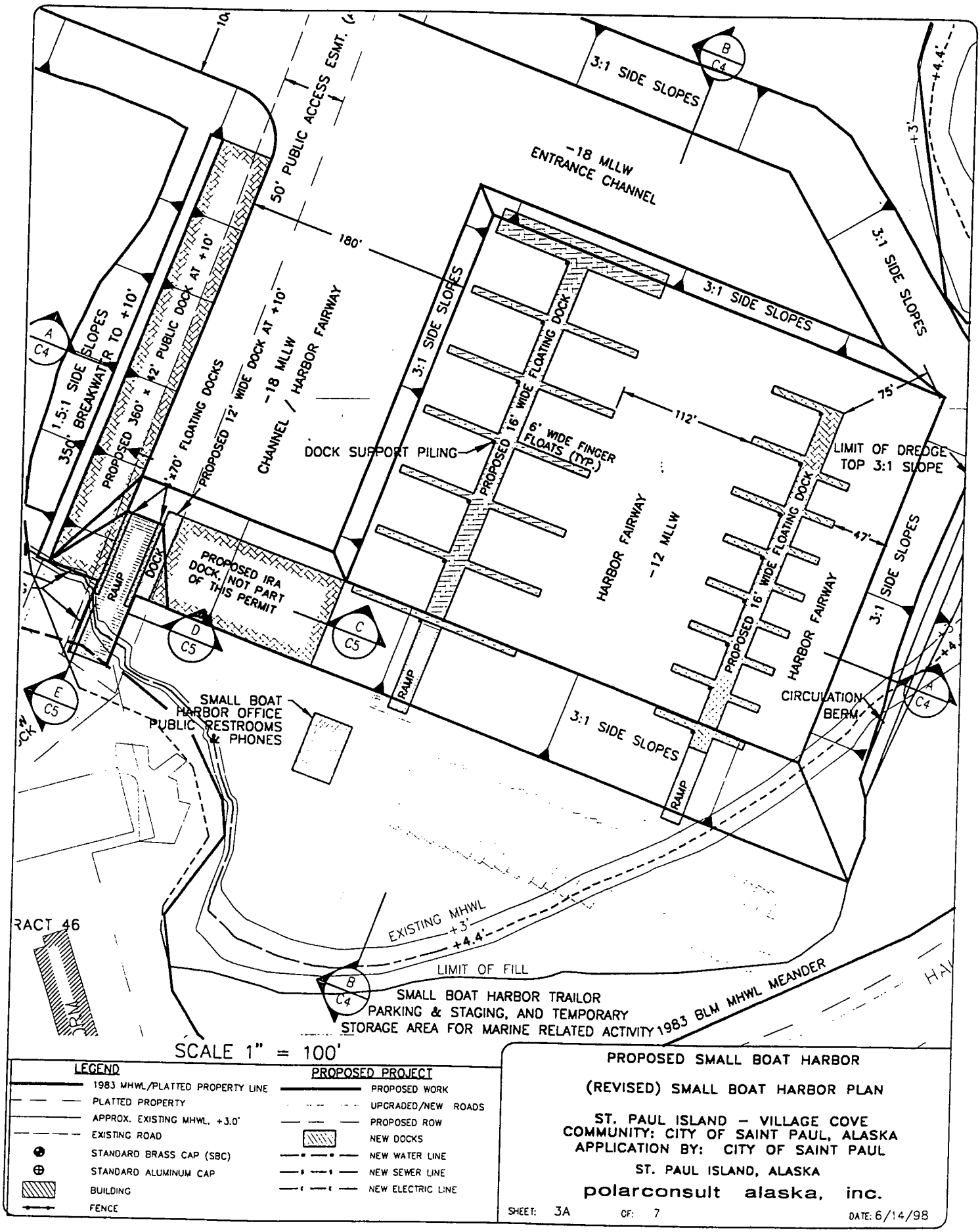
PROPOSED SMALL BOAT HARBOR

(REVISED) PROJECT SITE PLAN

ST. PAUL ISLAND – VILLAGE COVE
COMMUNITY: CITY OF SAINT PAUL, ALASKA
APPLICATION BY: CITY OF SAINT PAUL
ST. PAUL ISLAND, ALASKA

polarconsult alaska, inc.

SHEET: 2A OF: 7 DATE: 6/14/99



PROPOSED SMALL BOAT HARBOR

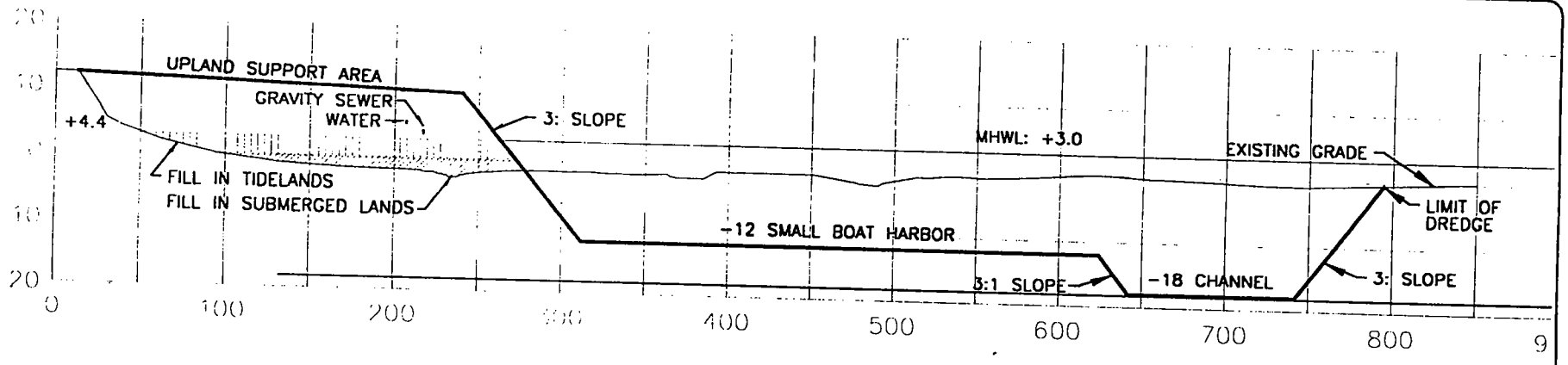
(REVISED) SMALL BOAT HARBOR PLAN

ST. PAUL ISLAND – VILLAGE COVE
COMMUNITY: CITY OF SAINT PAUL, ALASKA
APPLICATION BY: CITY OF SAINT PAUL

ST. PAUL ISLAND, ALASKA

polarconsult alaska, inc.

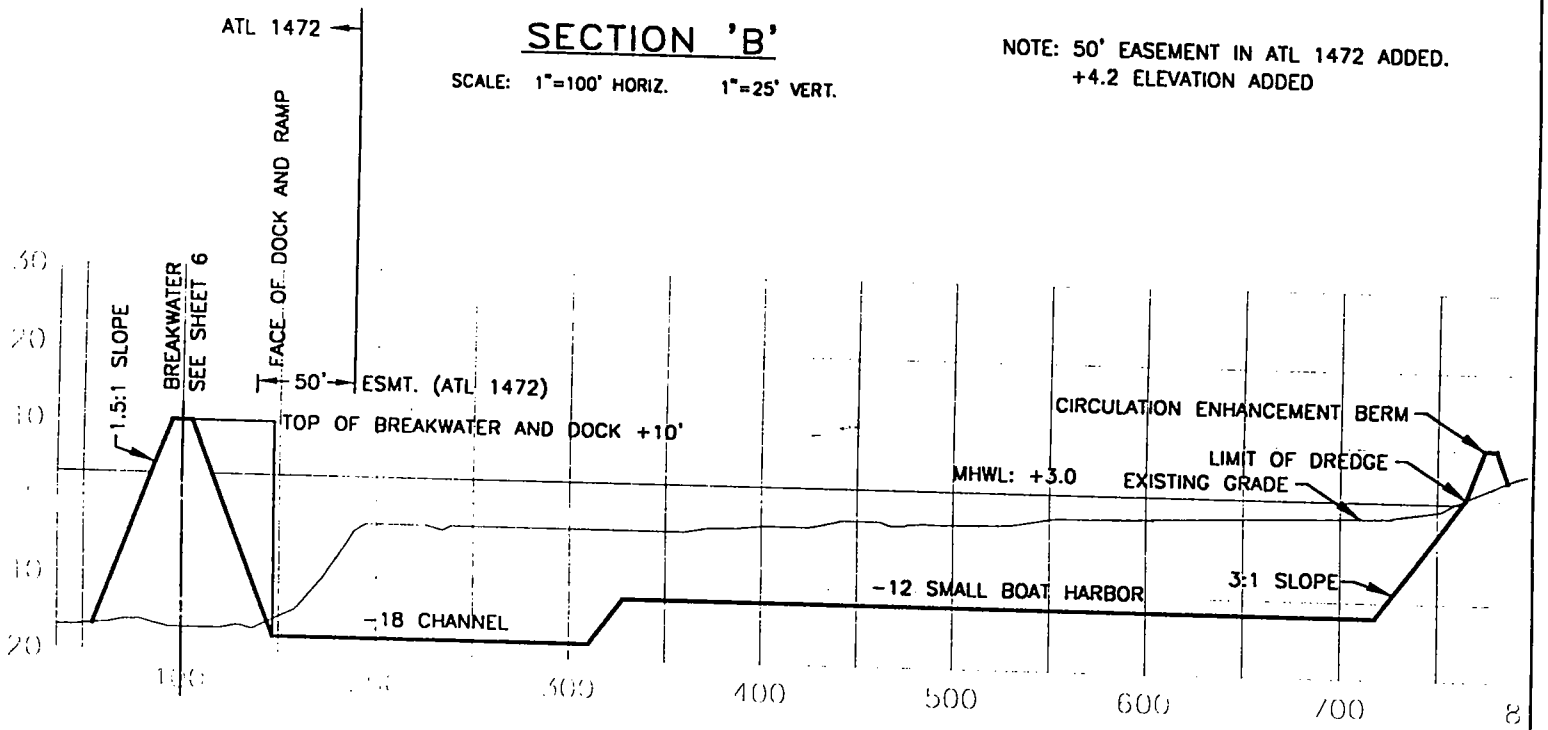
SHEET: 3A OF: 7 DATE: 6/14/98



SECTION 'B'

SCALE: 1"=100' HORIZ. 1"=25' VERT.

NOTE: 50' EASEMENT IN ATL 1472 ADDED.
+4.2 ELEVATION ADDED



SECTION 'A'

SCALE: 1"=100' HORIZ. 1"=25' VERT.

PROPOSED SMALL BOAT HARBOR

(REVISED) PROJECT SECTIONS

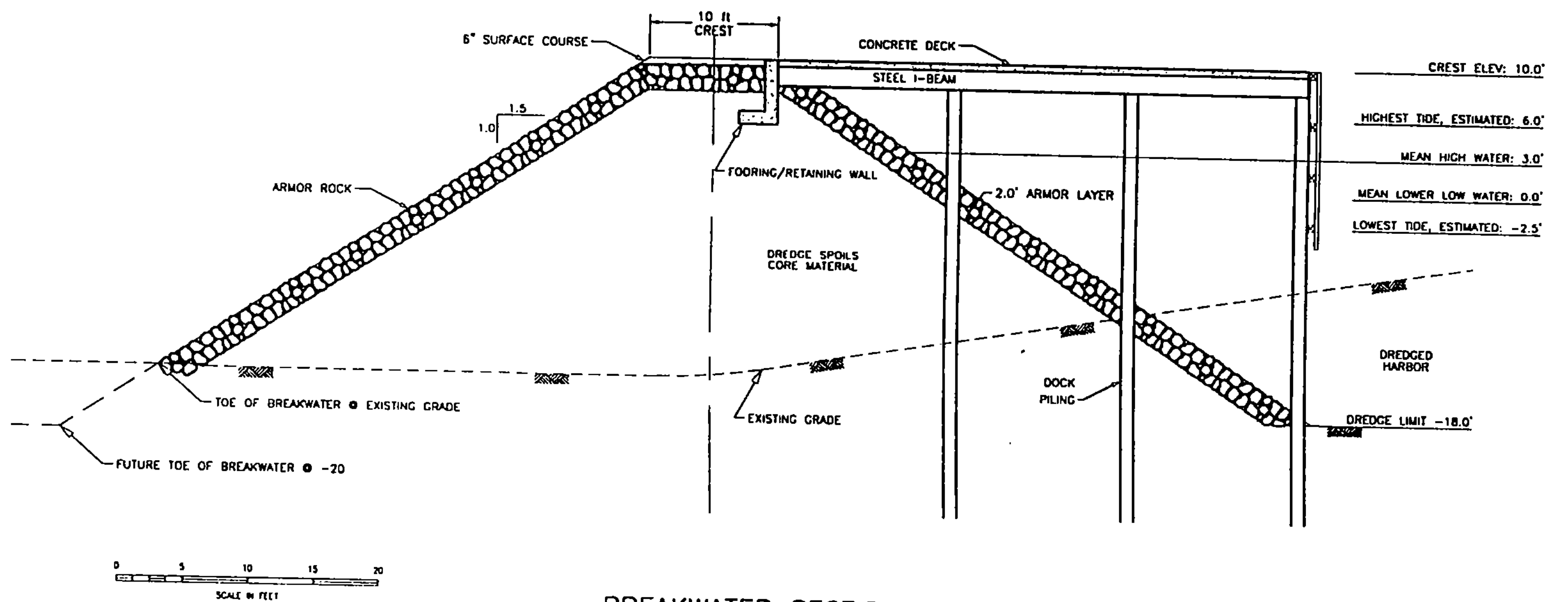
ST. PAUL ISLAND - VILLAGE COVE
COMMUNITY: CITY OF SAINT PAUL, ALASKA
APPLICATION BY: CITY OF SAINT PAUL

ST. PAUL ISLAND, ALASKA

polarconsult alaska, inc.

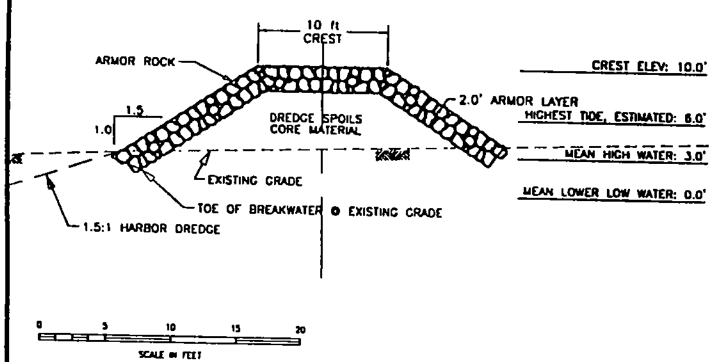
SHEET: 4A OF 7

DATE: 6/14/99



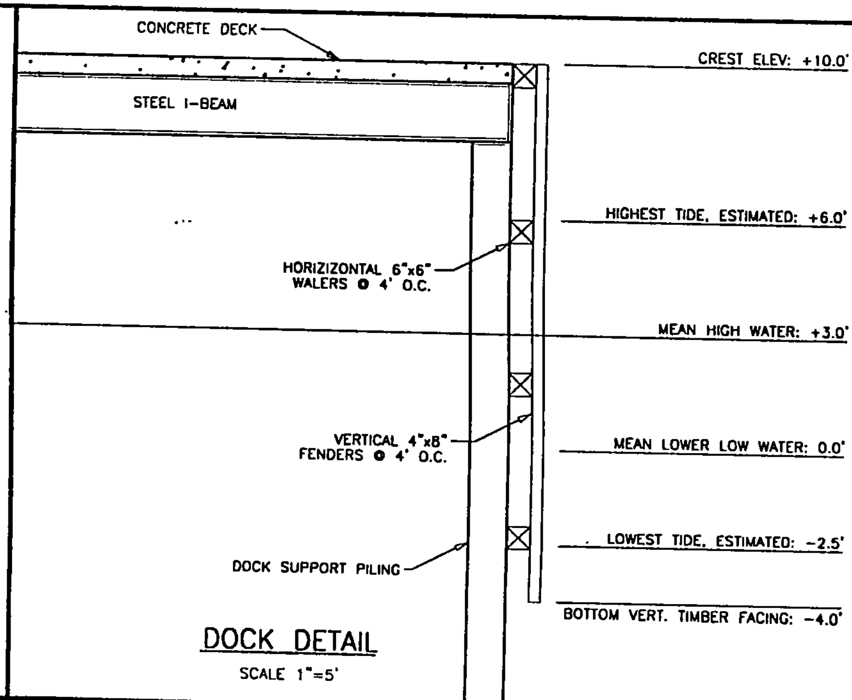
BREAKWATER SECTION

SCALE 1"=15'



CIRCULATION BREAKWATER SECTION

SCALE 1"=15'



DOCK DETAIL

SCALE 1"=5'

PROPOSED SMALL BOAT HARBOR

(REVISED) BREAKWATER SECTION

ST. PAUL ISLAND – VILLAGE COVE
COMMUNITY: CITY OF SAINT PAUL, ALASKA
APPLICATION BY: CITY OF SAINT PAUL

ST. PAUL ISLAND, ALASKA

polarconsult alaska, inc.

SHEET: 6A OF: 7 DATE: 6/14/99

8

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF AIR AND WATER QUALITY
NON-POINT SOURCE WATER POLLUTION CONTROL

TONY KNOWLES, GOVERNOR

555 Cordova Street
Anchorage, AK 99501-2617
PHONE: (907) 269-7564
FAX: (907) 269-7508
http://www.state.ak.us/dec/

February 18, 2000

Dee High
DHI Consulting Engineers
800 E. Dimond, Suite 3-545
Anchorage, Alaska 99515

Subject: Village Cove 2, NPACO No.2-981150
State I.D. No. AK 9812-15AA

Dear Mr. High:

In accordance with Section 401 of the federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation is issuing the enclosed Certificate of Reasonable Assurance for the proposed construction of a small boat harbor within the existing boat harbor at St. Paul, Alaska.

This certification is one of the approvals required as part of a coastal management consistency determination issued by the Division of Governmental Coordination under 6 AAC 50.070.

Department of Environmental Conservation regulations provide that any person who disagrees with any portion of this action may request an adjudicatory hearing in accordance with 18 AAC 15.200-920. The request should be mailed to the Commissioner of the Alaska Department of Environmental Conservation, 410 Willoughby Ave., Suite 105, Juneau, AK 99801-1795. Please also send a copy of the request for hearing to the undersigned. Failure to submit a hearing request within thirty days of receipt of this letter constitutes a waiver of that person's right to judicial review of this action.

By copy of this letter we are advising the Corps of Engineers and the Division of Governmental Coordination of our actions and enclosing a copy of the certification for their use.

Sincerely,

Tim Rumfelt
Environmental Specialist

Enclosure

cc: Corps of Engineers
F&WS
Maureen McCrea, DGC Anchorage
EPA, AK Operations
ACMP, DNR\DOL
ADF&G, Anchorage

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, in accordance with Section 401 of the federal Clean Water Act and the Alaska Water Quality Standards, is issued to the Aleut Community of St. Paul and the Tanadqusix Corporation, 1500 W 33rd Ave, Suite 220, Anchorage, Alaska 99503, for the proposed construction of a small boat harbor within the existing boat harbor.

The proposed activity is located within section 25, T35S, R132 W, Seward Meridian, Saint Paul Harbor, Saint Paul, Alaska.

Public notice of the application for this certification was given as required by 18 AAC 15.180.

Water Quality Certification is required under Section 401 because the proposed activity will be authorized by a Corps of Engineers permit identified as Village Cove 2, NPACO No. 2-981150, and a discharge may result from the proposed activity.

Having reviewed the application and comments received in response to the public notice, the Alaska Department of Environmental Conservation certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the Clean Water Act, the Alaska Water Quality Standards, 18 AAC 70, and the Standards of the Alaska Coastal Management Program, 6 AAC 80, provided that the following stipulations are adhered to. These stipulations were adopted pursuant to 6 AAC 50 (Project Consistency with the Alaska Coastal Management Program) and are necessary to ensure that your project is consistent with the ACMP:

1. Sorbent material in sufficient quantity to handle operational spills must be on hand at all times for use in the event of a fuel spill.

2. The applicant shall provide and maintain containers for the collection of waste petroleum products, liquid wastes, garbage, and litter at the facility.

3. The deflector breakwater shall be constructed or re-oriented, as per the engineering done by the U.S. Army Corps of Engineers, concurrent with construction of the small boat harbor. Construction and location shall ensure proper water circulation and exchange at all times within the Salt Lagoon.

Date 2/18/00

Tim Rumfelt
Environmental Specialist

"Clean Air, Clean Water"

STATE OF ALASKA

OFFICE OF THE GOVERNOR

TONY KNOWLES, GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

☑ *SOUTHCENTRAL REGIONAL OFFICE*
550 W. 7TH AVENUE, SUITE 1660
ANCHORAGE, ALASKA 99501
PH: (907) 269-7470/FAX: (907) 269-3981

☐ *CENTRAL OFFICE*
P.O. BOX 110030
JUNEAU, ALASKA 99811-0030
PH: (907) 465-3562/FAX: (907) 465-3075

☐ *PIPELINE COORDINATOR'S OFFICE*
411 WEST 4TH AVENUE, SUITE 2C
ANCHORAGE, ALASKA 99501-2343
PH: (907) 271-4317/FAX: (907) 272-3829

September 18, 2002

Mr. John Burns
U.S. Army Corps of Engineers
P.O. Box 898
Anchorage, Alaska 99506-0898

Dear Mr. Burns:

SUBJECT: ST. PAUL SMALL BOAT HARBOR (VILLAGE COVE 1, MOD.)
STATE I.D. NO. AK 0205-02AA
FINAL CONSISTENCY FINDING

The Division of Governmental Coordination (DGC) is coordinating the State's review of your proposed project for consistency with the Alaska Coastal Management Program (ACMP) and has developed this final consistency finding based on reviewers' comments. Because all parties with elevation rights concurred with this project per the ACMP, I did not issue a proposed consistency finding.

Scope of Project Reviewed

Three activities are under review in Village Cove, St. Paul Island (Township 35S, Range 132W, section 24, Seward Meridian).

1. Modifications to the Small Boat Harbor in Village Cove that include a redesign of the splitter breakwater to enhance circulation and deepening the entrance channel two feet to reduce water velocity through the channel;
2. Disposal of dredged material from the harbor in ocean waters;
3. Assessment of impacts of emergency action on the main breakwater in Village Cove.

Contaminated dredge material will be placed at the treatment/disposal site developed by the National Oceanic and Atmospheric Administration to handle contaminated soils that they are cleaning on St. Paul Island; it will not be disposed of in-water.

The activities covered are explained more completely in the Environmental Assessment that the U.S. Army Corps of Engineers prepared for the activity.

This final consistency finding, developed under 6 AAC 50, applies to the federal consistency determination required for the activity per 15 CFR 930 Subpart C.

The revised activity requires no new authorizations subject to this consistency review. The following authorizations were included in the initial review undertaken pursuant to the City of St. Paul's applications for the project (AK 9812-05AA, Village Cove 1).

Department of Environmental Conservation
Certificate of Reasonable Assurance

Department of Natural Resources/Division of Mining, Land, and Water (DNR/DMLW)
Material Sale LAS 227120
Tideland Lease LAS 227132

U.S. Army Corp of Engineers
Section 404 and 10 Permit # 2-981089

Most State agencies should issue permits within five days after DGC issues a final consistency finding. DNR authorizations involving a disposal of interest in State land may take considerably longer. You may not use any State land without DNR authorization. This consistency finding does not obligate any State agency to issue an authorization under its own statutory authority, nor does it supersede state agency statutory obligations. Authorities outside the ACMP may result in additional permit/lease conditions not contained in the consistency finding.

The Alaska Departments of Environmental Conservation, Fish and Game, and Natural Resources and the St. Paul coastal resource district have reviewed your proposed activity. Based on that review, the State concurs with your determination that this proposed project is consistent with the ACMP to the maximum extent practicable. You agreed to the following alternative measures that were included in the original review, Village Cove 1, AK 9812-05AA. (See enclosure). These measures will be included on the State permits noted.

Material Sale:

1. The buyer of materials from the State of Alaska shall conduct all operations in a manner that will prevent unwarranted erosion to the coastline. All such erosion shall be repaired in a manner satisfactory to the regional manager of DNR/DMLW at the buyer's expense.

Rationale: This stipulation is necessary to ensure that shoreline erosion will not occur and damage coastal habitat per the statewide Habitats Standard (6 AAC 80.130) and the enforceable policy 29 of the St. Paul Coastal Management Program (SPCMP).

2. Access to and from State tideland areas shall not be blocked or impaired by dredging and barge operations. Please note: if temporary closure of access is necessary, you are required to notify DNR/DMLW immediately.

Rationale: This stipulation is necessary to ensure public access is maintained per the statewide standard for Recreation [6 AAC 80.060 (b)].

Material Sale, Tideland Lease, and Certificate of Reasonable Assurance:

3. Sorbent material in sufficient quantity to handle operational spills must be on hand at all times for use in the event of fuel spill.

Rationale: This stipulation ensures that petroleum products will not enter the environment and is necessary to ensure consistency with the statewide stand for Air, Land, and Water Quality (6 AAC 80.140) and enforceable policies 36 and 37 of the SPCMP.

4. Waste petroleum products, liquid wastes, garbage or litter of all kinds shall be disposed only in appropriate containers. No disposed items are allowed to pollute Village Cove.

Rationale: This stipulation ensures that petroleum products will not enter the environment and is necessary to ensure consistency with the statewide stand for Air, Land, and Water Quality (6 AAC 80.140) and enforceable policies 8, 36, and 37 of the SPCMP.

5. The deflector breakwater shall be constructed or re-oriented concurrent with construction of the small boat harbor and per the engineering done by the U.S. Army Corps of Engineers. Construction and location shall ensure proper water circulation and exchange at all times within the Salt Lagoon.

Rationale: This stipulation is intended to maintain adequate and appropriate circulation to ensure consistency with the statewide standard for Habitats [6AAC 80.130 (c)(2) and (3) Land Air, Land, and Water Quality (6 AAC 80.140).

Material Sale and Tideland Lease:

6. All activities shall cease if they may damage any historic, prehistoric, and archaeological sites that may be discovered during the course of field operations. Please note: you are required to notify the Office of History and Archaeology in the Division of Parks and Recreation (907) 269-8715/8720 and the appropriate coastal district immediately.

Rationale: This stipulation is necessary to preclude possible loss of such artifacts and preserve historic, prehistoric, and archaeological resources to ensure consistency with the statewide standard for Historic, Prehistoric, and Archaelogical Resourses (6 AAC 80.150) and enforceable policy 38 of the SPCMP.

Tideland Lease:

7. Use of the public dock shall not restrict the entrance channel to a width less than 150-feet.

Rationale: The intent of the public dock is to support the local fishing fleet. This stipulation ensures that navigation will not be impeded and fosters public use of public facilities per

statewide enforceable standards 6 AAC 50.060 (b), 6 AAC 80.090, and 6 AAC 120 and policy 8 of the SPCMP.

8. Moored vessels in the small boat harbor are limited to those no greater that the 60-foot class.

Rationale: The intent of the public dock is to support the local fishing fleet. This stipulation ensures that navigation will not be impeded and fosters public use of public facilities per statewide enforceable standards 6 AAC 50.060 (b), 6 AAC 80.090, and 6 AAC 120 and policy 8 of the SPCMP.

Advisories.

DFG notes that the plans include a mitigation feature in the form of constructing a tidal pool east of the small boat in the historic Salt Lagoon outlet channel. The tidal pool would be separated from the harbor by a circulation berm. However, the mitigation plan is conditioned on uncertain property ownership and no firm commitment is made to provide alternative mitigation if the tide pool cannot be constructed.

DNR advises that if the materials dredged from the Salt Lagoon channel are used for any beneficial purpose, they must be purchased and an additional DNR material sale contract will be necessary. Also, if the project extends into tidelands leased to Tanadgusix Corporation, both Tanadgusix Corporation and DNR, Division of Mining, Land, and Water (DMLW) must be notified at least 90 days prior to the commencement of activities. The concurrence of DNR/DMLW must be obtained for these activities.

DEC advises that the initial workplan for the project at St. Paul is adequate for the contractor to know what to do in order to bid. Please be advised that the contractor is required to produce a more detailed workplan and sampling/analysis plan (SAP) this winter after the Corps selects the contractor.

Please be advised that although the State agrees the project is consistent with the ACMP, based on your project description and any alternative measures contained herein, you are still required to meet all applicable State and federal laws and regulations. Your consistency finding may include reference to specific laws and regulations, but this in no way precludes your responsibility to comply with other applicable laws and regulations.

This consistency finding is ONLY for the activity as described. If you propose changes to the approved activity, including its intended use, prior to or during its siting, construction, or operation, you must contact this office immediately to determine if further review and approval of the revised project is necessary. Changes may require amendments to the State approvals listed in this consistency finding.

If the proposed activities reveal cultural or paleontological resources, please stop any work that would disturb such resources and immediately contact the State Historic Preservation Office (907-269-8720) and the Corps of Engineers (907-753-2712) so that consultation per section 106 of the National Historic Preservation Act may proceed.

This final consistency determination is a final administrative decision for purposes of Alaska Appellate Rules 601-612. Any appeal from this decision to the superior court must be made within 30 days of the date of this determination.

If you have any questions about this review, please contact me at (907) 269-7473 or email maureen_mccrea@gov.state.ak.us.

Sincerely,

Maureen McCrea

Maureen McCrea
Project Review Coordinator

cc: w/enclosure
Enclosure:

Stefanie Ludwig, DNR/SHPO, Anchorage
Karlee Gaskill, ACMP Liaison, DNR/DOL, Anchorage
Brad Sworts, Permits Officer, DOT/PF, Anchorage
Wayne Dolezal, DFG/DHR, Anchorage
Tim Rumfelt, DEC, Anchorage
Naoma Putman, Coastal District Coordinator, City of St. Paul, St. Paul
John Merculief, City Manager, City of St. Paul, St. Paul
Roger Du Brock, Bering Sea Fishermen Association, Anchorage
Jeanne Hanson/Dave Cormany, NMFS, Anchorage
Michael Dahl, Polarconsult Alaska, Inc., Anchorage
Medrick Northrup, COE Regulatory, Anchorage
Gary Wheeler, USFWS
Arlan DeYong, DNR
Ron Philemonoff, TDX Corp.
Patrick Baker, IRA, St. Paul
Karin Holser, Pribilof Islands Stewardship Program
Dee High, DHI Consulting Engineers, Anchorage
Erin Rose, Owens & Turner

S:\dgc\a-files\maureen\0205-02 final

Project Amendment -- Acceptance

I have reviewed the proposed consistency finding for my project, St. Paul Small Boat Harbor (Village Cove 1, Mod.), State ID #AK 0205-02AA, and hereby amend my proposal to fully incorporate all of the alternative measures described in the original review, Village Cove 1, AK 0812-05AA.

John Burns (name)

Sept 13, 2002 (date)

Please fax this signed and dated form to the Division of Governmental Coordination at [907-269-3981] no later than 5 days from receipt. You also have the option of amending your original application form no later than 5 days from receipt. If you are unable to agree with these alternative measures or return this form by that date, please contact DGC at [907-269-7470] to request an elevation or extension of time. This form is necessary to meet requirements in federal regulations for State consistency determinations (15 CFR 930.4(a)(2)).

VOR

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services Anchorage
605 West 4th Avenue, Room 61
Anchorage, Alaska 99501-2249

APR 29 2002

WAES(T:\CORPS\St Paul hbr\ReviewEA April 2002)

John Burns
U.S. Army Engineer District, Alaska
CEPOA-EN-CW-ER
P.O. Box 898
Anchorage, Alaska 99506-0898

RECEIVED
MAY - 3 2002

Re: Environmental Assessment,
St. Paul Small Boat Harbor

Dear Mr. Burns:

We have reviewed the Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Small Boat Harbor and Emergency Repair of the Main Breakwater and Disposal of Dredged Material in Open Waters at St. Paul Island, Alaska and have the following comments and recommendations.

The U.S. Fish and Wildlife Service (Service) has been involved with various aspects of this project for many years. We have prepared Coordination Act Reports which included site-specific investigations. We have updated those reports periodically as the project scope and complexity have changed.

Additional Project Impacts:

Rats:
The EA acknowledges that the introductions of rats to St. Paul Island is an important resource concern. We agree that large vessels did not dock on St. Paul until the construction of breakwaters and docks. The continued expansion of breakwaters and docking areas increases the risk that ships could bring rats to the island. The introduction of rats could devastate important seabirds colonies that are part of the Alaska Maritime National Wildlife Refuge.

The City of St. Paul, in cooperation with the Service, has designed and implemented an effective rat prevention program at St. Paul. The EA is technically correct that there are no rats on the island, but this is due to a number of factors, including the rat prevention program. The St. Paul rat prevention program has been in place since 1993. Since that time, six rats have been killed on the St. Paul docks, rat damaged cargo and rat droppings in cargo have been observed, and a carcass was discovered (which likely arrived dead). There have also been two sighting of rats being carried in the mouths of foxes and of one unverified drowning of a rat in the harbor. Additional rat sightings are unverified.

Since 1997 incidents of rats getting to St. Paul have declined dramatically. We believe this is due to several factors: 1) decline in fisheries, 2) changes in freight delivery mechanisms (more air cargo), 3) outreach to ships using the Pribilof Islands to make them more likely to be rat-free (a short term program which will likely end in 2003); and 4) luck. All of these factors could revert back to former conditions and the risk of rats reaching the island could increase.

The EA mentions the potential for establishing new processing facilities on the island, for developing multi-species harvesters and processing, and new cod and groundfish processing. Such changes will dramatically intensify the threat of rat introductions. This will occur because:

1) Harbor use will increase (more ships, more rats);

2) Larger ships (trawlers and freighters stand a greater potential for carrying rats);

3) The likely production of fish meal (a preferred rat attractant);

4) Ship traffic will proportionally shift more toward the summer season. Escaping rats would have a much higher likelihood of getting established in summer when weather conditions are mild, masses of seabirds and marine mammals provide limitless food, and defensive stations are less attractive; and

5) Defensive stations for rat prevention would be less attractive to rats escaping from ships in summer since the food (poison/bait on traps) and shelter the stations provide will not be as attractive.

The Service role in the rat prevention program is an advisory one. We have helped with setting up the program, supplies, coordination, training, and experimentation to find better methods to deal with specific problems. We have also secured funding and led outreach efforts to ships to lessen the likelihood they will carry rats. The Service will continue to assist when possible, however, we are concerned that we have often been required to step in and do more than assist when local efforts fall short and/or processors fail to fulfill their part of the program. The Service believes the primary responsibility for rat prevention on St. Paul lies with the local community and processors using the island. As the breakwater system and other harbor features, including the new small boat harbor, produce direct economic benefit to the community, we would like to see more, sustained efforts directed to the rat prevention program. We recommend the Corps of Engineers (Corps) make an approved rat prevention program for the harbor vicinity a harbor feature and/or an enforceable component of the harbor agreement. We are unfamiliar with the funding sources available to the City of St. Paul for this program, however we believe fish taxes or moorage fees could be a source of sustained revenue for a modest, but effective program.

Mitigation:

Our last formal interaction with the Corps (letter dated August 7, 2000, included in the EA) concerned the potential mitigation to be completed with the addition of the small boat harbor to the larger harbor project that was being proposed by the Corps. We have reiterated this need informally with you since that time.

The Service recommended that the Corps restore the historic entrance channel of Salt Lagoon to functional intertidal habitat to mitigate the loss of other marine habitats upon construction of the small boat harbor. The historic entrance channel appears to have been altered through the creation of a new outlet channel. We believe the hydrologic isolation from the main outlet channel of Salt Lagoon and a lack of tidal flushing due to the protection of Village Cove by the breakwaters have combined to degrade the former entrance channel. The isolated channel has increased in elevation due to sedimentation, diminishing its functions and values as habitat. There are several shorebird species that used this site before it was degraded and would use it again if it was restored to pre-disturbance contours. Of particular interest is the rock sandpiper, a species of unique biological interest because this sub-population summers at St. Paul and winters in Cook Inlet.

The EA describes the historic entrance channel mitigation project on pages 41 and 48. We appreciate that the Corps is supportive of the project, however the viability of the project is tenuously dependent upon resolution of a legal matter between the TDX Corporation and the City of St. Paul. As both the TDX Corporation and the City of St. Paul stand to benefit from the development of the small boat harbor and other amenities constructed by the Corps, we encourage the Corps to take a more active role in securing the restoration site in order for the restoration project to be completed. Without this mitigation project, or a suitable alternative, we must assume that the direct and secondary impacts resulting from the construction of the small boat harbor would not be mitigated. The Service would consider the lack of mitigation for the proposed project inconsistent with existing policy and guidance and would not be in the public interest.

As we begin to evaluate mitigation needs for the project we would appreciate the opportunity to review the existing plan for rehabilitating Salt Lagoon. It has been several years since this project has received attention and we want to ensure that the project environment has not changed in a way that would affect the planned work. We would not expect the review to take much time, but there are many new people involved with this project that could benefit from a brief review of the project as is was proposed and designed to compensate for other impacts arising from the larger harbor project.

Additional Resource Information:

We have two other corrections we wanted to bring to your attention:

Page 45, para 4, line 3: Service biologists report that Steller sea lions are often hauled out at Zapadni Point.

Page 45, para 5, line 3: Service biologist's report that Steller's eiders have been observed in the Village Cove area.

Summary:

The cover letter for the EA states, "The FONSI will be signed upon review of comments received and resolution of significant objections." The Service has significant objections to this project as proposed unless and until an appropriate mitigation plan/project(s) is developed and implemented.

The Service would be happy to discuss the historic entrance channel project or other potential projects or issues with you at any time. Please call Mark Schroeder at 271-2797 if you have any questions or wish to arrange a meeting.

Sincerely,

Ann G. Rappoport
Field Supervisor

cc: ADFG
NMFS
EPA

United States Department of the Interior

NATIONAL PARK SERVICE
Alaska Regional Office
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501

IN REPLY REFER TO:
H34 (AKSO-RCR)

FEB 23 2005

Guy R. McConnell
Chief, Environmental Resources Section
Department of the Army
U.S. Army Engineer District, Alaska
P.O. Box 6898
Elmendorf AFB, AK 99506-6898

Dear Mr. McConnell:

This letter is in response to your letter dated January 28, 2005, regarding the harbor construction project in the South Village Cove at St. Paul, Alaska. The support facilities of the proposed in the project are located within the boundary of the Seal Islands National Historic Landmark.

We concur with your determination of no adverse effect on the National Historic Landmark, assuming that the road identified in your letter that "will extend past the theater" will not be impacted. If the Army Corps of Engineers is proposing any changes to this road, please let me know.

Thank you for the opportunity to review this proposed project. If you have questions about my comments, please contact me by telephone at (907) 644-3461or email, janet_clemens@nps.gov.

Sincerely,

Janet Clemens

Janet Clemens
Historian

STATE OF ALASKA

FRANK H. MURKOWSKI, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION
OFFICE OF HISTORY AND ARCHAEOLOGY

550 W. 7th Ave., SUITE 1310
ANCHORAGE, ALASKA 99501-3565
PHONE: (907) 269-8721
FAX: (907) 269-8908

February 17, 2005

File No.: 3130-1R COE/ Environmental

SUBJECT: Construction of harbor at South Cove, Saint Paul Island, Alaska

Guy R. McConnell
Chief, Environmental Resources Section
U. S. Army Corps of Engineers, Alaska District
P. O. Box 6898
Anchorage, AK 99506-0898

Dear Mr. McConnell:

The State Historic Preservation Office received your correspondence on February 4, 2005 and has reviewed your referenced undertaking for conflicts with cultural resources under Section 106 of the National Historic Preservation Act. As mentioned in your letter, the proposed harbor will be within the Seal Island Historic District (XPI-002) National Historic Landmark (NHL). The harbor will not directly impact historic buildings and structures. We concur with your determination that no historic properties will be adversely affected by this project.

Since the project is within a NHL, you also should consult the National Park Service regarding their concerns.

Please contact Stefanie Ludwig at 269-8720 if you have any questions, or if we can be of further assistance.

Sincerely,

Joan M. Antonson

Judith E. Bittner
Deputy State Historic Preservation Officer

JEB:sll

Cc: Janet Clemens, National Park Service, Alaska Regional Office

Boyer, Lizette P POA

From: Mark_Schroeder@fws.gov
Sent: Friday, March 11, 2005 9:25 AM
To: Boyer, Lizette P POA
Cc: Frances_Mann@fws.gov
Subject: Saint Paul Harbor CAR

Lizette:

Thank you for meeting with the Service the other day to discuss the Saint Paul Harbor project. We were involved in the review of the previous Saint Paul small boat harbors (two competing designs) when they were under public review by the Regulatory Branch of the Corps, before the project was incorporated into the Civil Works project. Our Fish and Wildlife Coordination Act responsibilites were reflected in our comments on that project and our recommendations were later conceptually incorporated into the Civil Works project. We remain agreeable to the overall concept of the "tidal basin" that would be constructed near the outlet of the Salt Lagoon channel. As we discussed, our goals and objectives for that part of the project (as described in our April 29, 2002, letter) can be fulfilled as the overall project enters the PED phase. With this understanding, we do not believe a Coordination Act Report is necessary for adding the Small Boat Harbor to the larger Civil Works project.

Mark Schroeder
Fish and Wildlife Biologist
Anchorage Fish and Wildlife Field Office