

**HOMER MARINER PARK HABITAT ASSESSMENT
& RESTORATION DESIGN PROJECT**

RECEIVED

APR 07 1998

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL

Project Number: 99314
Restoration-Category: Intertidal Community, Recreation and Tourism
Proposer: City of Homer
Lead Trustee Agency: Alaska Department of Natural Resources
Cooperating Agencies: Alaska Department of Fish and Game
Department of Interior, Fish and Wildlife Service
Alaska SeaLife Center: No
Duration: 1 year
Cost FY 99: \$95,350
Geographic Area: Kenai Peninsula, Homer
Injured Resource/Service: Intertidal Organisms, Recreation and Tourism

ABSTRACT

In its present state, Mariner Park is a highly stressed marine habitat in decline. The area is experiencing a dramatic reduction in marine biota and shorebird population while incompatible and environmentally destructive human uses flourish. From the results of a comprehensive feasibility study that includes botanical, biological, and hydrological field studies coupled to community information it is possible to develop a comprehensive habitat restoration and enhancement plan. This plan will establish the optimal hands-on restoration program to increase and diversify the intertidal fauna, which, in turn, will benefit migrating shorebirds and promote recreationally compatible use of the area by residents and tourists.

INTRODUCTION

Kachemak Bay is the premier marine ecosystem in Cook Inlet. It is important for its fertile intertidal, nearshore, and subtidal waters. These estuarine areas support a richly diverse biosystem. In particular, the Bay nurtures a thriving marine bird habitat by providing important feeding, nesting, rearing, and migratory staging throughout the year. Central to this critical habitat, as an ecosystem and a destination for resident and non-resident recreational visitors, is Homer Spit.

Located at the base of the Spit and east of the Sterling Highway (Spit Road), is Mud Bay. This bountiful habitat is one of the most biologically diverse and active areas in the spectrum of northeast Pacific shallow-water estuaries, [Shimek 1979]. From a biological perspective, Mud Bay is a classical thriving northern mud flat site. It is home to a collection of worms, bivalves, crustaceans, and other intertidal life. These organisms are food for birds, crabs, and fish. Once an integral part of Mud Bay with all of the important habitat characteristics of its host ecosystem, the area west of the road, referred to in this proposal as Mariner Park redefined itself.

Mariner Park a 109 acre parcel of which 71 acres are owned by the Alaska Department of Natural Resources, 32 acres by the City of Homer, and 6 acres in private hands, faces west toward Cook Inlet. Approximately fifty years ago, prior to the construction of the Homer Spit Road and Airport, Mariner Park was contiguous with the habitat rich, Mud Bay. Today, Mud Bay, (a.k.a. Coal Bay), continues as a productive estuary, a fate not shared by its estranged neighbor, Mariner Park.

Once a mudflat, Mariner Park emerged as a sand beach ecosystem with a complex intertidal habitat. It consists of a high tide line saltwater wetlands, inshore tidal lagoon, and protective sand berm. Outer Kachemak Bay water enters the lagoon through a breach in the protective sand berm via a tidal stream. Since most of the lagoon area is relatively high, actual flooding occurs for short periods only during high tides; consequently, water exchanges are infrequent and the area is submerged only briefly. As a consequence Mariner Park has lost most of its diversity and density of infaunal organisms. It has become far less attractive for migratory shorebirds and folks who frequent the Spit to enjoy recreational opportunities. This decline in the vitality of the habitat was exasperated by protective actions taken in response to the *Exxon Valdez* Oil Spill (EVOS) incident.

During the *Exxon Valdez* incident the tidal stream inlet to Mariner Park was raised to lessen the potential for oil to enter the habitat. The tidal stream, which supplied critical nutrients to the intertidal lagoon and marsh was, per governmental directive, dammed to protect the intertidal wetlands from oil. During the closure the wetlands dried and biota rich portions of the habitat were greatly reduced. With the inability of the intertidal community to sustain itself the area was unable to effectively support migrating shorebirds. Correlationally, the dry area attracted inappropriate use by residents and visitors. This human disturbance, which included trampling of vegetation by off-road vehicles, removing drift wood from the storm berm, and deforming the protective sand barrier, translated into a loss of nesting area for Common Eiders, harassment of shorebirds during migration, disturbance to shorebirds and sparrows nesting in the dunes area,

and the over-all degradation of the habitat. The effort encumbered in this proposal is to perform a feasibility study for a project to restore the intertidal community injured by *EVOS*. The study, in the form of a National Environmental Policy Act (NEPA)-Environmental Assessment (EA), will delineate the feasibility of a follow-on construction project to restore and enhance the intertidal wetland community in Mariner Park. With botanical, biological, and hydrological studies, coupled to community and historical information, providing the foundation of the EA, predictions are that a comprehensive restoration construction program will return the area to the rich wetland status it once was. The eventual enhancement potential is to provide, preserve, and protect intertidal feeding habitat for migrating shorebirds, which in turn will help restore recreation and tourism services injured by *EVOS*.

NEED FOR THE PROJECT

A. Statement of Problem

Historically, as the head of Mud Bay, Mariner Park was a classical northern mud flat. The contiguous area supported a diverse biomass with dominant organisms to include polychaete worms and small bivalves. The small organisms were food for larger, transient organisms: shorebirds, crabs, and fish. The density of infaunal organisms at this site was high; consequently, even a small portion of habitat was a productive location supporting a relatively large number of important organisms.

While Mud Bay continues to prosper in intertidal and avian diversity, Mariner Park has not fared as well. With excavation of the area for fill used to construct the airport and the road segregating the area from its naturally connected ecosystem, Mariner Park's habitat has morphed into an intertidal area with complex sedimentary and biological relationships.

Mariner Park's sedimentary characteristics now resemble a sand beach versus mud flat ecosystem. Sediment carried via long-shore transport was deposited in the intermittently flooded lagoon area. Generally, the soil profile is sand, to a depth as shallow as four feet, over silty clay. Higher elevations have coarser sediment than lower areas. The subtidal cobble area is partially covered by moving patches of sand. The tidal stream habitat is composed of sandy gravel with cobbles and the saltwater marsh area, being farthest from the current flow, contains finer sediments. [USF&W, 1991 and Land Design North, 1980]

The site consists of a high tide line saltwater wetlands and lower inshore area which behaves as a tidal lagoon. The lagoon is separated from the outer Kachemak Bay by a storm berm. Historically, a tidal stream breaches the storm berm. Since most of the lagoon area is relatively high, it fills only at high tides, during which actual flooding occurs for short periods. Frequently, water becomes trapped in the lagoon area for long periods because the tidal stream channel is not sufficiently deep and the inshore lagoon too high to permit frequent exchange of water. The only remaining vegetation is located at the base of the bluff, which is primarily private property.

The areas above mean high tide line on both sides of the Spit Road are covered with grasses. These areas are interlaced with tidal channels and occasional tidal basins which are classified as

saltwater wetlands, [Kenai Peninsula Borough Coastal Management Program, 1990]. Vegetation of the small saltwater marshes at the base of the Spit are mainly Lyngbye sedge and arrow grass, with alkali grass at the lower tidal levels. These marshes are prime feeding habitats for the less common shorebirds as well as secondary feeding and loafing areas for the principal shorebird migrants. [ADF&G, 1992 and West, 1990]

Not only has natural sediment transport processes affected Mariner Park but consequences due to human use have depleted the habitat. As Homer grew the Spit became a very desirable recreation and tourist area. To address the demands for Spit development, in the late 1970's through the early 1990's, various proposals to address the ever growing need for campground and recreational areas on the Spit were written. It was the belief of various proposers, as a consequence of their site investigations, that the area at the base of the Spit and west of the road be partially filled and made into a park. The proposals suggested allowances be made to protect the saltwater lagoon and tidal stream. [Land Design North 1980, Dames & Moore 1981, and City of Homer 1984, 1990] ~

Responding to various ideas expressed in the proposals, in 1985, a phased development of a portion of the site was begun. Specifically, to support open space/recreational use, approximately 20,000 cubic yards of fill material was placed in a 2.6 acre area south of the tidal stream by 1989. The area, Phase I of a three phase park concept, was partially filled, graded, and safety/sanitation upgrades made. It was during this period that Mariner Park got its name.

Concurrent with the Park's development, a chorus of concerned Homer residents voiced their opposition while extolling the virtues of habitat protection. In 1985 a petition against filling the area gathered 400 signatures. After the *Exxon Valdez* incident which caused the closure of the tidal lagoon, in 1990 the residents of property adjoining Mariner Park signed a joint letter to the US Army Corps of Engineers (COE) expressing their continued opposition to the development of Mariner Park and encouraging its prompt return to a natural habitat.

In response to the degraded habitat in Mariner Park, the City of Homer's Spit Campground Task Force, in 1990, revised the partially implemented 1984 park development plan. The Task Force proposed a scaled-down development plan that incorporated a lagoon flushing and enhancement program for the area. Further development of the area, to include the filling of an additional 2.0 acres adjacent to Phase I was withdrawn by the City of Homer. Subsequently, as a consequence of the *EVOS* incident, community sentiment, and concerns voiced by recreational users of the area to preserve and enhance the habitat, the COE denied a permit application to continue development of Mariner Park.

With the partial reopening of the breach in 1992, the tidal stream resumed transport, at lower levels, of nutrients into the intertidal lagoon. The refreshed lagoon and raised gravel plain attracted a small number of waterfowl and cranes. The breach was again closed in 1994 during a severe storm and was partially re-opened in 1996. As a consequence of the tidal stream closures, Mariner Park has experienced a noticeable increase in the rate of habitat degradation.

B. Rationale/Link to Restoration

As a protective measure against oil entering Mariner Park's wetlands during the *Exxon Valdez* incident, the tidal stream inlet was closed. The result of the closure was that critical nutrients were prevented from entering the intertidal lagoon. By cutting-off the stream from the outer bay and tides, the saltwater lagoon and marshes dried, thus, biologically rich portions of Mariner Park were not able to sustain themselves.

With the inability of Mariner Park to sustain a vibrant intertidal community, the feeding habitat for shorebirds was injured. This transformed a once thriving habitat viewing area into an unattractive and unavailable tourist and recreation destination.

In addition to directly restoring the injury caused by the response to *EVOS* (i.e., closing the tidal stream inlet), this proposal is also justified as replacement for, and enhancement of, injured intertidal resources. Intertidal wetlands on the Homer Spit must be protected, as much as reasonably possible, if we are to maintain a healthy and productive ecosystem for populations of shorebirds and provide residents and tourists unique wildlife experiences.

C. Location

The environmental assessment project will be undertaken in Homer, Alaska. The flora, fauna, and hydrological studies will be conducted at the base of Homer Spit to include both sides of the Spit Road, (Mariner Park and the nearshore portions of Mud Bay).

The project will directly benefit the Homer area. Additionally, given the international interest in the ecosystem of Kachemak Bay, the environmental assessment will provide invaluable information to the scientific community on the integration of wetland restoration in high use areas. An eventual product of a restoration project is increased tourism to observe the unique habitat and shorebird migration. This will benefit the Cook Inlet region, specifically, and the State, generally.

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

This project is a collaborative venture. Its success is predicated on a collegial relation where the interests of individuals, community groups, and governmental bodies are woven with scientific findings and Trustee Council concerns into tapestry for an optimal restoration outcome which is in the best interest of Homer and the environment. Frequent, open, and candid dialogue is the effective mechanism to achieve this goal.

While scientific information will shape the technical elements of the habitat restoration design, the program will only be effective if placed in a community context. It is incumbent and expected that the project will solicit community involvement and draw upon local resources for input to the planning, scheduling, assessment, and design efforts. A major objective of the project coordinator's scope of work is to communicate with residents, in non-technical terms, on all aspects of the project. It is the project's responsibility to establish and implement procedures

for collecting technical, local, and traditional ecological knowledge as well as investigating the issues and concerns raised by the public.

Homer is a community blessed with residents who possess a broad spectrum of knowledge and represent a myriad of talents. It is assumed the project will call on this talent to provide project support. For example, Homer is home to renowned biologists who have studied the intricacies of the big-diverse Kachemak Bay and the effects of change on ecosystems and habitats. These respected "birders" have intimate knowledge of the area, which translates into project effectiveness and cost savings. They are expected to be an integral component of the planning, assessment, and design team. As to the nuts 'n bolts issues of the project, depending on availability, the assessment team will use local labor and resources, such as equipment and vessels, to assist in collecting data.

PROJECT DESIGN

A. Objectives

The eventual restoration goal, for which this proposal is a critical element, is to restore the intertidal community. The principal objective of this project proposal is to develop a National Environmental Policy Act - Environmental Assessment that will provide a feasible project to restore the intertidal community of Mariner Park. In turn, the restoration project is to restore and rehabilitate the area in such a way as to increase, preserve, and protect a diverse feeding habitat for migrating shorebirds. Correspondingly, due to the fact that Mariner Park is on the flight approach to the airport, the plan will address the issue of how to discourage geese and cranes from frequenting the area, (i.e. inhibit the growth of submergent and emergent vegetation). Additionally, the plan establishes mechanisms to enhance the recreational use of the area in an environmentally compatible manner.

The restoration construction project, the topic of a follow-on proposal to the Trustee Council, is meant to enhance the spectacle of the spring shorebird migration. This translates into increased resident and tourist interest in the area especially during the annual Kachemak Bay Shorebird Festival. With the implementation of an optimal restoration design, Mariner Park will be a showcase of wetland rehabilitation in a high use area.

Concurrently with this project the City is proceeding with improvements to Mariner Park, including a windbreak and interpretive signage describing the Critical Habitat Area and shorebirds that flock to the Homer Spit.

To meet the proposal objectives, scientific and testimonial information is gathered to develop comprehensive restoration alternatives. These alternatives are compared and a preferred restoration alternative is tendered.

The objectives of the project are addressed by, but are not limited to, the tasks listed below.

1. Conduct a review of past documentation to establish an historical perspective for the comparison of past to present community related information and technical data.
2. Collect traditional and local information on prior and expected use of the area in relation to economic, social, and environmental issues. Solicit comments on issues and concerns relative to the impact on resources and services from a restoration project.
3. Measure the diversity, frequency, and abundance of flora and fauna in Mariner Park.
4. Determine the geophysical characteristics of Mariner Park and the head of Mud Bay.
5. Develop restoration design alternatives and conduct a comparative study to identify the preferred restoration project design.
6. Write a National Environmental Policy Act - Environmental Assessment.

B. Methods

The feasibility project being proposed involves collecting biological, botanical, hydrological, and community data that is used to produce an EA. Coordination and management of the project are the responsibilities of a representative for the City of Homer. Field, analytical, and formal EA efforts are to be developed and performed by consultant(s) hired by the City. The consultant(s) will formulate the details and methods for field studies. Generally, the elements of the project are as follows:

1. Research past biological, botanical, and hydrological studies of the area in order to develop a catalogue of historical data and information. !
2. Conduct field studies to catalogue the flora and fauna presently in Mariner Park. The data will establish a baseline for comparing historical data in an effort to delineate changes in the project area.
3. Conduct a hydrological study of Mariner Park and Mud Bay. Perform hydraulic, soil classification (test hole), and sediment transport studies.

The information acquired from the technical and community studies will provide the basis for determining the optimal restoration program. Production of the EA will follow NEPA guidelines.

C. Cooperating Agencies, Contracts, and Other Agency Assistance

The City of Homer is the sponsoring, coordinating, and responsible agency for this project. The lead Trustee agency is the Alaska Department of Natural Resources (ADNR). Aside from providing technical expertise on environmental restoration issues, as property owner of a significant portion of the project area, the ADNR has land use interests in the Mariner Park.

Additionally, during discussions with ADNR and ADF&G it was suggested that the project may best be served if the agencies act in the role of co-lead Trustees. This is a viable option that would facilitate the efficient prosecution of the project.

A restoration project in Mariner Park directly impacts and interfaces with several state and federal agencies. Of the many agencies touched by the project, the primary Trustee cooperating agencies are the Alaska Department of Fish and Game (ADF&G) and the US Department of Interior, Fish and Wildlife Service (USF&WS). Both agencies have technical knowledge and vested interest in projects that purport to restore and protect habitat. By providing key insight on biological relationships, the agencies can provide valuable support during the analysis of field data, the developing of restoration alternatives, and the selection of the preferred alternative.

With respect to the USF&WS role, it is expected they will provide expertise and review functions during the environmental assessment phase of the project. The EA is the primary planning and permitting document for the project. As such, it is a primary tool for communicating the merits and options for follow-on restoration activities at the site and its consequence on neighboring facilities and habitats.

The Alaska Department of Transportation and Public Facilities (ADOT&PF), US Army Corps of Engineers (COE), and Federal Aviation Administration (FAA) possess significant technical knowledge of the area. Additionally, these agencies have vested interest in a Mariner Park restoration construction project because the area is in proximity to their spheres of influence and responsibility: the Homer Spit Road is an ADOT&PF facility, the airport is the privy of FAA, and the COE is a permitting agency representing coastal water concerns. Other agencies with peripheral interest are the Alaska Department of Environmental Conservation (ADEC - State Water Quality Certification) and the Alaska Office of Management and Budget: Division of Governmental Coordination (Certification of Consistency with the Alaska Coastal Management Program). In all cases, the EA will provide a basis for understanding the relationship of the project to the environment and be a mechanism to critique the potential of the project in meeting the established restoration goals.

When appropriate, the project will attempt to contract with local talent and resources for specific project services. In some cases experts from outside the Homer area may best meet the objectives of the project. Expectations are to contract with private consultants for biological, botanical, and hydrological studies.

SCHEDULE

A. Measurable Project Tasks for FY 99

October 1 - November 15: Collect and review historic information and data.
Develop contract proposals for consultant(s) effort, advertise for cost proposals, and evaluate proposals.
Conduct community involvement, (education and information gathering), component of project.

December 10:	Award contracts.
December 11 - January 1:	Assist contractors in logistics for field efforts.
January 1 - March 27:	Assist with winter field surveys. Analyze historic information and data. Prepare portions of EA.
January 15 - January 24:	Attend Annual Restoration Workshop, (3-day workshop).
February 1 - March 15:	Conduct community involvement component of project.
March 16 - April 14:	Prepare annual report of activities to date.
April 15:	Submit annual report.
April 15 - September 30:	Consultant(s) conduct spring, summer, and fall field efforts and analyze data. Conduct formal community involvement component of project. Produce EA.

B. Project Milestones and Endpoints

December 1: Collect and analyze historic data.
 January 15: Initiate EA process.
 September 1: Complete EA field studies and analysis of data..
 September 30: Submit EA and Report of Project to Trustee Council.

C. Completion Date

Substantial completion of the project is September 30, 1999. The principal objective to be completed by this date is the production of a NEPA-EA. Elements encumbered by this objective are historic and community perspectives, field studies, restoration design alternatives, no action alternative, comparative study of alternatives, preferred alternative, and final draft of the environmental assessment document.

PUBLICATIONS AND REPORTS

The project does not, at this writing, plan to submit manuscript(s) for peer-reviewed publication(s) in FY 99.

The project will submit to the Council an annual progress report on April 15, 1999 and a final project report on September 30, 1999.

PROFESSIONAL CONFERENCES

The project does not plan to present at professional conferences in FY 98.

NORMAL AGENCY MANAGEMENT

N/A

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

The location and nature of this project requires close local, state, and federal agency coordination. During the formulation of this proposal substantive discussions have taken place with community organizations, local authorities, and state/federal agencies: ADNR, ADF&G, ADOT&PF, COE, USF&W, and FAA. As the project unfolds it is expected that the coordination effort will expand.

Interested parties from the public, private, and government sectors are encouraged to engage the project during planning, design, implementation, and review processes. Similarly, the project will share data from the field efforts and welcomes feedback on its analyses, conclusions, and recommendations.

At present, the project addressed by this proposal has not solicited matching funding. This does not preclude such; rather, it is expected the project will take advantage of complimentary work undertaken by other entities, (i.e. shorebird counts and COE projects scheduled for the Spit).

It is planned that the follow-on restoration construction project will vigorously seek matching funding from non-Trustee Council sources. Potential sources for matching funds are the COE "Project Modifications for Environmental Improvement, Section 1135" and ADNR restoration grants.

EXPLANATION OF CHANGES IN CONTINUING PROJECT

N/A

PROPOSED PRINCIPAL INVESTIGATOR

The City of Homer plans to employ a Project Coordinator to manage the EA process. At present, the City does not know who will fill the Coordinator position.

PRINCIPAL INVESTIGATOR

Not Known

OTHER KEY PERSONNEL

Eileen R. Bechtol, Planning Director, City of Homer
Technical resource person and responsible party for City

Poppy Benson, U. S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge
Technical resource person

Mike Bennet, Alaska Department of Natural Resources, Division of Lands
Technical resource person

Ruth Carter, Alaska Department of Transportation and Public Safety, Coastal and Harbor
Engineering Section, Hydrology and engineering resource person

Gino Del Frate, Alaska Department of Fish and Game, South-central District
Technical resource person

Larry Dugan, U.S. Fish and Wildlife Service, Ecological Services
Technical resource person

Ken Eises, U.S. Army Corps of Engineers, Coastal Engineering
Technical resource person on engineering design and hydrology issues

Dave Erikson
Biology resource person

William Hauser, Alaska Department of Fish and Game, Habitat Restoration Division
Representative of Cooperating Agency and technical resource person

Mac Humphrey, Federal Aviation Administration, Airports: Environmental Division
Technical resource person on FAA environmental concerns

Don McKay, Alaska Department of Fish and Game, Habitat Restoration Division
Representative of Lead Trustee Agency and technical resource

Mary Lynn Nation, U.S. Fish and Wildlife Service, Ecological Services
Representative of Cooperating Agency and technical support on NEPA-EA

Harvey Smith, Alaska Department of Transportation and Public Safety, Coastal and Harbor
Engineering Section, Hydrology and engineering resource person

Art Weiner, Alaska Department of Natural Resources, Wetlands Restoration
Representative of Lead Trustee Agency

George West, Birchside Studios
Biology resource person

LITERATURE CITED

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Shimek, R. L., 1979. Unpublished Report in the Addendum to Land Design North, 1980. The report is entitled Tidal Lagoon Feasibility: The Biological Perspective.

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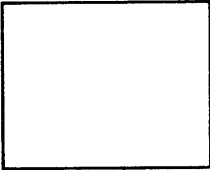
FY 99 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1998 - September 30, 1999

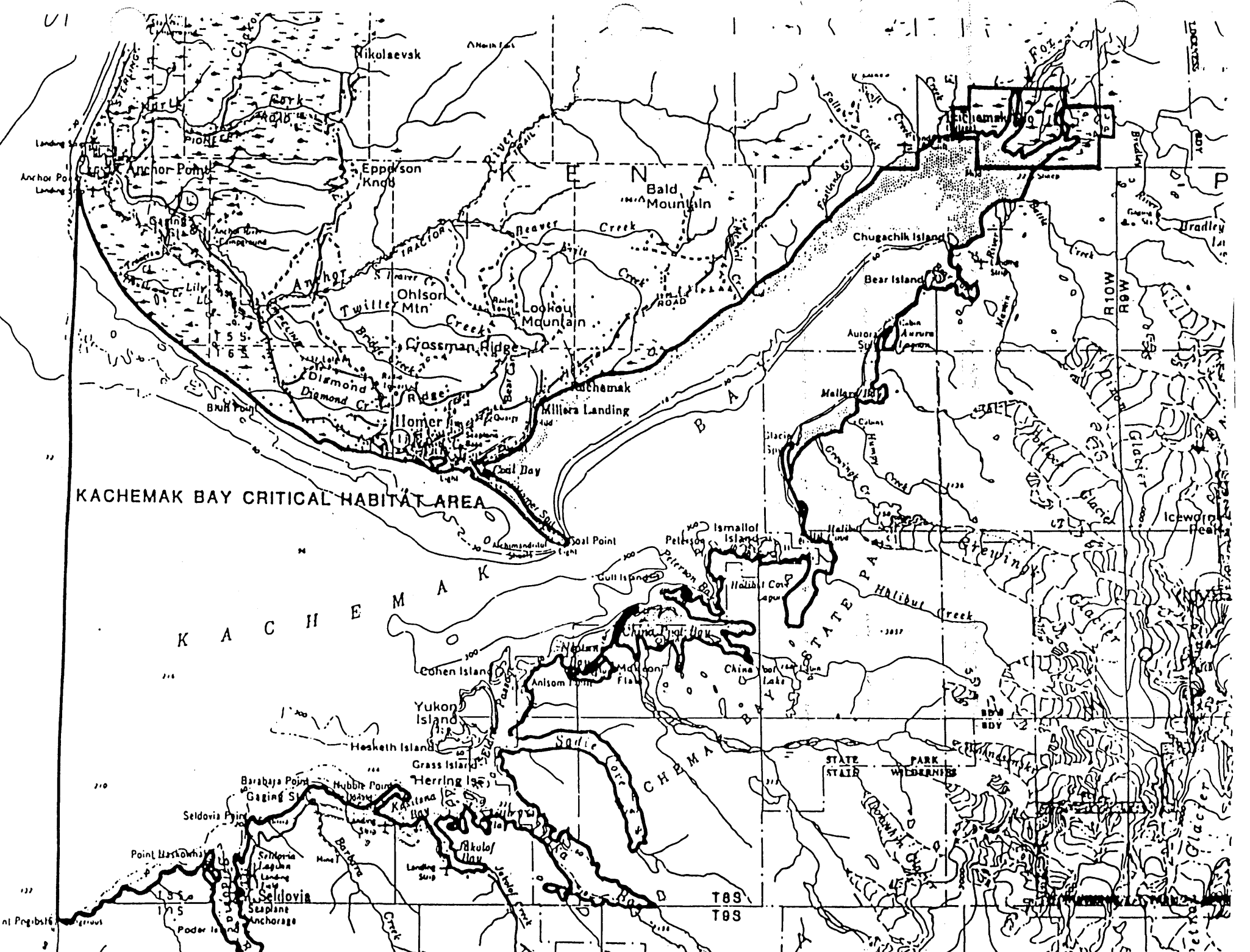
Budget Category:	Authorized FY 1998	Proposed FY 1999						
Personnel		\$14,400.0						
Travel		\$2,710.0						
Contractual		\$60,000.0						
Commodities		\$0.0						
Equipment		\$2,350.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	\$0.0	\$79,460.0		Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		
Indirect		\$15,890.0						
Project Total	\$0.0	\$95,350.0						
Full-time Equivalents (FTE)		12.0						
Other Resources								
Dollar amounts are shown in thousands of dollars.								
Comments:								
<p>The Indirect Cost multiplier for the project is 20%. The Indirects include, but are not limited to: utilities, phones, copying, office supplies, administrative and finance functions, and mail service.</p>								

FY 99

Project Number: 99318
 Project Title: Homer Mariner Park Habitat Assessment & Restoration
 Design Project
 Name: City of Homer, Alaska



Prepared:



KACHEMAK BAY CRITICAL HABITAT AREA

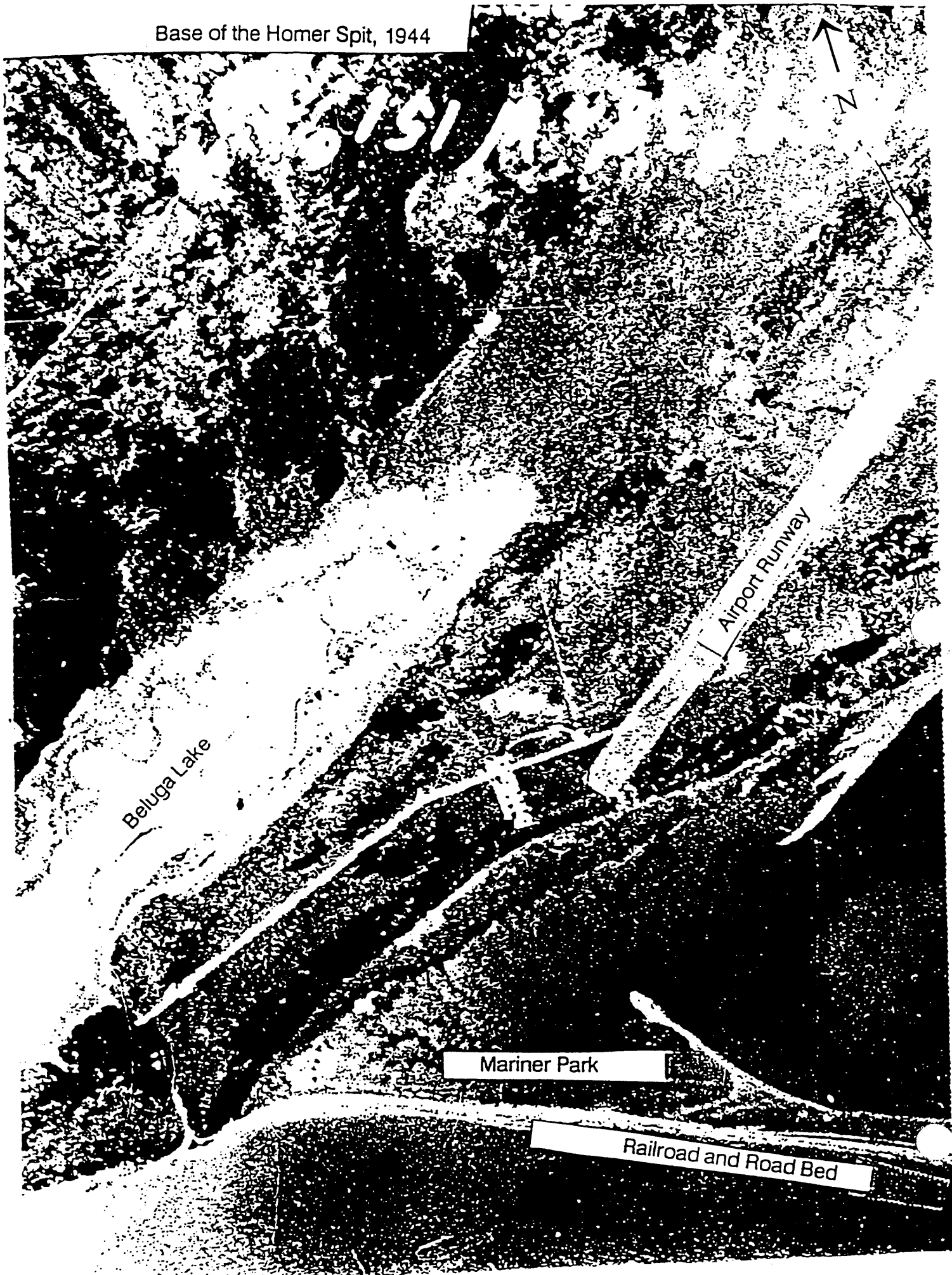
KACHEMAK

STATE PARK
STATE WILDERNESS

T8S
T8S

nl Proj: 516

Base of the Homer Spit, 1944



Beluga Lake

Airport Runway

Mariner Park

Railroad and Road Bed





Mariner Park

Mud Bay

Kachemak Bay

Homer Spit Road



Kachemak Bay

Mariner Park

Mud Bay

Homer Spit Road

Base of Homer Spit, 6/6/96