Matanuska-Susitna Borough Coastal Management Plan

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Matanuska–Susitna Borough Coastal Management Plan

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MATANUSKA-SUSITNA BOROUGH

COASTAL MANAGEMENT PROGRAM

PUBLIC HEARING DRAFT

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PURPOSE

The Matanuska-Susitna Borough Coastal Management Plan is intended to be a reflection of local concerns and Alaska Coastal Management Act Standards. This district plan recognizes the interrelationship of available resources with resource use, and is a voice of the issues, preferences and direction of the Borough in the development and management of its resources.

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Chapter 1
Introduction

INTRODUCTION

This document is a public review draft of the Matanuska- Susitna Borough Coastal Management Program (MSBCMP) also referred to as the District program. It is intended for public, Borough, State and Federal agency review and comment. Based upon public and agency comments received through this review process, a final coastal management program (CMP) will be developed and adopted by the Alaska Coastal Policy Council and the District. In addition to the coastal management plan, this document also contains some explanatory information. Much of this latter information (such as what the CMP is, the process it has gone through, the outline for the review, hearing, and adoption process) will be unnecessary in the final document and will be deleted. (Figure 1-5 describes the review, hearing and adoption process).

WHERE DOES THE MSBCMP COME FROM?

Federal Coastal Zone Management Act

In 1972, recognizing the national need for a coordinated governmental approach to the balanced utilization of coastal resources, Congress passed the Federal Coastal Zone Management Act (CZMA). The CZMA established a national program for the management, beneficial use, protection and development of the land and water resources of the coast. The federal program was designed to assist states in exercising their management responsibilities over land and water resources through the development and implementation of state coastal management programs. The intent of Congress was to achieve wise use of land and water coastal resources while giving consideration to ecological, cultural, historical, aesthetic values, as well as the need for economic development.

Alaska Coastal Management Act

The pressures on coastal resources which prompted Congress to enact the Coastal Management Act are intensely present in Alaska. Advances in oil and gas exploration, mineral extraction technologies and rapid growth and development along coastal regions of Alaska result in substantial economic, social, cultural and environmental impacts on coastal communities and their coastal resources. The size and diversity of Alaska's coastal area and wealth of coastal resources requires specially adapted organizational arrangements for coastal management. These specialized needs are reflected in the passage of the Alaska Coastal Management Act of 1977 (AS 44.19.891-894 and AS 46.40), providing a state coastal management program methodology based upon the partnership of shared state and local management responsibilities for coastal areas and resources.

The Alaska Coastal Management Act created the Alaska Coastal Policy Council in the Office of the Governor. One of the responsibilities of the Council has been to adopt use, habitat and resource standards for the Alaska Coastal Management Program and guidelines for the development of district coastal management programs. The standards and guidelines were subsequently approved by the legislature and accepted into the Alaska Administrative Code, serving as the minimum requirements for coastal management in Alaska. Both the local coastal resource districts and State agencies are guided by the standards when considering uses and activities in coastal areas, coastal habitats and specified coastal resources. The guidelines of the Alaska Coastal Management Program (ACMP) specify the planning process local coastal resource districts utilize in preparing a district coastal management program.

The Alaska Coastal Policy Council is responsible for State-wide oversight and coordination of coastal management efforts. Local coastal districts, such as the Matanuska-Susitna Borough, are responsible for developing district coastal management programs that meet State requirements. These local coastal management programs serve as building blocks of the Alaska Coastal Management Program, through which local,

State, Federal governments and the private sector operate to manage Alaska's coastal resources and promote their wise use and development.

WHAT IS THE DISTRICT COASTAL MANAGEMENT AREA?

The Matanuska-Susitna Borough's natural resource base has various characteristics. The Borough's coastline extends for approximately seventy miles from the Kenai Peninsula Borough in the South, along the extreme northern shores of Upper Cook Inlet and Knik Arm, to the mouth of the Knik River and the Municipality of Anchorage in the east. This coastal area is characterized by extensive tidal flats interspersed with low-level vegetated bluffs. (Figure 1-1).

The variety of coastal resource characteristics within the District includes all offshore and estuarine areas, tideflats and wetlands, vegetated coastal bluffs, rivers, streams and lakes and important upland habitats which have a significant impact on coastal fish and wildlife. Contained within this area is a wealth of natural, cultural, aesthetic and economic resources which support a variety of existing coastal land and water uses and activities. These uses and activities include residential housing, industrial and commercial activities, wildlife management, recreation, tourism, mining and mineral processing, timber harvesting and agricultural production. (Figure 1-2 identifies the Matanuska-Susitna Borough's coastal management district within the Borough).

HOW DOES THE MSBCMP WORK?

Standards and Guidelines of the Alaska Coastal Management Program (ACMP) (6 AAC 80 and 6 AAC 85) establish minimum requirements for inclusion in a district program. These requirements are reproduced in detail in Appendix A. (The location of each of these requirements is cross referenced by MSBCMP chapter in Figure 1-3). The MSBCMP follows a typical planning process of inventory/analysis - issues/goals/objectives - policies - implementation (illustrated in Figure 1-4) indicating the way the chapters of this document interrelate.

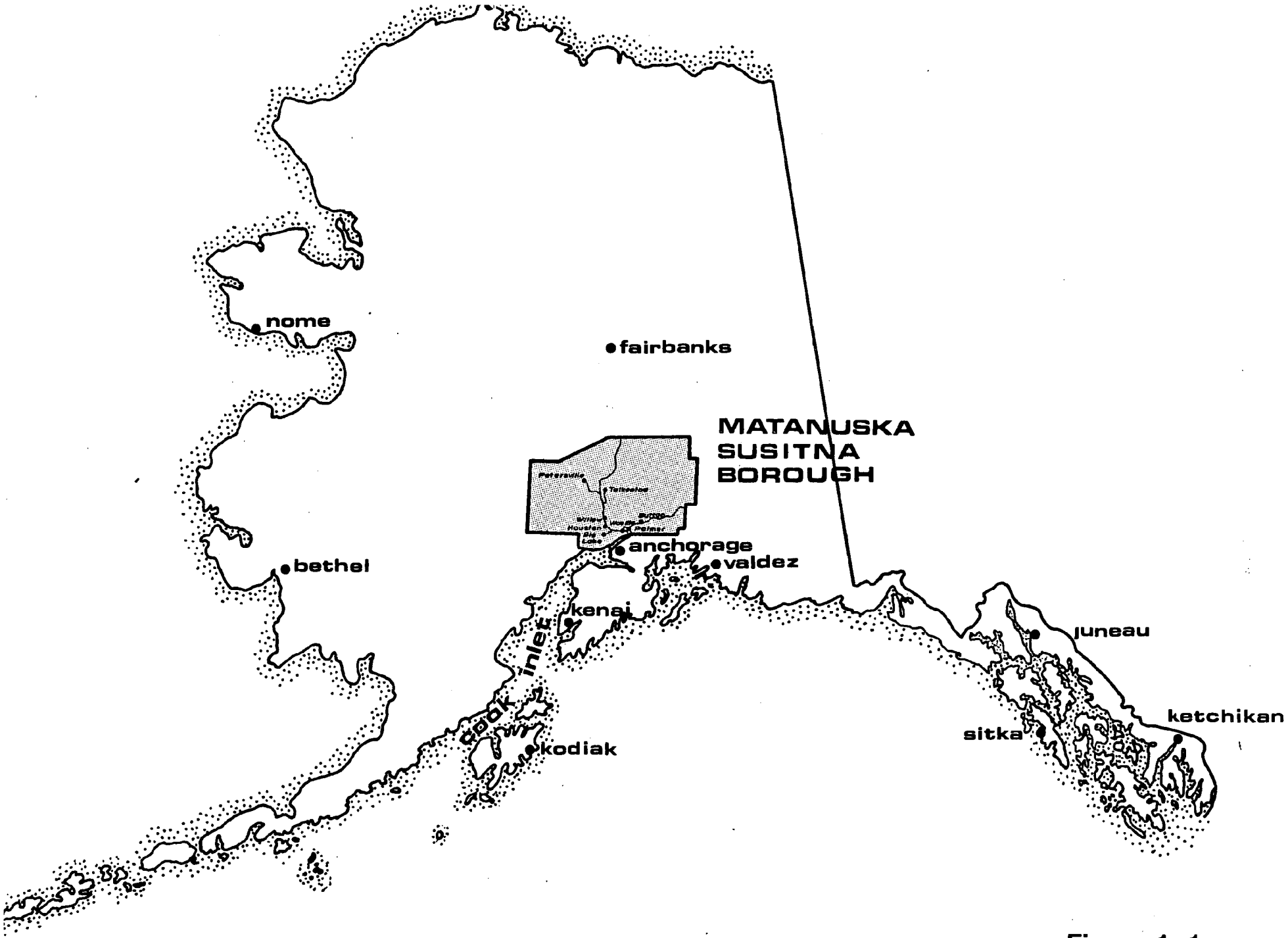

nome
fairbanks
MATANUSKA
SUSITNA
BOROUGH
Palmer
anchorage
valdez
bethel
kenai
cook inlet
juneau
ketchikan
sitka
kodiak

Figure 1-1

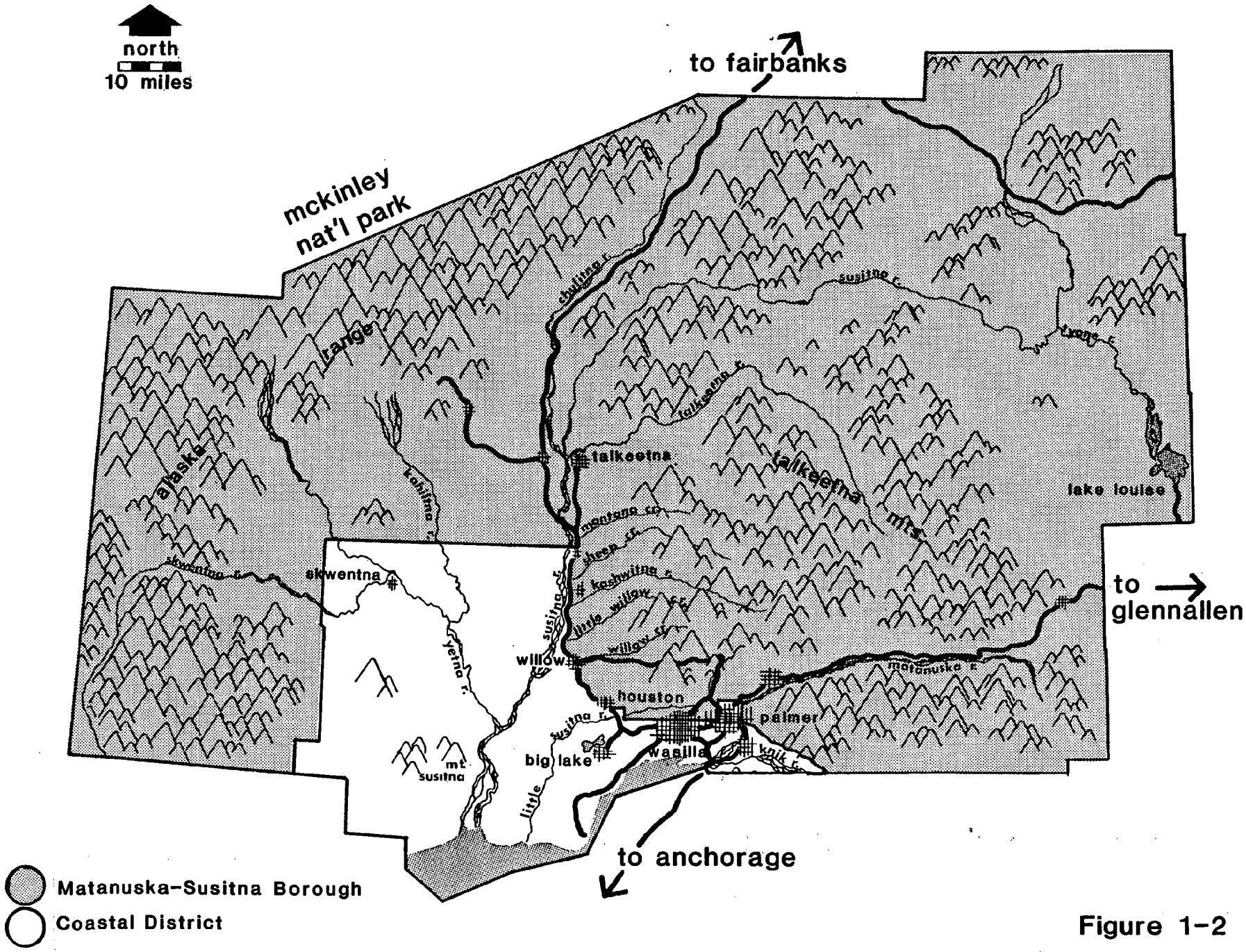
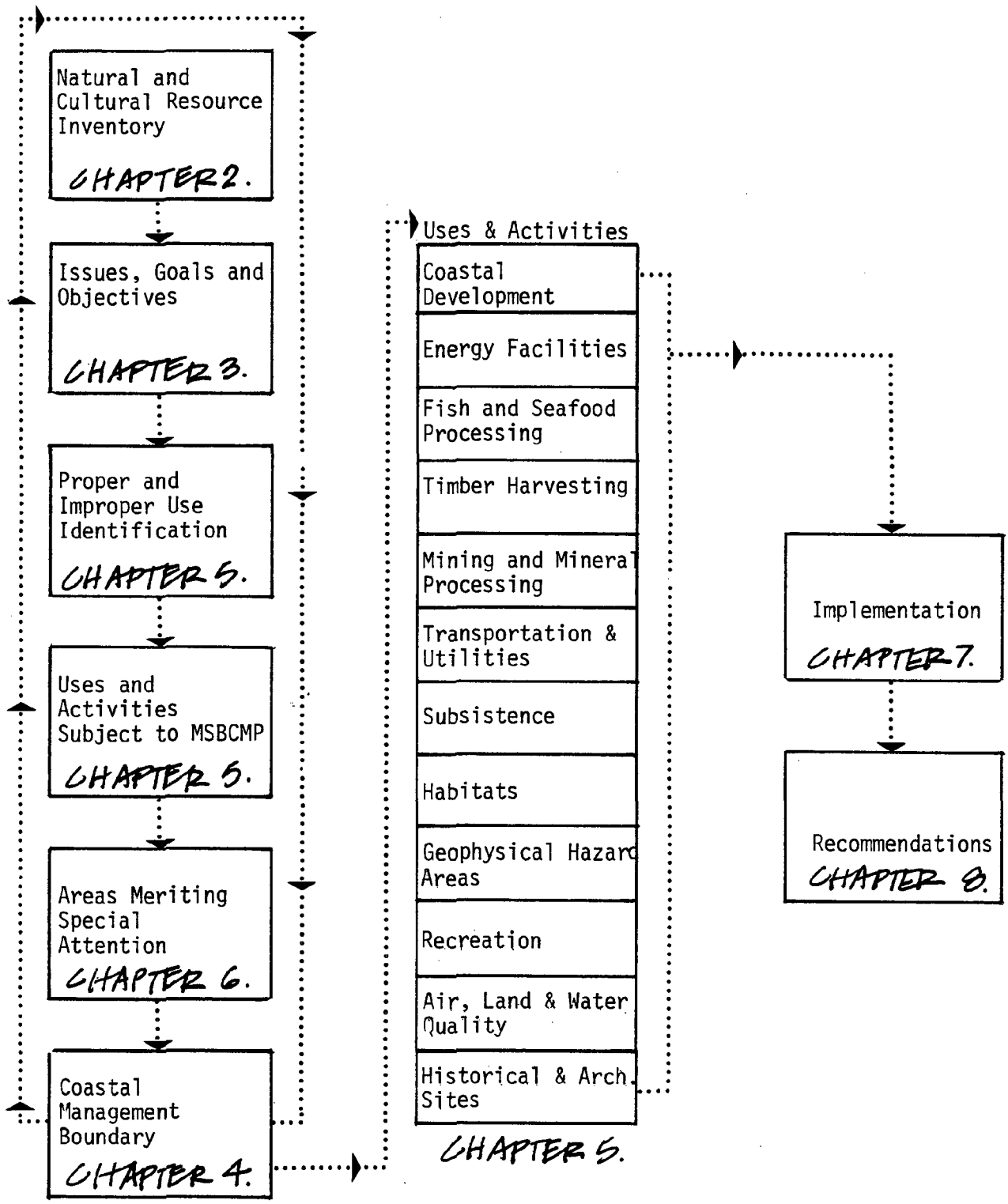

north
10 miles
to fairbanks
mckinley
nat'l park
range
alaska
chulitna r.
susitna r.
tyone r.
talkeetna r.
talkeetna
talkeetna mts.
lake louise
kahiltna r.
montana cr.
sheep cr.
kashwitna r.
little willow cr.
willow cr.
skwentna r.
skwentna
susitna r.
yetna r.
willow
houston
palmer
matanuska r.
susitna r.
big lake
wasilla
knik r.
mt. susitna
little
to glennallen
to anchorage
Matanuska-Susitna Borough
Coastal District

Figure 1-2

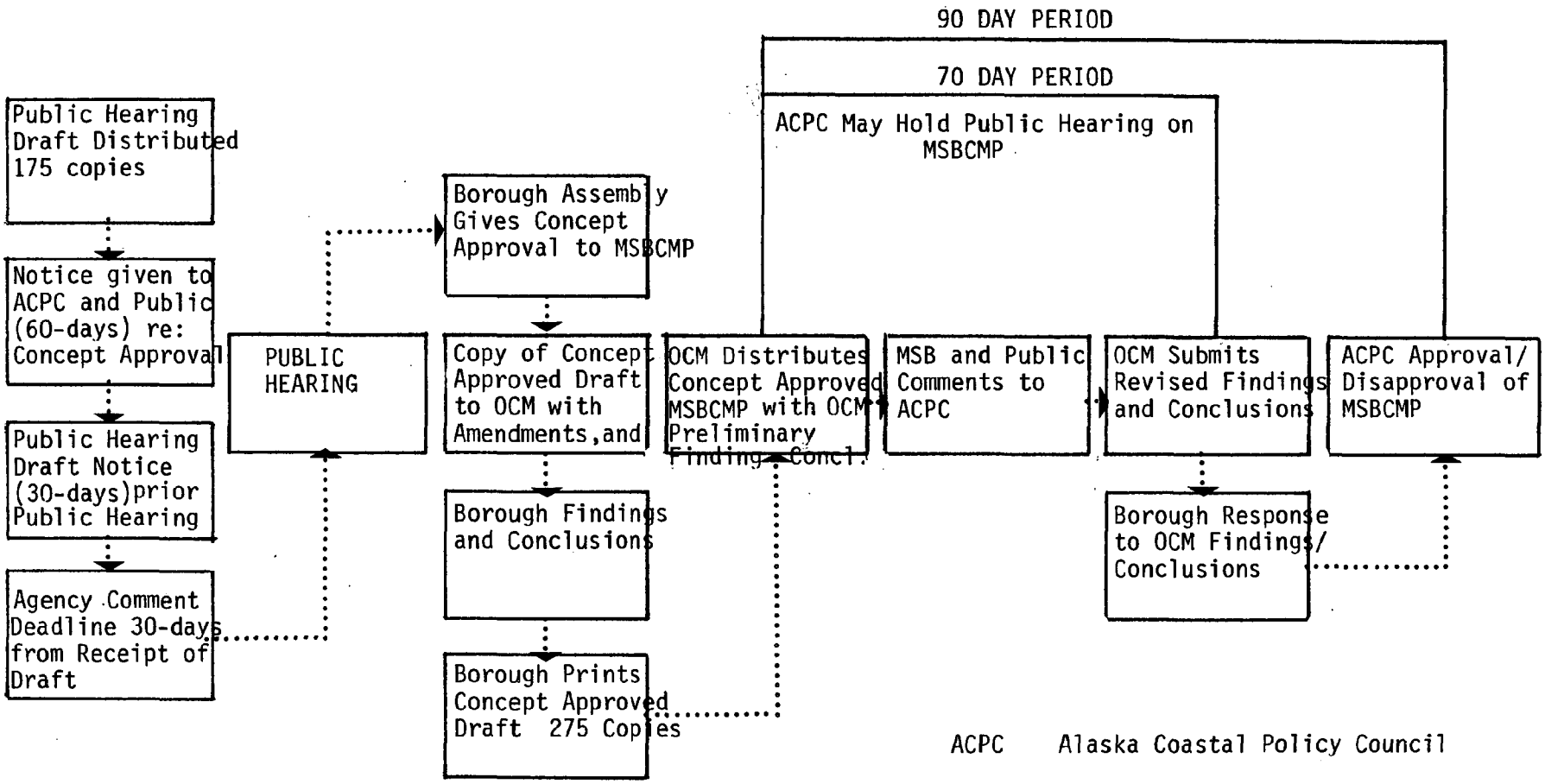
program elements	chapter 2	3	4	5	6	7	appendices
needs • goals • objectives		*					*
organization						*	*
boundaries	*		*		*		*
resource inventory	*				*		*
resource analysis	*				*		*
subject uses • activities	*	*		*	*		*
proper and improper uses		*		*			*
policies				*			*
implementation						*	*
public participation	*	*	*	*	*	*	*
coastal development	*	*		*	*		
recreation	*	*		*	*		
energy facilities	*	*		*			
transportation • utilities	*	*		*			
fish • seafood processing	*	*		*			
timber harvest • processing	*	*		*			
mining • mineral processing	*	*		*			
geophysical hazard areas	*	*		*			
offshore areas	*	*		*	*		
estuaries	*	*		*	*		
wetlands • tideflats	*	*		*	*		
vegetated bluffs	*	*		*	*		
barrier islands • lagoons			none identified				
exposed high energy coasts			none identified				
rivers, lakes, streams	*	*		*	*		
important upland habitat	*	*		*	*		
air, land, water quality	*	*		*			
historic, prehis., arch. resources	*	*		*			
subsistence	*	*		*			
areas merit special attention	*	*	*	*	*		

Figure 1-3



MSBCMP Planning Process
Figure 1-4

MSBCMP Review, Hearing and Adoption Process



ACPC Alaska Coastal Policy Council

MSBCMP Matanuska-Susitna Borough Coastal Management Program

OCM Office of Coastal Management

Figure 1-5

Chapter 2, the inventory and analysis element, includes descriptions, interpretation and analysis of natural and cultural resources. Natural resources include all mandated resources and habitats as well as others of local significance. Cultural resources include existing uses as well as historical, prehistoric, and archeological resources. Pocket maps #2-6 contain natural and cultural resource information relating to Chapter 2. Chapter 3 contains issues issues relating to resource use considerations. These were developed from, and have contributed to, the need for further natural and cultural resource inventory and analysis information. Goals have been developed on the basis of local values and desires to address identified issues. Objectives were then developed to help achieve each goal.

Coastal management policies are specific guidelines created to direct development decisions in ways consistent with adopted goals and objectives. They are to be applied to land and water uses and activities subject to the District program. Chapter 5, Policy Development, describes subject uses and activities and delineates the policies of this program which are to be applied. The enforceable rules are criteria for evaluating development proposals against resource values which have been identified in the District. Ideally put, if all policies are followed, the objectives of this program will be attained. If all objectives are met the goals set for the District, in order to achieve development which respects identified resource values, will be fulfilled.

Chapter 7, Implementation, describes the techniques that will be used to ensure that the District program is carried out. Various tools will be used including a consistency review system of existing applicable Borough, State and Federal regulations. There will be no additional permit systems established by the District. The District program enforceable rules will be emphasized in the Federal and State consistency review process.

Areas Which Merit Special Attention (AMSA), Chapter 6, were identified by the District in recognition of their specific coastal resource and

use values. They are a product of the inventory and analysis of existing natural and cultural resources and are a tool to help achieve program objectives. Program policies have also been established to develop and protect resources forming the basis of AMSA designations. Pocket map #2 contains boundary information relating to AMSA designations.

Boundaries of the District program include those that identify the entire area subject to the provisions of the program. These boundaries were based on State program guidelines and the District findings of resource inventory and analysis. Chapter 4, Pocket map #1 and Appendix D include information relating to District boundary definition.

A summary of the public participation program for the development of the District plan is described in Appendix B. Public input into the development of each element has been facilitated through the Citizen/Agency Joint Forum and opportunities for public review of, and comment on, all products has been continually provided.

It is important to note that this program assumes, and is designed to accommodate, the development of new and more detailed natural and cultural resource information as it becomes available. The criteria and evaluation methods employed allow the definition of land use suitability environments by their natural characteristics including development limitations and any applicable enforceable rules and policies for land and water use in the District.

HISTORY OF THE MSBCMP

The Matanuska-Susitna Borough began work on its District coastal management program in mid 1979. Progress to date can be highlighted by describing the reports that have been issued:

1. First Annual Progress Report - June 1979 : Developed with the assistance of the firms Simpson, Usher, and Jones; Dames and Moore; and A. W. Burns Co., this document reported progress to date on the various coastal program elements and set forth

recommendations on how to complete the program. Among its contributions were references to Borough comprehensive planning goals and objectives of May 1978, cataloging of natural and cultural resource inventory work to date and preliminary designation of Areas Meriting Special Attention. It also included a report entitled: Matanuska-Susitna Borough Surficial Geology (Generalized) with Distribution of Mineral Discoveries, prepared by A.L. Renshaw Jr., P.E.. This report represents the geological resource and analysis information of the District coastal management program.

2. Matanuska-Susitna Borough Coastal Management Program, Phase I Completion Report - May 1981: Prepared for the Borough by the firms of Maynard and Partch and Woodward - Clyde Consultants. This document included:
   - Identification of preliminary coastal issues, goals and objectives;
   - Additional resource inventory and analysis; and
   - Preliminary boundary definitions.

3. Matanuska-Susitna Borough Coastal Management Program, Executive Summary - Mid 1981, prepared by Maynard and Partch. This document was a summary of District coastal management planning, the Phase I Completion Report and additional efforts through June 1981. It was intended to educate public and private industry officials about the District's efforts.

4. Matanuska-Susitna Borough Coastal Management Program, Phase II A Program Report - September 1981: Prepared by Maynard and Partch and Woodward - Clyde Consultants. Advances of the program reflected in this document included:
   - Final recommended boundary;
   - Further delineation of issues, goals and objectives; and
   - Introduction of implementation measures.

5. Matanuska-Susitna Borough Coastal Management Program, Public Hearing Draft, Preliminary Review Copy Phase II B, September 1982: Prepared by Maynard and Partch and Woodward - Clyde Consultants. This work was extensively edited by the Borough Department of Planning. Natural and cultural resource inventory and analysis; issues, goals and objectives; policy development; and implementation were revised by the Borough.

6. Phase III - Completion of the MSBCMP

   The District is completing its Coastal Management Program utilizing the Department of Planning staff. In the final phase, this Public Review Draft will be revised to integrate it with the District's Comprehensive Plan and to incorporate comments received from this Public Review Draft. This Draft will be distributed to local, State, Federal agencies, the general public and comments solicited. Activities will be conducted which will lead to District conceptual approval and State Coastal Policy Council approval.

Current Planning & the MSBCMP

Since the Borough began development of its Coastal Management Program in 1979, a number of other major planning efforts have been undertaken. They are described below followed by a general discussion of their relationship to the MSBCMP. Although each of these plans has a different scope, they involve a portion of the same geographic area and must be closely coordinated.

1. Matanuska-Susitna Borough Comprehensive Plan: The Borough Comprehensive Plan is addressing land use, transportation and public facility requirements throughout the entire Borough. The focus of this plan is the road accessed and privately owned portion of the Borough, but this plan also integrates and expands upon the following planning efforts.

2. State Resource Management Plans: The Matanuska-Susitna - Beluga Area Plan; The Willow SubBasin Plan; and The Hatcher Pass and Fish Creek Management Plans: The State Department of Natural Resources, in cooperation with the Borough, has already completed the Willow SubBasin Area Plan and is currently involved in the Matanuska-Susitna Beluga Area Plan. This plan is concerned with the area outside of the Willow SubBasin within the Borough and includes the Beluga coal field area outside of the Borough. These area plans guide land use decisions and establish land management guidelines for State owned lands. The focus of the Matanuska-Susitna-Beluga Area Plan is the non-road accessed portion of the Borough where the resources of concern are agriculture, forestry, fish and wildlife, recreation, settlement, subsurface mining and transportation.

   The Department of Natural Resources management plans magnify portions (management units) of the Matanuska-Susitna-Beluga Area Plan for which general guidelines are prepared and develop more specific plans for these areas. Plans for areas within the Borough are currently being prepared for the Fish Creek and Hatcher Pass Management Units which were identified in the Willow SubBasin Plan.

3. Denali Land Bank Study: The U.S. Bureau of Land Management is revising its plans for the Denali Blocks - a large area of federally owned land in the northeastern corner of the Borough. This study will determine which lands should be opened to mineral entry, mineral leasing, and settlement. The study will also develop a management plan for the preservation of visual quality along the Denali Highway.

4. Other Plans: Studies underway which relate to the MSBCMP include The Knik Arm Crossing Study, Alaska Power Authority's powerline corridor studies, the Susitna Hydroelectric Power Project planned for the upper Susitna River and Enstar's natural gas pipeline study of the Beluga to Anchorage corridor.

Summary

All of these plans have a common purpose to allocate specific land and water resources to particular uses and activities. The District's coastal management program provides a vehicle to ensure that the District's coastal land and water resource values are respected while the goals of these other plans are accomplished. While other uses may be considered, the District coastal management plan ensures a provision of policies and standards for subject uses, activities and issues including those of State concern within the Federal and State Coastal Management Program guidelines. The environmental data required by these planning efforts is a shared resource between the District and State agencies, providing a common natural and cultural resource inventory and analysis process.

Chapter 2
Coastal District Inventory and Analysis

MATANUSKA-SUSITNA BOROUGH
COASTAL MANAGEMENT PLAN
PUBLIC HEARING DRAFT

MATANUSKA-SUSITNA BOROUGH PLANNING DEPT,

PALMER, AK AND STEARNS, MICHELLE R.

NATURAL RESOURCES: INVENTORY AND ANALYSIS

INTRODUCTION

The following is a summary analysis of natural and cultural resource information of the Matanuska-Susitna Borough. It inventories the natural resources of habitats, wildlife, air, land, water and cultural resources and presents their interrelationship to one another within the Borough. One purpose of the analysis is to speculate on human utilization of the Borough's natural and cultural resources. Potential development which can enhance or detract from this resource base include energy related projects, transportation, port facility and mining and mineral processing activities. Point MacKenzie Industrial Port Site, Knik Arm Crossing, Susitna Hydroelectric Project and the Beluga and Susitna Coal Fields are all major potential economic development projects which may also effect environmental changes within the District.

The Matanuska-Susitna Borough's natural and cultural resource base is fragile and requires continual management in its development. Economic development, population growth and expanded resource extraction has, and will continue to, place increased demands on the District's coastal areas and its resources. In particular, the relatively undeveloped coastal area which includes the three State Game Refuges and Point MacKenzie Agricultural Project; the District's historic resources including trails, sites and structures; and important coastal wildlife habitats and waters all deserve careful management and development to realize the goals of the Matanuska-Susitna Borough Coastal Management Plan. (Note: A more detailed listing of natural and cultural resource information is included in Appendix C).

METHODOLOGY

The natural and cultural resource inventory and analysis process

assesses present conditions and anticipated demands on the District's coastal resources; evaluates the resource's ability to meet these demands; and projects any significant anticipated changes in inventory characteristics based upon human utilization. The Coastal Zone Management Act specified that permissible land and water uses should consider development and utilization of natural and cultural resources as well as conservation activities.

Natural Resources: Inventory and Analysis

COASTAL HABITATS AND RESOURCES

There are eight coastal habitats identified in the Alaska Coastal Management Program. These habitats include: offshore areas; estuaries; wetlands and tideflats; rocky islands and seacliffs; barrier islands and lagoons; exposed high energy coasts; rivers, streams and lakes; and important upland habitat. Not all of these coastal habitats are present within the Matanuska-Susitna Borough. For example, some coastal habitat categories within the District have been modified or combined to conform to the natural characteristics of the District. Offshore and estuarine areas have been combined as one coastal habitat and vegetated bluffs has replaced rocky islands and seacliffs as a coastal habitat. Barrier islands and lagoons and exposed high energy coasts, as coastal habitats, do not exist in the District (Pocket Map #6).

Offshore and Estuarine Areas

All offshore areas of the District are considered estuarine. Offshore areas are waters and submerged lands seaward of the coastline. An estuary is technically defined as a waterbody with a free connection to the sea in which sea water becomes considerably diluted by fresh water. This is the case in the offshore and estuarine areas of the District where Knik Arm and Upper Cook Inlet have an unrestricted connection to the sea and salinities are greatly reduced with fresh water runoff. As a result, the offshore and estuarine habitat classifications have been combined and include all waters and submerged lands beyond mean lower low water to the offshore limits of the District.

Human utilization of these offshore habitats is presently very limited. Future utilization of these coastal resources could change due to implementation of proposed projects such as development and construction of the Knik Arm Crossing or an industrial port/park and new town at Point MacKenzie.

Harvesting of marine mammals has been of limited and minimal importance in the offshore area of the District. A small commercial fishery

operates in the area offshore of Susitna Flats State Game Refuge. This activity has been limited to approximately ten set gill net sites that are usually fished from June 25 to August 15 each year. Two twelve-hour fishing periods have typically been held each week during this time. Management activities of salmon stocks in the District are primarily effected through the control of escapements from the drift gill net fishing in central Cook Inlet. (Salmon escapements are discussed further in the habitat section on Rivers, Streams and Lakes).

Wetlands and Tideflats

Wetlands are permanently moist, shallow, submerged lands, such as marshes, wet tundra, swamps and bogs. Tideflats include those habitats that are alternately covered and uncovered by tidal changes. Utilization of resources in the wetland and tideflats habitat is well documented for the State Game Refuges along the District coastline. As a result, this section focuses on resource use of the wetlands and tideflats within the State Game Refuges. The analysis and use of upland wetlands is also discussed further under the Important Upland Habitat section.

Both tideflats and wetlands are extensive in the District. The three entensive areas of tideflats along Knik Arm and Upper Cook Inlet have been designated State Game Refuges. These areas include Susitna Flats (301,950 acres*), Palmer Hay Flats (25,340 acres*) and Goose Bay (13,262 acres*). (Pocket Map #2). The primary purpose of all three refuges is to protect, maintain and enhance fish and wildlife populations and habitats in agreement with other components of the ecosystem. All three refuges are State regulated to protect waterfowl habitat and Susitna Game Flats Refuge is regulated to protect big game habitat, particularly moose and black bear.

The primary human uses of wetlands and tideflats are hunting for waterfowl and moose, and trapping of furbearing mammals. Critical management issues in these areas are increased hunter access to disperse concentrated hunting pressure, effects of increased human access on

waterfowl, moose and their habitats and effects of agricultural activities on drainage in this habitat.

*Refuge acreage includes uplands, tidelands and submerged areas.

Vegetated Bluffs

The vegetated bluffs coastal habitat designation was used by the District to replace the rocky island and seacliff habitat found in 6 AAC 80.130 of the Alaska Coastal Coastal Management Program. A rocky island and seacliff habitat typically refers to rocky shores with steep faces, offshore rocks, and capes. The District has none of these characteristics. This habitat classification was modified to refer to the high coastal bank areas (generally between 25 and 100 feet) in the District. Rather than rock composition, these high banks consist of vegetated upper slopes with muddy intertidal zones. Two areas fall into this classification - the shorelines between Palmer Hay Flats and Goose Bay and south of Goose Bay to the Susitna Flats Game Refuge. Typical vegetation in these areas is young mixed forest interspersed with nonforested and medium and old age mixed forest. In addition, very poorly drained nonforested areas and other forest lands typical of poorly drained soils can be found here.

There is little wildlife use of the bluff habitat presently and similarly, there is presently little human use of this habitat. However, development of a Knik Arm crossing or of the Point MacKenzie site would significantly affect the human utilization of this habitat. In addition, the vegetated bluffs of Point MacKenzie along the Knik Arm are surrounded on both sides by State game refuges. Consequently, any future development in this area will affect future wildlife use of this habitat as well as the game refuge use.

Rivers, Streams and Lakes

The District has an extensive network of rivers, streams and lakes. The three major rivers within the District - the Susitna, Matanuska,

and Knik - provide approximately 70 percent of the fresh water entering Upper Cook Inlet. Freshwater runoff occurs during spring, summer and fall. In winter, frozen rivers, lakes, and streams provide transportation corridors. Rivers in the District are generally safe for vehicular travel approximately between mid-December and the beginning of April.

The rivers, streams and lakes habitat includes all surface freshwater systems within the District. Rivers and streams provide permanent habitat for many species and act as a conduit and spawning area for anadromous fish. In addition, rivers, streams, and lakes support summer and winter activities of primarily local bird and mammal population. All of the rivers, streams, and lakes in the District provide vital habitat for resident and anadromous fish, large and small upland mammals and birds.

Fisheries resources are the primary human uses of rivers, streams and lakes. Secondary human uses of this habitat include moose hunting (particularly along the Susitna River), waterfowl hunting (particularly in the Jim-Swan Lakes areas) and trapping small furbearers which occurs on rivers, streams and lakes throughout the District.

Road access is a key factor for recreational fishing. Increased road access will have immediate localized effects due to increased fishing efforts at selected sites and possible environmental changes caused by road construction. Effects of road construction can increase siltation of streambeds and restrict movement of anadromous fish requiring monitoring and mitigation. Fish stocks in the rivers, streams and lakes require continual management and supplementation of the State's stocking programs.

Less localized impacts are also inevitable from increased road access. These effects are easier to assess in areas which have road access than in areas where access is limited. In the latter case, a true assessment of the comparison productivity in the area is often lacking; therefore an awareness of change in the system is not an easy or necessarily timely task.

Development activities such as transportation and utility projects, logging, agricultural, recreational, urban and industrial development also have an impact on the District's rivers, streams and lakes habitat and ultimately the fisheries' productivity and resource use. These activities create changes in stream flow regimes, remove foliage from stream banks, increase surface runoff and introduce large amounts of sediment or other foreign materials into the rivers and streams.

Important Upland Habitats

Important upland habitats are those areas above mean higher high water exclusive of wetlands, rivers, streams and lakes which are within the upland boundaries of the District. Typical dry upland vegetation includes agricultural areas, willow thickets, cottonwood stands, tall white spruce stands and mixed forests such as cottonwood/birch/spruce and cottonwood/willow/alder. These areas are frequently interspersed among poorly drained lakes, streams and rivers. Uplands provide additional habitat for species unique to it plus provide additional habitat for species which use riparian and wetland habitat.

Upland game activities which occur in the District are often extensions of activities along river corridors and in wetland habitats. As a result, sharp distinction in uses among these three habitats is inappropriate. Critical upland habitats within the District are those associated with heavy wildlife use, especially those areas meeting particular seasonal or life cycle needs, such as winter or summer forage areas, calving areas, denning areas and migration corridors. Winter habitat is usually the most limited and any loss may have severe effects on wildlife populations.

The Borough contains portions of four State Game Management Units (GMU), 13A, B, D and E, 14A, B and C, 16 A and B and 19C. (Figure 2-1). These game management boundaries include substantial upland habitat outside of the District boundary but within the Borough boundary. Statistics indicate that the majority of the upland moose hunting (outside GMU 16B) occurs near the District's road system within the 1000 foot contour.

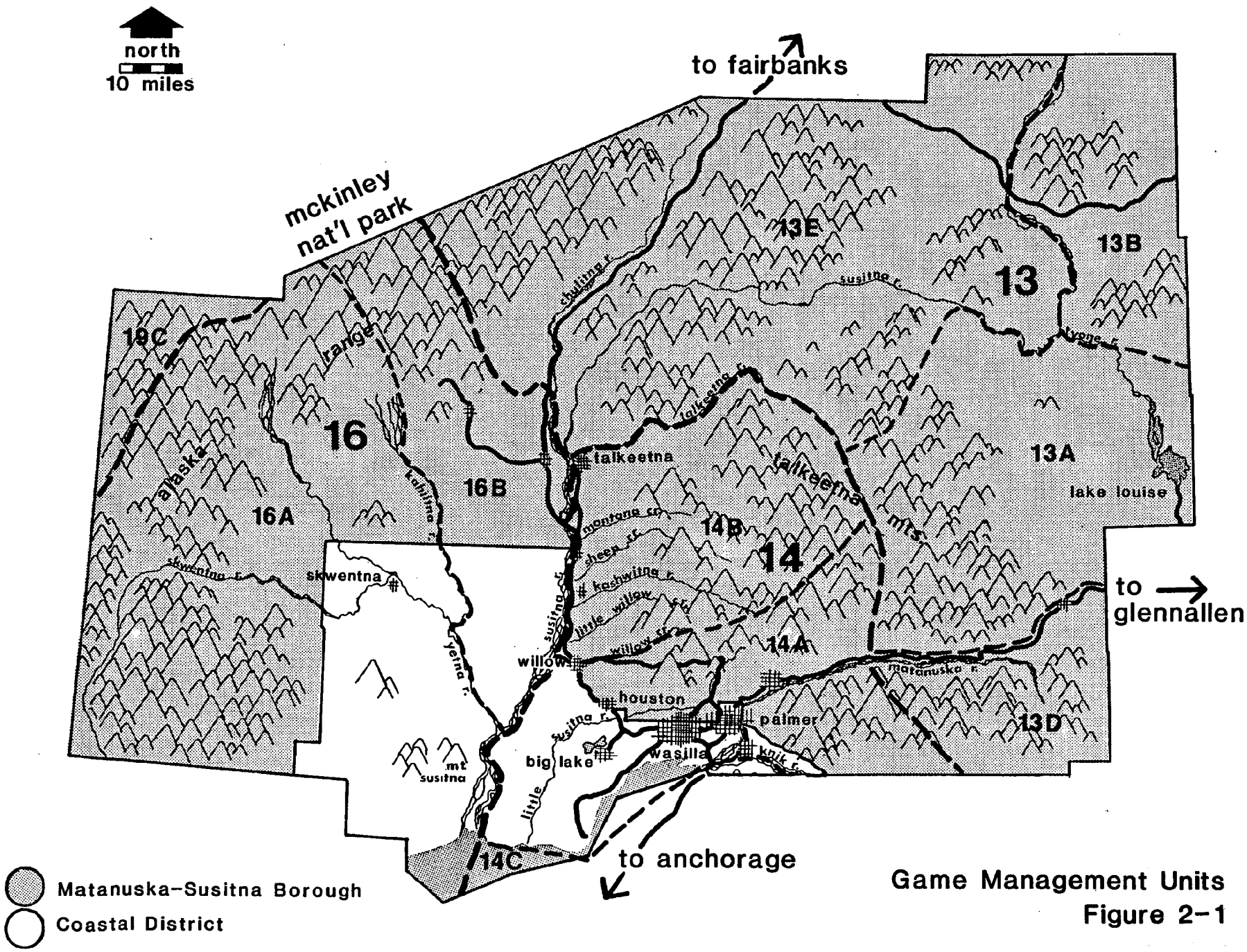
Much of the black bear harvest likewise occurs within the 1000 foot contour.

The upland river systems of Lake Creek, Little Susitna River, Susitna River, Theodore River, Chuitna River, Alexander Creek, Yenta River and Skwentna River are prime moose harvest areas. Other prime areas include the Matanuska Valley, Knik Arm, Kahiltna Flats, Black Creek, Cache Creek, 20 Mile Slough, the areas around and between Beluga Mountain and Mount Susitna, Sunflower Basin and the Kahiltna - Peters Hills area. All of these sites are within the Borough but some are outside of the coastal management district boundary.

Weather conditions, harvest practices and access are some of the various factors that can influence the size and location of upland moose harvests. Statistics indicate that during the early 1970's over 160 moose were found dead in the upland area from Alexander Creek and the Susitna River north to Talkeetna. Not until mild winters in more recent years have the District's moose populations recovered.

PHYSICAL OCEANOGRAPHY

The coastline of the District extends for approximately 37 miles along the extreme northern shore of Upper Cook Inlet and for 40 miles along the northwest shore of Knik Arm. The natural forces that are capable of producing significant oceanic hazards in Upper Cook Inlet apply to the District coastline as well. The following information summarizes the oceanographic setting of the District with respect to circulations, tides, bathymetry, sediment and transport.



Game Management Units
Figure 2-1

Circulation

Circulation and local tidal currents are important oceanographic factors in Cook Inlet. Circulation patterns which are prevalent throughout the entire Inlet are governed primarily by interaction between tides, Coriolis force and the counterclockwise Alaska current. Locally generated tidal currents are influenced by the bathmetry, morphology and fresh water influx characteristics of Upper Cook Inlet. Tidal currents tend to control the character of Inlet circulation. Local currents are produced by wind stress, fresh water influx and ordinary convective and advective processes. These local currents are smaller in magnitude than locally generated tidal currents. Wind driven currents can add appproximately 2-3 percent of the wind speed to tidal current velocities in some localities.

Tides

Tides in the Upper Cook Inlet region are semidiurnal in character. Tidal amplitudes are mixed, with two unequal high tides and two unequal low tides per tidal day (24 hours, 50 minutes). The mean diurnal tidal range varies from 13.7 ft. at the mouth of Cook Inlet to 29.6 ft. at the City of Anchorage, with maximum current speeds of about 3 knots. Flood currents occur more than 70 percent of the time. Ebb currents are strong but have a short duration. A large gyre (spiral motion) develops in the region during the last half of ebb flow in Knik Arm, causing upstream flow along the east shore.

Tides in Upper Cook Inlet are more dynamic, with extreme conditions producing currents of 4 knots, and sometimes 6 to 8 knots. The funnel shape of Cook Inlet coupled with exposure to the deep Pacific Ocean waters, permits the amplification that causes tidal ranges in the vicinity of Anchorage to rank among the largest in the world.

Current velocities are more than a function of tidal range and phase; they are also influenced by local shore configuration, bottom geometry and possibly wind effects in some shallow areas. Strong tidal currents

and inlet geometry produce considerable cross currents and turbulence within the water column. Bottom current speeds of 1.2 to 1.8 knots can be estimated from the formation of sand bottom waves in the mud flats. The high latitude (62°N) of Cook Inlet results in strong Coriolis force which, coupled with inlet geometry, causes considerable cross currents at both ebb and flood tides. Water flow is turbulent throughout the entire water column.

Bathymetry

Cook Inlet can be considered a coastal plain estuary extending inward from the ocean. Upper Cook Inlet begins at the west and east forelands. The depths in the Upper Inlet are generally less than 120 feet. This area is characteristically defined as a shallow and narrow silt laden basin. The Inlet divides into two arms at its head called Knik and Turnagain Arms. Knik Arm is 45 nautical miles long, approximately 50 feet deep for half its length, and then rapidly shallows to a large mud flat. Large areas of Knik Arm are exposed at low tide. Knik Arm and a segment of Upper Cook Inlet form the southern, and only, coastal boundary of the District.

Sediment Transport

Cook Inlet bottom sediment consists predominantly of cobbles, pebbles, and sand with minor proportions of silt and clay. Suspended sediments are mostly of glacial origin. The highest concentrations of sediment have been recorded near the mouths of Susitna and Knik Rivers. The Matanuska and Knik Rivers are glacier-fed rivers that transport large quantities of suspended sediment into Knik Arm. The average total suspended sediment for the Matanuska and Knik Rivers is approximately 16 million tons for April to September (months of highest sediment load) while average load from October to March diminishes to 135,000 tons. The maximum daily suspended sediment load recorded for the Matanuska River is 1.3 million tons, and 2.0 million tons for Knik River.

Approximately 10 million tons of suspended sediment (60 percent of the material) entering Knik Arm leaves the area in the highly turbulent waters and in the density currents moving along the bed. The other 40 percent of the suspended material is presumed to be deposited in the Knik/Matanuska River delta. The greatest influence on sediment distribution in Cook Inlet is attributed to tidal currents. Distribution and character of sediments in the forelands is also influenced by ice rafting and by rivers. Turbid fresh water discharging into the Inlet, particularly from the north and west, produces extensive sediment plumes. During the summer months and particularly during large floods, large amounts of gravel can be transported by the District's river currents.

WILDLIFE

Mammals

All the major river systems in the District provide essential habitat for both big game species and furbearers. The rivers and streams provide migration paths, spring and summer bear forage, important winter moose range (especially during severe winters), spring moose calving habitat and wolf and wolverine habitat. The coastal wetlands provide habitat for moose, bear and other furbearers while the uplands provide essential habitat for these mammals as well as sheep, mountain goat and caribou. (Pocket Map #5).

Moose tend to use the coastal areas primarily during spring calving. The thick cover and boggy nature of the terrain provides desirable forage and protection from predators. Summer use of the coastal areas is more limited as moose disperse to the uplands in search of browse. The summer moose range can be extensive. It typically includes all the area between the Yentna River, Lake Creek drainages and Deshka River, the area south of the Yentna River and around Beluga Mountain and the area between Little Susitna River and Willow Creek. An important upland area providing essential winter habitat for moose is that north of Wasilla.

Black bear are more prevalent than brown bear within the District. Preferred brown bear habitat is in the upper drainages of the Susitna River tributaries and to the west of the Susitna River. Riparian habitat is most important to bear during the summer months when red and silver salmon are abundant. Brown bear habitat often overlaps with black bear habitats, especially in the higher elevations of the Borough. Sheep are also found at these higher elevations as in the Chugach Mountains, Talkeetna Mountains and Alaska Range. This also holds true for much of the caribou and mountain goat habitat which is found in the Talkeetna Mountains, outside of the coastal management district.

Wolves and wolverine are relatively abundant in the river areas. Wolves are particularly abundant at the headwaters of the Yentna and Skwentna Rivers as are moose. Wolves are also evident along the lower Susitna River, Matanuska River and Little Susitna River. Wolverine, like bears, tend to frequent the rivers and streams in pursuit of salmon.

Black bear habitat is closely associated with timber areas and dence alder growth. Grasses, sedges, horsetail, berry crops and moose calves support the black bear population. Preferred brown bear habitat is alpine or sub alpine and usually in the elevations higher than 1000 feet, outside of the coastal management district.

Primary moose habitat includes willow, aspen groves and seral birch. Willow is the most important browse vegetation for moose although birch, when available, is also well utilized. Other preferred forage includes cottonwood, high-bush cranberry and rose. Alder is seldom browsed by moose.

Moose hunting typically occurs in the eastern portion of the Palmer Hay Flats, an area not used extensively by waterfowl for habitat. Similarly, moose hunting along the western portion of Goose Bay Refuge is separated from most waterfowl use. Poor access combined with poor hunting conditions discourages most hunting in the Susitna Game Flats Refuge, except in the northern portion of the refuge.

State game management practices have also had an impact on harvest in some upland areas of the District. For example, aerial harvests of wolves were prohibited and stopped in 1972. As a consequence, harvests in GMU 16 were halved by this limitation. In addition, bounty on wolverine in GMU 14 was stopped in 1968. Harvest data for 1979-80 indicate a harvest of 55 wolverines compared to 36 in 1972-73, a few years after the elimination of bounty. Research indicates, though, that access or habitat changes are not critical factors in wolf and wolverine harvests, but rather game management practices are responsible for subsequent population impacts. Generally speaking, there appears to be little potential for conflicts arising due to trapping activities.

There is no closed season for black bear, but 50% of the harvest occurs in the Fall between July 1 and December 31. Larger fall harvests reflect bear taken as chance encounters or additions to the bag limit during established ungulated (hoofed animal) hunting seasons. Black bear vulnerability can largely be associated with sightability, therefore spring harvests typically occur after black bear leave the den but before deciduous foliage appears. Harvests which take place outside of ungulate seasons or after foliage appears can primarily be attributed to food-seeking bears encountering human habitats.

Any development in previously undeveloped areas of the District will necessitate access, increase road traffic and its implications for all wildlife will be three-fold. First, new roadways will alter existing vegetative patterns either increasing forage potential for moose by replacing mature forests with new vegetation along the road or reducing forage by replacing prime habitat with pavement. Second, increases in road traffic may have a double impact. It may drive away certain species which are intolerant of human activity or (because roads often provide forage, which attracts moose) may create an abundance of "road kills". Thirdly, wildlife hunting pressures can be affected in two ways; increased road access will enable more hunters to participate, but the increased pressure on the wildlife will be more evenly distributed because of increased road access.

Marine Mammals

Harbor seals and beluga whales often utilize the offshore areas of the District. Both tend to congregate at the mouth of the Susitna River and in lower Knik Arm to take advantage of the spawning runs of anadromous fish. Most marine mammal use of the offshore and estuarine coastal habitat area is limited to spring, summer and fall due to extreme weather conditions.

Birds

The District tideflats and associated wetlands are critical waterfowl and shorebird habitat for both breeding and migration. Resident raptors which breed in the District include goshawks, greathorned owls and hawk owls. Migrating raptors which breed in the District are marsh hawks and red-tailed hawks. Most waterfowl nesting occurs at the interface of the marsh and shrub habitats. Key areas for duck staging and brood rearing include the Jim-Swan lakes areas, Palmer Hay Flats, Goose Bay and Susitna Game Flats. The areas between Palmer Hay Flats and Goose Bay are the most productive of the two vegetated bluff areas. Population size and composition of migrating waterfowl shift continuously. These daily changes reflect the constant departure and arrival of new individuals. Seasonal variations also occur and reflect the timing of migrations for different species.

During spring migration, trumpeter swans are abundant on Palmer Hay Flats where they rest for several hours or may wait out poor weather. Geese use the wet meadows, marshes and windflats as staging areas and for breeding. Bald eagles are usually associated with waterfowl presence on Palmer Hay Flats and with salmon in the Jim Creek area. Bald eagles also rest along local rivers such as the confluence of Moose Creek and the Yentna River.

Upland agricultural areas provide forage for geese and sandhill cranes as well as other game birds such as grouse and ptarmigan. Peregrine falcons tend to use the coastal wetlands and the Susitna River as a migration route.

Primary human use of the game refuge wetlands is for waterfowl hunting. Other uses include game hunting, fishing, trapping (although this typically occurs within the riverine habitat), and nature enjoyment. The Susitna Flats Game Refuge and Palmer Hay Flats Game Refuge rank first and second respectively in the State for the number of hunter days spent waterfowl hunting per year. Duck harvests from the Susitna Flats Game Refuge rank highest in the State. Palmer Hay Flats Game Refuge duck harvests are typically second. Goose harvests are also very productive. (See Appendix C.)

Issues related to waterfowl populations, wetland habitats and waterfowl hunting are common to all three game refuges. Hunting pressure is oftentimes temporarily concentrated. Duck hunting season typically extends between September and December or January; however, one third to one half the hunting effort is expended between September 1 and September 10 every year. Due to limited access within the Palmer Hay Flats Game Refuge and the surrounding area, hunting is usually restricted to the Duck Flats and Cottonwood Creek areas which are accessible by road. Access to Goose Bay State Game Refuge is limited to roads along the northern and western boundaries. The Susitna Flats Game Refuge is accessible only by boat or plane where hunters concentrate around landing sites rather than along road access points. Four wheel drive access to the Susitna Flats Game Refuge is possible from a non-maintained road which heads south from the Big Lake Area.

A major influence on bird wildlife populations in the District is the effect of access on its hunting. Modes of access to waterfowl shift as natural conditions dictate. Aircraft use in combination with boat and all- terrain vehicles has increased considerably as a majority of the potential wildlife harvests are essentially inaccessible by highway or its vehicles.

Anadromous and Resident Fish

Salmon and smelt spawn in the Knik, Matanuska and Susitna rivers within the District. The Susitna River is the major spawning stream in Cook

Inlet for pink, chum and king salmon. Sockeye use the extensive lake system associated with the Susitna River drainages, the mainstream and its tributaries including the Yentna, Skwentna and Talachulitna River. These salmon use the offshore and estuarine coastal habitat area as they prepare to enter these river systems.

Since the major rivers of the District are of glacial origins, resident fish normally prefer lakes and moderately swift clearwater tributory streams to the glacial rivers. Resident fish include trout, pike, burbot, white fish and salmon. The mainstream rivers such as the Susitna are used primarily for migration and wintering when icing inhibits activity in its tributaries. Most favorable summer habitat is in the clearwater tributories such as the Alexander and Lake Creeks and the Deshka and Talachulitna Rivers.

Human utilization of living resources within the rivers, streams and lakes habitat is focused on the use of these fishery resources. The fishing utilization in the District is typically recreational. The Susitna River drainage provides the most important recreational fishing rivers and streams in the state. Statistics indicate that the Deshka River, Lake Creek, Alexander Creek, Clear Creek, Little Willow Creek, Rabbit Slough, Kepler Lake Complex, Lucille Lake, Big Lake and the Nancy Lake Recreation Area are some of the most heavily fished rivers and lakes. Statistics also indicate that Finger Lake, Little Susitna River, Ship Creek, Willow Creek and Montana Creek are the <u>most heavily</u> fished areas.

Rivers, streams and lakes throughout the District provide good harvests of coho salmon, dolly varden and grayling. King salmon within the District are caught primarily on drainages on the west side of the Susitna River, especially the Deshka River and Alexander Creek. The west side drainages also provide the greatest pink and chum salmon catches; Willow and Montana Creeks are prime producers of pinks, and Lake Creek is a prime producer of chum. Drainages between and including the Little Susitna River and Knik Arm provide the largest harvests in the District for landlocked salmon, sockeye salmon and rainbow trout.

Finger and Lucille Lakes have the highest catch of landlocked salmon, the Little Susitna River has the highest catch of sockeye salmon and the Big and Kepler Lakes have the highest harvest of rainbow trout.

WATER RESOURCES

The water found within the District is a renewable resource that has increasing demands placed on it as development of the District increases. The District's natural users of water include vegetation, fish and wildlife. Development within the District can potentially lead to a multitude of new demands on the water resource. These demands can include community development, timber harvesting, road building, oil and gas development, mining, sand and gravel extraction, fish hatcheries, irrigation and hydroelectric development.

A significant demand for any type of development is community use. The amount of water used per capita is dependent on the water distribution system. In communities with municipal water systems, such as Palmer, use may exceed 100 gallons per day (gpd) per capita. In remote areas, such as Skwentna where individuals are sometimes required to carry water by hand, consumption typically drops to about 5 gpd per capita. Although some of the above mentioned development users are not currently utilizing the water resources of the District, the potential does exist and therefore (ultimately) their development will affect the District's natural watershed characteristics and its water quality.

Many watershed problems within the District are associated with landforms or slopes where geologic erosion and sediment production is naturally high. These areas can be particularly sensitive to such upland activities as timber harvesting and transportation corridor construction. On many of these landforms, however, influences, such as shallow slopes, coarse-textured soils with high permeability, thick organic layers, and rapid revegetation, render the land less sensitive to human activities. Geologic factors within the District also influence the amount and quantity of ground water available through structure and distribution of aquifers. Landforms and water currents influence the mixing

characteristics of water, an important consideration in disposing of treated and untreated wastes. The following inventory presents a summary of surface and ground water resources and quality, and associated water resources' analysis.

Surface Water Resources

The Susitna and Matanuska Rivers are the two major streams bordering most of the developed land in the District. Numerous smaller streams, which are tributaries to the Susitna and Matanuska Rivers or to Upper Cook Inlet or Knik Arm, also provide a potential surface water source for the communities in the District. Most of the major streams in the District originate in the mountains and are fed by large glaciers. The glacial origin causes these streams to carry large quantities of water even between rainstorms; however, the water is heavily laden with silt and glacial flour.

The average discharge of gaged streams in the District (such as the Knik, Matanuska, Susitna, Little Susitna, and Skwentna Rivers), indicates that there is an ample supply of surface water available from these streams. This average discharge is typically exceeded in the months of May through September when rainfall, glacier melt and snowmelt are at a maximum. Peak flows typically occur in June, July, and August. Stream flow decreases in October as the temperature drops, decreasing melt waters and causing precipitation in the mountains to fall as snow. Lowest flows typically occur in February and March. The winter months are most critical in terms of surface water availability. All streams freeze over, and many of the smaller ones freeze to their bed. Streams typically freeze up in later October or early November and do not break up until late April or May.

There are many lakes in the District which can be termed surface water resources. The largest lakes include Big Lake, Wasilla Lake, Lake Lucille and Nancy Lake which are all used for recreational purposes. Most lakes feed small streams and therefore contribute to their flow regulation.

Ground Water Resources

The best potential source of ground water in the District is located in the Susitna lowlands. Well yields of 1,000 gpm (gallons per minute) can be expected near major streams in this area. Most wells serving communities in the District yield 10 to 50 gpm. The Palmer city well #3 located north of Palmer has yielded 325 gpm at a well depth of 625 feet; an irrigation well south of Palmer typically yields 200 gpm at a depth of 95 feet; and the well at Big Lake summer camp yields 300 gpm at a well depth of 31 feet.

Well water in the District is characteristically located in the interbedded sand and gravel lenses in glacial deposits. Well depths average 30 to 295 feet near Palmer and 25 to 170 feet near Wasilla and westward. The most successful wells are drilled 50 to 150 feet below the surface. Wells that yield 10 to 50 gpm are usually 75 to 150 feet deep. Springs occur along the base of the mountains in the District. The largest known spring is located near Palmer where it flows at a rate of 150 to 200 gpm.

Water Quality

All major rivers are sustained primarily by snow and glacial melt water. These glacial fed rivers contribute heavily to sediment load in Upper Cook Inlet and Knik Arm. Sediment load in this region is one of the highest in the State. The highest rate of suspended sediment yield per square mile in the District has been recorded in the Knik River near Palmer (See Appendix C). The average annual yield for this area is 6,000 tons per year. The Knik, Matanuska and Susitna Rivers and Susitna River tributaries carry the bulk of sediment load during the summer months. Very little sediment is transported during the winter months when the rivers are frozen over and the glaciers contribute very little melt water.

Surface water has less chemical-quality variation than ground water. It is also softer than ground water. Generally speaking, the quality of

surface water in the District is good. It usually contains less than 0.3 mg/1 (milligrams per liter) of iron. The surface water hardness is less than 150 mg/1 and is mainly of the calcium magnesium bicarbonate type. The Matanuska River near Palmer contains a higher concentration of sulfate than other streams in the District. This phenomena is attributed to the presence of coal mines near Palmer, the drainage from which enters tributaries of the Matanuska River.

A high iron content is known to exist in ground water within the District. Water taken from shallow wells drilled in alluvium contain high concentrations of iron. Ground water resources characteristically are of a calcium bicarbonate type. The Palmer city well #3 water is of the sodium bicarbonate type and registers the highest concentration of sulfate present in the well water in the area. The presence of sulfate in the well is attributed to the theory that the well is located in a former channel of the Matanuska River. The theory is based on the observation that the water level and sulfate concentration in the well seems to fluctuate with the river level and sulfate content.

Palmer well water also contains a high concentration of boron. Both surface water and ground water along the Matanuska River contain measurable concentrations of boron. Nitrate is also present in some wells. High concentrations of nitrate have been found in water near Palmer and Wasilla. The nitrate present in this region appears to be geologic in origin.

Water Resources Analysis

Surface water and ground water resources in the District are largely untapped. Lakes and streams can provide large quantities of water throughout the year. Ground water is plentiful in the aquifer along the Susitna River and its tributaries. Future water needs for the District communities of Palmer, Wasilla, Houston, Willow, Big Lake and Montana can be supplied from this aquifer. Following is a water resources analysis of these communities.

Palmer - To meet increased demands for water in Palmer it will be necessary to drill wells north of town or in abandoned channels south of town, or installing a gallery adjacent to the Matanuska River east of town. The ground water source near Fishhook Road appears to be intermittent. Some wells in the area have dried up or yield only a minimum amount of water. Other wells in the area are providing adequate quantities of water.

Wasilla - There is an adequate supply of ground water available near Wasilla, although the water is close to the surface and contamination of the shallow ground water aquifer and lakes is possible. Wells were contaminated by adjacent septic tanks in 1970.

Houston - The supply of ground water available to Houston is sufficient to meet the present and projected future needs of its population.

Willow - Willow water supplies are adequate.

Big Lake - Big Lake wells yield fairly large quantities of water. There is a potential for contamination with increased settlement in the area. Additional water can be obtained just north of the community.

Montana - Montana has an abundant water supply.

CLIMATE AND AIR QUALITY

The climate of the District is in the transition zone between coastal and continental climates. The annual precipation ranges from about 15 inches at low elevations to over 80 inches in the mountains. The normal temperature range is from about -3 degrees F to 70 degrees F. Winds average less than 10 knots. A summary of climatic data is shown in Appendix C.

The highest recorded temperature in the Borough, outside of the coastal management district was 91° F in Talkeetna. The lowest recorded temperature in the District was -56° F in Willow. The coldest period usually occurs in January, while the highest temperatures usually occur in June because of the amount of sunlight and less cloud cover. As the mean daily temperature rises, breakup (ground thawing) begins in late March or early April and continues through the month of May in some poorly drained areas. In the fall, rapidly decreasing sunshine causes the mean daily temperature to decrease below 32° F on about October 25 each year. Lower temperatures are generally associated with higher elevations in the District.

Mean annual precipitation recorded within the Matanuska-Susitna Borough varies from 14 to 29 inches, which includes snowfall of about 45 to 119 inches. Mean annual precipitation would be greater at higher elevations. About one half of the total precipitation occurs as snow in the winter and about one half is contributed by rains. The amount of precipation in the District is inadequate for most agricultural development and irrigation is required. (See Appendix C).

Air quality in the District is classified by the Department of Environmental Conservation as Class 2 P.S.D. (Prevention of Significant Deterioration) which is considered excellent. The most significant pollutant is currently not associated with industrial development, but is blowing dust which occurs naturally in the District from associated winds.

Winds can move loose materials and cause wind stress on the water, producing a wind tide which promotes erosion by increasing the beach area that is exposed to wave action. Wind direction determines the initial direction of wave travel with bathymetric variation, capable of producing substantial alternation of wave direction and characteristics. These factors, coupled with shorelike orientation, determine the direction of wave attack on the beach. Winds in the District of Upper Cook Inlet are generally moderate; however, they occasionally are very gusty during the winter months.

High speed winds occur throughout the basin when an atmospheric pressure gradient is established over the entire Inlet. Average wind speeds are low. Prevailing winds in December and January are northerly and have the lowest average wind speed. Southerly winds prevailing in May and June have the highest average speed. Average daytime winds are approximately 10 to 20 percent greater than nighttime winds. Winds produced by cold air moving downslope from highland glaciers through adjacent valleys occur occasionally and are called "katabatic" winds. These winds can be very strong when the temperature differences between the land and Inlet water are greatest.

A strong gusty north wind called "Matanuska" may persist for 2 or 3 days at speeds of 20 to 45 mph. Wind speed can reach 40 to 60 mph for 6 hours or more, with short duration gusts of 80 to 90 mph. Strong northerly winds occur several times each winter originating in a rapidly increasing pressure gradient between the Gulf of Alaska and the Interior. These winds start as low level air movement from the Copper River Basin, moving westward through the Matanuska River Valley, turning southward near the Palmer area and then flowing down Cook Inlet.

Southeast winds flowing over the Chugach Range are called "Knik Winds" when they blow across Knik Galcier and "Turnagain Winds" when they blow across Turnagain Arm. Wind speeds of 100 mph have been recorded at the west base of Chugach Mountain valleys (Eagle River, Peters Creek, Ship Creek). These speeds diminish rapidly as the winds spread over the flat land and Knik Arm. A maximum speed of 51 mph for the 19-year period, 1941 to 1959, was recorded at the Elmendorf weather station. Anchorage weather bureau data show that 80 to 90 mph winds are capable of forming over the Knik Arm due to the lack of obstructions.

Air inversions within the District can create hazards if traffic or industrial facilities increase. Air inversion occurs when warmer air acts as a cover overlaying a colder air mass near the ground surface and doesn't allow air masses to mix. This results in high concentrations of pollutants being trapped near the ground surface. The potential development of the Point MacKenzie area could produce more pollution for

Anchorage. However, the concentrations of SO_2, NO_2, and NO_3 are presently very low level in the Anchorage airshed. These substances are the major pollutants produced by a petroleum facility.

GEOLOGY AND GEOPHYSICAL HAZARDS

The District is located within one of the most seismically active areas on earth, accounting for about 7 percent of the annual worldwide release of seismic energy. The seismic activity delineates the Benioff subduction zone which originates from the collision of the North American and Pacific Ocean tectonic plates. The convergent margin of the North American continental plate where it is being underthrust by the Pacific oceanic plate along the Aleutian Trench (Figure 2-2) lies approximately 400 km (250 miles) south of the Borough. Numerous geologic hazards in the District are related to this regional plate tectonic framework, i.e., earthquakes, volcanism, and earthquake triggered mass wasting.

A series of northeast striking major faults including the Border Range, Eagle River, Bruin Bay and Castle Mountain cross the District and are part of a broad arcuate fault system including the Denali and Fairweather faults to the east of the Borough boundaries. Faults classified as active are those along which there has been displacement within the last 100,000 years. The active fault within the District includes the Castle Mountain Fault. The McKinley Strand of the Denali Fault is also active and is found outside of the coastal management district in the Borough. (Figure 2-2).

Mount Spurr, which is located 13 km (8 miles) south of the District boundary, is the northernmost volcano in a chain of 24 active volcanic centers extending along the Alaska Peninsula. (Figure 2-2). This active volcanoe is a surface expression of the subducting plate beneath the District. Due to the andesitic composition of the volcanos, eruptions tend to be explosive. Regionally, the District is within a highly active tectonic setting with resultant seismic and volcanic phenomenon.

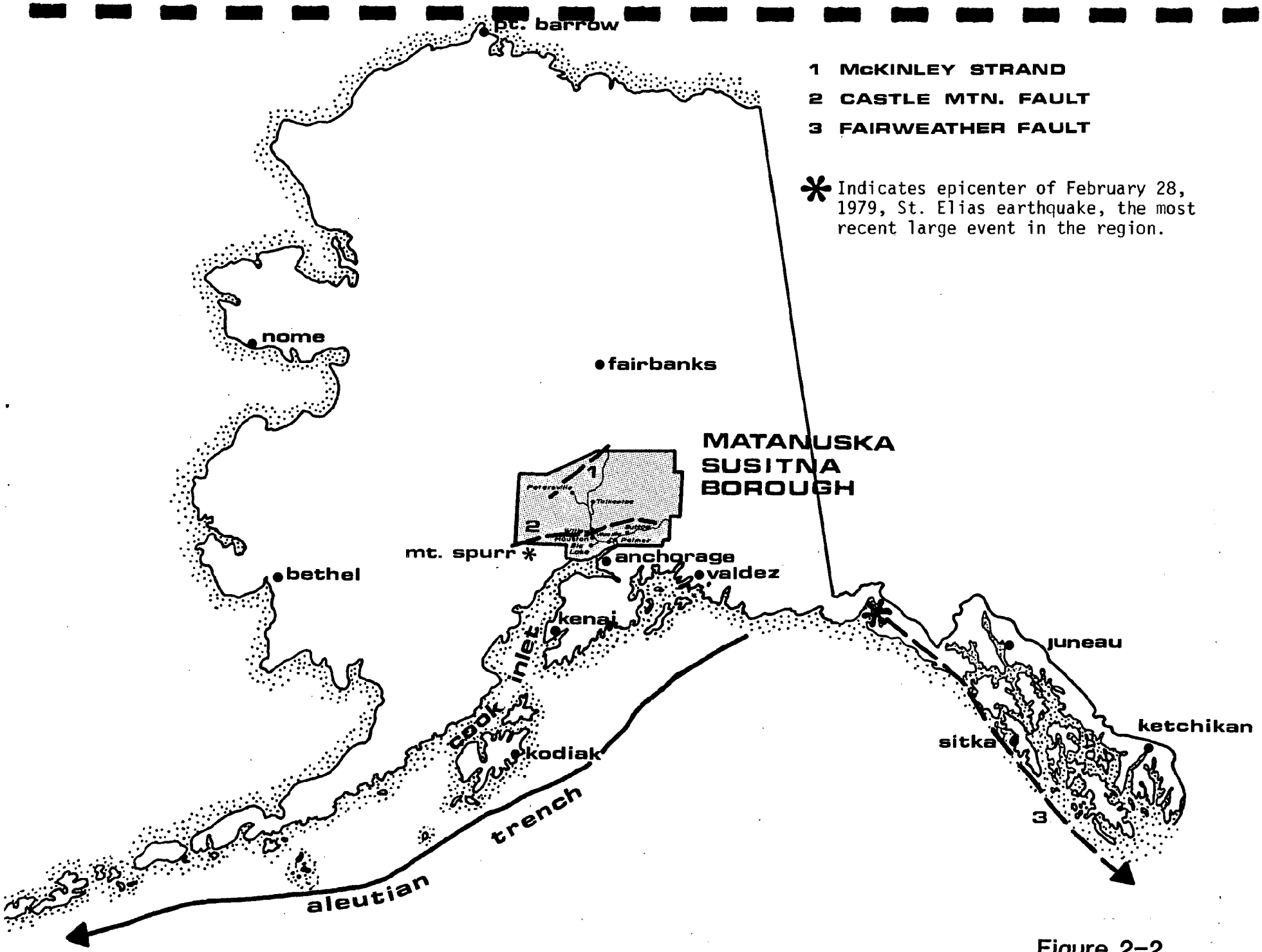

pt. barrow
1 McKINLEY STRAND
2 CASTLE MTN. FAULT
3 FAIRWEATHER FAULT
* Indicates epicenter of February 28, 1979, St. Elias earthquake, the most recent large event in the region.
nome
fairbanks
MATANUSKA SUSITNA BOROUGH
1
2
mt. spurr *
anchorage
valdez
bethel
kenai
cook inlet
kodiak
juneau
ketchikan
sitka
3
aleutian trench

Figure 2-2

The District is bounded on three sides by mountain ranges. The Alaska Range forms the west and north boundary, while the Talkeetna and Chugach Mountains collectively form the eastern boundary. The Matanuska River Valley is bounded on the north by the Talkeetna Mountains and on the south by the Chugach Mountains. (Figure 2-1). The following geological information summarizes data from Matanuska-Susitna Borough Surficial Geology (Generalized) with Distribution of Mineral Discoveries, by A.L. Renshaw Jr., June 1979.

Bedrock geology in the westcentral and central Alaska Range is primarily stratified sedimentary rocks of Mesozoic age with a southeastern wedge of Upper Tertiary continental deposits. The westcentral Alaska Range is intruded by Mesozoic felsic to intermediate composition igneous rocks which are expressed topographically by Mount Spurr (quartz monzonite to granite), and Mount Susitna and Little Mount Susitna mountains (granodiomite to granite). The central Alaska Range is intruded by felsic rock of which Mount McKinley is the chief expression.

The Talkeetna Mountains are predominantly stratified metasedimentary rocks with a central core of Jurassic through Tertiary felsic igneous rock. A segment of Paleozoic rock crops out in the center of the batholith. Younger Mesozoic metasedimentary rock crop out in the northwestern Talkeetna Mountains. Slivers of Paleozoic sedimentary and Mesozoic metamorphic rocks crop out in the southwestern Talkeetna Mountains along the Castle Mountain Fault, which traverses the southern edge of the Talkeetna Mountains through the District.

Bedrock geology along the walls of the Matanuska River Valley is complex. Generally, stratified sedimentary rocks of Lower Jurassic to Middle Tertiary age crop out along the north wall of the valley and are highly faulted by the Castle Mountain-Caribou Fault system. The bedrock outcrops on the south valley wall are Jurassic, Triassic and Permian metamorphic rocks and Lower Cretaceous and Upper Jurassic melange rocks. Contacts are fault bounded by the Border Range and Eagle River Faults. The Valley floor is composed of Tertiary and Cretaceous felsic igneous rock.

The main portion of the District is occupied by the Cook Inlet-Susitna Lowland, which is overlain by glacially derived Pleistocene deposits. Periods of glaciation have sculpted the lowlands and surrounding mountains. The earliest and most extensive glaciations have been Mount Susitna and Caribou Hills.

Expanding ice caps on the Alaska Range, Chugach and Talkeetna Mountains completely filled the Matanuska and Susitna Valleys, largely covered the bordering mountains and pushed out to join other major glaciers to fill Upper Cook Inlet to elevations of 3,000 to 4,000 feet. Below the confluence of the Matanuska and Knik Valleys, many of the divides between tributary glaciers stood above the ice surface and a large upland area on the southwest flank of the Talkeetna Mountains stood above the ice. During the following glaciations the Matanuska-Knik ice lobe did not coalesce with ice flowing down the Susitna River.

The District contains landforms which resulted from glacial, fluvial, lacustrine, periglacial and paludal processes. During the glacial advances, bedrock was scoured and debris was transported and deposited by the glaciers and their attendant streams and lakes. The broad lowland area is characterized by north-south trending elongate drumlins and fluted ridges with intervening swampy, till covered lows, on the north. Farther south in the District lowlands, the drumlins and ridges give way to flat, poorly drained areas of glaciolacustrine deposits. These lowlands are underlain by a thick sequence of coalbearing Tertiary rocks which rest on Mesozoic rocks.

Superimposed on the glacial landforms are floodplain and terrace deposits. Generally well sorted floodplain, terrace, and alluvial fan deposits occur in association with the rivers and streams that drain the District. Alluvial fans are extensive along the Alaska Range front and a few occur in the Talkeetna and Chugach Mountains outside of the District. A large alluvial fan deposit has accumulated where the Matanuska and Knik Rivers drain into the Knik Arm. (Appendix C contains a geological glossary).

Mineral Resources

Metallic mineral deposits exist throughout the Matanuska-Susitna Borough. Lode deposits generally occur along the borders of large igneous intrusions and along major fracture zones. Copper and associated minerals are found in the northern section of the Borough, the Alaska Range and the Talkeetna Mountains. Gold is indigenous to the entire Borough and is the primary mineral mined during the past 80 years, with a recent increase in hard rock gold mining activity. Other metallic minerals, such as tin, platinum and copper, have been mined mainly as by-products associated with gold mining.

Coal and gravel are the principal economic, non-metallic resources available in the Borough and coastal district. Major coal deposits occur in the Broad Pass, Susitna and Matanuska Coal Fields. Matanuska and Broad Pass deposits have been mined since the early 1900's. Large potential reserves have also been identified in the Susitna-Beluga Fields, although no mining development has occurred to date.

Oil and gas leases occur throughout the Susitna River Basin, with the heaviest concentration in the southern portion of the basin adjoining upper Cook Inlet. Most District lands, appear at this time, however, to have low petroleum potential.

HAZARDS

Flooding

The quantity of water flowing past a given point in a specified unit of time is called discharge; it is usually expressed in cubic feet per second (cfs), gallons per minutes (gpm) or million gallons per day (mgd). Flood discharges on several streams within the District have been calculated by the U.S. Geologic Survey from records of previous maximum known flood events, theoretical calculations and are included in Appendix C.

A standard flood which is used for establishing floodplain boundaries for planning purposes is the 100 year flood. Such a flood has a one percent chance of occurrence in any year, or a 26 percent chance of occurring in a 30 year period. It is advantageous to locate new construction out of the floodplain of a 100 year flood, or if it is necessary to construct within the floodplain, locate the construction on fill or above the flood elevation. Estimated 100 year flood discharges for various streams in the District are given in Appendix C.

The 100 year floodplain boundaries within the District may change over time. The two primary causes of change are increased levels of hydrologic data and degree of development in the basin. Even the detailed floodplain delineation studies are based on estimates of the magnitude of the 100 year recurrence interval flood. Estimates of such floods in Alaska are typically based upon only a few years of discharge measurements, and often these measurements are on a different stream or too far upstream or downstream on the study stream. As additional years of data are made available, the magnitude, and thus the floodplain boundaries of the 100 year flood may change; such a change may be an increase or decrease from the current values.

Increased development in the floodplain typically decreases the natural storage and retention properties of the natural conditions. Wetlands, lakes, vegetation and slight depressions have the capability to store and delay runoff so that floods last for a long time and have relatively low magnitudes. As development occurs, these storage and retention features are replaced by buildings and pavement from which runoff is rapid. Thus, floods last for shorter periods and have increased peaks as development continues. Because of the increased flooding as a basin is developed, structures built adjacent to the present 100 year floodplain may be in the 100 year floodplain within a decade if substantial development occurs.

Damaging floods from the Knik River in the District have been found to occur only when Lake George, a glacier-dammed lake, releases its waters; the largest such flow occurred in 1958 when a peak of 359,000 cfs was

recorded. Very little private property damage has been documented other than some damage to crops and cleared land. Although Lake George has not been dammed by the glacier since 1966, the potential exists for the glacier to advance, causing Lake George to once again become dammed and subsequently release, causing extremely high flood magnitudes. Lake George is the largest and best documented glacier-dammed lake in the Matanuska-Susitna Borough and probably all of Alaska.

The Knik River near Palmer is famous for destructive outburst flooding from Lake George. Since 1918, at least, the lake emptied annually, a pattern which continued until 1963 when no ice dam formed. Lake George again annually refilled and dumped between 1964 and 1966. The annual flooding of Knik River was so regular between 1918 and 1963 that flood experts, bridge maintenance crews, and tourists reserved a week in July or August for the event. Because of this spectacle, the area has been designated as a National Landmark by the National Park Service. Since 1966, Knik Glacier has failed to form an ice dam and the lake has not filled. In this case, a period of regular lake dumping lapsed briefly and later ceased abruptly.

The peak discharges from 1949 to 1966 changed systematically rather than randomly as is usual for non-outburst floods. From 1949 through 1961, there was a significant rise in the peak discharges; then during the later phase of the lake, 1962-66, the peak discharges were lower than during the preceding decade. The cause of these latter changes was undoubtedly due to a thinning of the ice at the glacier terminus. Lake George will reform in the future if Knik Glacier thickens and advances a small amount.

The maximum flood discharge per unit area of 300 cfs/mi^2 associated with the release of Lake George is roughly six times the value that would be expected for a 100 year flood on a river of that size. Other glacier-dammed lakes also affect streams in the District; these include Strandline Lake affecting the Beluga River in the southwest corner of the District and many small unnamed lakes affecting the Matanuska, Skwentna, Yentna, Kahiltna, Tokositna and Chulitna Rivers. Strandline

Lake released in mid-July 1979, causing large floods along the Beluga River.

The aerial extent of the lands affected by flood waters is related to the flood magnitude, the width and depth of the channel, topography adjacent to the channel, natural or man-made constructions in the channel or floodplain and many other factors. As a result, detailed evaluation of floodplain limits can only be accomplished with detailed study of many of these factors. Some areas of the District have recently been studied in detail by the Federal Emergency Management Administration (1982).

A detailed study by the Corps of Engineers (1980) has been done for the Willow area which has been rated low average in hazard potential. (See Appendix C). Willow Creek and its tributary Deception Creek were studied in detail, the results of which indicated that approximately 3900 acres (mi^2) of area in both basins are in the floodplain of the 100 year flood (one percent annual chance of occurrence). In the Willow Creek basin, only 1.5 percent of which is currently developed, average annual flood damages of over $600,000 are predicted.

In another study by the Soil Conservation Service (1980), Little Willow Creek and lower Little Susitna River floodplains were delineated. The lower Little Susitna River study included the area from 2 miles upstream of the Parks Highway to its mouth at the 100 year floodplain included approximately 1,400 acres (2.3 mi^2) in the Little Willow Basin and 16,400 acres (25 mi^2) in the lower Little Susitna river study area. Average annual damages are estimated to be about $9,000. Damaging floods have occurred in 1955, 1959, 1969, 1971, and 1975; more extensive flooding can occur in the future.

A general summary of the flood hazard potential of several communities in the District indicate that flood hazard potential is mostly due to stream overflow and local drainage problems. (See Appendix C). The frequency of occurrence is generally low to low-average and the majority of the communities that were rated were given a low flood hazard rating.

Flood hazard potential changes as development occurs in the stream basins, making it necessary to revise the hazard assessment as development occurs in the basin. (It should again be noted here that the Federal Emergency Management Agency recently - November 1982 - released a preliminary Flood Insurance Study which will aid the District in the identification of flood hazards and administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973).

Icing

Icings (also called aufeis, naleds, and glaciation) are defined to be ice features that form from a series of overflow events which freeze on the icing surface, thereby thickening the icing. Icings typically develop in braided river floodplains, at culverts, and across roads, but they may occur anywhere in cold environments. Three requirements for icing formation are:

1. A water source in the form of springs, groundwater, or flow;

2. A subsurface constriction such as bedrock, less pervious soil, or permafrost; and

3. A surface constriction such as the downward freezing of the active frozen soil layer or channel ice, or the icing itself.

Icings are a relatively localized hazard in the District and have been found to occur along portions of Willow, Montana, Wasilla and Bodenburg Creeks. Many areas in the District have the potential to be affected by icings, including nonflood plain areas. Icings forming in stream channels reduce the capacity of the channel to carry flow, resulting in more extensive flooding than would otherwise occur during spring runoff.

Stream Bank Erosion

Stream bank erosion results from any single or combination of processes

that include:

1. High water velocities eroding and transporting the material from the site;

2. Thawing of ice rich soils, which, as a result, lose their structural stability and slide into the stream channel;

3. Ice blocks being transported during breakup, gouging material from the banks;

4. Wind driven waves impacting the banks; and

5. Winds drying out the soil and carrying away the dry soil particles.

Stream bank erosion can progress to a point where it undermines structures, roads, or railroads causing extensive damage. Stream bank protection can be used to slow or stop the bank erosion process, but may cause increased bank erosion or bed scour elsewhere along the stream. Similar to icings, stream bank erosions is a localized hydrologic hazard. Stream bank erosion problems are likely in certain locations along the major rivers and streams in the District. Communities in the District with potential stream bank erosion hazard problems include Palmer and Wasilla.

Ice

The highest concentrations of sea ice are formed north of the forelands in Upper Cook Inlet. Several different types of ice are found including sea ice, beach ice, stamukas, estuary and river ice. Sea ice is formed by freezing of a thick crust on the surface of oceanic water. Each successive layer is formed on the bottom of the surface layer, building to thicknesses of as much as 8 feet and covering 3 to 4 tenths of the Inlet. Sea ice is more abundant in Cook Inlet than the other types of ice listed above.

Two forms of sea ice - floe ice and block ice - are the most prevalent forms of ice found in the District. The movement of block ice and floes in Upper Cook Inlet is controlled by wind forces and tidal currents. Tides provide the major motivating force moving ice in Cook Inlet, but wind direction and duration can exert great control on the seaward migration of floes. Ice in the Upper Cook Inlet area moves seaward primarily due to prevailing winter winds which blow SSW down Knik and Turnagain Arms. Occasionally, ice held in Knik Arm is pushed out of the Arm within a 24 hour period by winds.

Excessively large floes are not formed in Knik Arm because of the large tidal currents and eddies. Currents and eddies are also responsible for breaking up any floes that are carried into Turnagain Arm from Cook Inlet. Flood tides pick up the sheet ice, break it into small pieces and deposit it on the flats with some pieces stacked on top of others. High tides pick up these cakes of ice and carry them to mid-stream where current velocities are maximum. In mid-channel, the cakes of ice are broken up and reconsolidated to form the floe or float ice. Ebbing tides carry floe ice south to the channel constriction at the forelands. For the most part, floe travel is restricted to Upper Cook Inlet.

Most ice blocks are formed as shore-fast ice or are built up on the periodically flooded mud flats in Upper Kink Arm. Ice blocks are formed over a shoreline area exposed at lower tide levels. The ice block increases in size by successive coating of ice during each tide cycle. The thermal balance of heat transfer into the atmosphere during low tide exposure, and heat flow into the soil from the warmer tidal water during high tide, control the depth of ice formations. Shoal areas at an elevation higher than the heat balance zone are covered with solid ice. Higher current speeds tend to retard ice formation by altering heat flow and erosion rates.

Beach ice forms on the mud flats of the District when the ebbing tide exposes the mud to cold air, causing the upper layer of mud to freeze. Water overlying the frozen mud freezes on flood tide. Beach ice is eventually pulled away from the mud and carried out into the inlet, thereby assuming the character of sea ice.

Stamukas are stacks of layered ice, sometimes referred to as ice cakes that have been beached and frozen to the mud flats in Cook Inlet. Ice floes contribute to the formation of these ice cakes. Ice floes become lodged on top of stamukas when the tide recedes. Overhanging pieces can break off and produce ice cakes as great as 20 feet thick. Estuary and river ice are produced by freezing of fresh water. Estuary ice is a thin crust of ice that forms over mud flats and shallows in the District. River ice forms over shallows and shoals and remains in the rivers until spring breakup. River ice as thick as 6 to 7 feet is discharged in large quantities into the Upper Cook Inlet at breakup.

The location and size of icings is very site specific. Icings also change in size from one year to the next as a result of different climatic conditions controlling their formation. For example, climatological conditions in the Point MacKenzie area of the District generally produce about two and one-half feet of floe ice during the ice season. However, the mean floe size for a 100 year recurrence period is three and one-half feet. Any floes forming or being carried into Cook Inlet are broken up by large tidal variations and currents. Occasionally, floes reach 1,000 feet in diameter. Ice coverage for the entire Cook Inlet can reach a maximum 30 to 40 percent.

Constraints associated with ice hazard in the District include restrictions on development adjacent to the coastline and special design considerations for structures built in Upper Cook Inlet and Knik Arm waters. Ice floes that are moved by tides and winds can gouge shorelines, cause shoreline erosion and can exert significant forces on offshore structures. Stamukas, shorefeast ice and beach ice can remove surface layers on beach material if the ice is lifted by high tides and transported away by tidal currents or winds. Such material removal may impact near shore development projects within the District.

Seismicity

As a result of its dynamic tectonic setting, the Uniform Building Code has placed the District in Seismic Zone 4 (on a scale of 0-4) where

structural damage caused by earthquakes is generally the greatest. Damage due to earthquakes is caused primarily by ground rupture, ground failure and ground shaking. Ground rupture damage is usually restricted to the area on or near the fault tract. Ground failure in the form of liquefaction may occur in the District in areas of thick unconsolidated deposits where the water table is at or near the ground surface. Areas of potential liquefaction in the District include the flood plains of major streams and alluvial fans. Ground shaking effects can be amplified in the areas of fine silt and clay deposits as well as in peat bog areas. Ground shaking response, however, is also dependent on a number of other factors such as duration of shaking, response spectra, earthquake magnitude, depth of focus and building design and construction.

Secondary destructive mechanisms are regional including local uplift and subsidence, consolidation of soils, landslides and avalanches. Records from the 1964 Alaska earthquake indicate that structural damage in the District was minor with landslides recorded on Point MacKenzie. Ground cracking occurred in the swampy areas along streams. Cracks were also noted on the alluvial fans which flank the Chugach Mountains on either side of the Knik River Valley.

Storms

Storms like ice are another hazard of oceanic origin that contribute to the District's coastal erosion. Storm winds produce "sea waves" of significant height and intensity of which are capable of eroding and significantly altering beach formations. Shorelines composed of loose gravel and fine-grained sand such as those within the District coastline are generally more vulnerable to significant wave damage, whereas, rocky headlands and high sea cliffs are not. Storm waves in upper Cook Inlet generally seldom exceed four feet.

Mass Wasting

Hazards related to mass wasting in the District include landslides,

avalanches and rock glaciers. These phenomenon can be seismically induced or result from the particular rock structure, seasonal spring thaw and slope of the debris, rock or snow. Landslide describes the downhill movement of earth, rock, mud or debris such as the occurence along the vegetated bluffs of the District. Avalanche refers to similar movements of snow and ice. Processes which trigger landslides are rainfall, erosion, earthquakes and man-induced cutting and filling. Mass movement phenomenon usually affect lower mountain slopes and the margins of valley floors and are especially active during periods of spring thaw.

Avalanche chutes are present on steep mountain slopes (30-40°) but are most abundant in the north and east areas of the District including Mount Susitna. Avalanche hazard is directly related to snow accumulation and steep slopes, specifically those greater than 30 degrees. Spring runoff on south facing slopes lubricates the surface of the slope and creates a high avalanche risk. Chutes are cut or modified by rapidly moving masses of snow, ice, rock and soil. Tongues of boulders or rock debris typically accumulate at the bottom of the chutes near the base of the valley walls.

Rock glaciers are located on many floors of narrow mountain valleys. These landforms are developed from talus and other mass wasting debris which form tongues of rock fragments moving slowly downslope. Rock glaciers are generally found Borough-wide and not necessarily within the District.

Volcanic

Mount Spurr is located 13 km south of the District boundary and is the closest active volcanic peak to the District. As a result of Mount Spurr's close proximity, primary volcanic hazards are considered a threat. These volcanic hazards include turbulent clouds, violent directed explosions and glowing avalanches. Turbulent ash clouds, which are bursts of gas, steam, and ash that rise vertically to heights of 50,000 to 100,000 feet (15,000 to 30,000 meters), can be hazardous to

aircraft in the area. The turbulent cloud accompanying the 1954 eruption of Mt. Spurr rose 70,000 feet (20,000 meters) in 40 minutes. Violent directed explosions can carve a destructive path for many miles. Glowing avalanches can flow swiftly downslope from the summit for great distances. Some of the destructive secondary phenomena associated with andesitic volcano eruptions are voluminous volcanic mudflows or flash floods, lightening discharges, corrosive rains, earthquakes, sea waves, ash fall and landslides.

Cultural Resources: Inventory and Analysis

CULTURAL RESOURCES: INVENTORY AND ANALYSIS

INTRODUCTION

As the first Russian explorers arrived in Alaska in the eighteenth century, the Matanuska-Susitna Borough was already thinly settled by Athabascan Indians, specifically by the Tanaina group. Although the Athabascans moved seasonally and led a subsistence way of life as hunters, fishers, and gathers, they established only scattered villages in the Cook Inlet region.

The area remained thinly settled through the early twentieth century by which time settlement was limited to the native village of Tyonek (outside of Borough) and a few scattered homesites. During the following decades, additional incentives for settlement were provided by gold mining, agriculture and to a lesser extent, coal. Construction of the Alaska railroad between 1915 and 1917 opened local markets for Matanuska Valley agricultural products and attracted an influx of homesteaders. Coal mining towns in the Borough such as Chickaloon, Eska and Sutton formed along the railroad. In 1935, the federal government initiated the Matanuska Colony farm settlement in which a group of approximately 200 families were relocated in the Matanuska Valley. The intent of the federal relocation program was to determine the feasibility of establishing a self sustaining agricultural community in Alaska.

Gold mining and agriculture remained the economic mainstays of the region through the mid 1960's. The Willow Creek, Nelchina, Yentna and Talkeetna mining districts were the principal locations of mining activity. Coal mining was also important economically to the area with the Jonesville coal mine providing a source of power for Anchorage until the 1960's.

A farmer's cooperative served for over twenty years as the nucleus for social, political and economic development of the agriculturally dominant Matanuska Valley until incorporation of the Matanuska-Susitna

Borough as a second class borough in 1964. Throughout the latter half of the 1960's agricultural, as well as coal, output began to fade. High competition and production costs significantly reduced the amounts of agricultural activity in the Borough to levels well below the peak years attained in the early sixties.

Despite a decrease in agricultural and mining activities, the area experienced substantial population growth in the 1960's and 1970's, growing at a pace comparable to Anchorage. At statehood in 1959, the total population of the area now contained in the Borough was 5,188. This climbed to 6,509 by 1970 and to over 20,000 in 1980. Much of the recent population growth is attributable to people who commute to jobs in Anchorage, the North Slope or other areas outside the Borough.

Many of the existing communities and settled areas reflect historical settlement patterns. Approximately 90% of the approximate 26,000 residents (1982) of the Borough are located within a ten mile radius of Wasilla, primarily in or near Palmer, Houston, Big Lake and within the coastal management district. Other areas of relatively concentrated settlement are distributed along the Parks and Glenn Highways with increased densities at communities such as Talkeetna, Trappers Creek and Sutton. The remainder of the inhabitants are scattered throughout the Borough in rural or remote areas, often near mines or at sites accessible by water, air or rail.

(It should be noted here that this section includes land status, land use, population, transportation, recreation and cultural facilities. Public facilities and services inventory and analysis is included in the Matanuska-Susitna Borough Draft Comprehensive Plan).

LAND STATUS

State land

Throughout Alaska's history, the Territory of Alaska, the University of Alaska and the State of Alaska have acquired land from the federal

public domain through various federal land grants. One of the first of these federal land grants was the Act of 1915 (P.L. 330). This Act granted all vacant surveyed township sections 16 and 36 to the Territory of Alaska for the benefit of the common school fund. The income derived from these lands was placed in a trust with only the earnings being used to benefit the schools. In 1978, the Alaska Legislature redesignated the "school sections" as general state land removing the trust land designation. The legislature now provides for a percentage (½%) of the state resource revenues to feed the school trust fund in place of school trust land revenues.

The Act of 1929 (P.L. 679) granted 100,000 acres of surveyed, non-mineral, vacant, unappropriated and unreserved land to the University of Alaska. These lands, like the school lands, were trust lands with only the earnings being used to benefit the University. Through the Act of 1929, the University of Alaska acquired title to land within the coastal area of the Matanuska-Susitna Borough. Much of the University land has been leased under State of Alaska leasing laws.

The Mental Health Grant Act of 1958 (P.L. 830) granted a sizeable area of land, 1,000,000 acres, to the state for the purpose of establishing another trust fund to benefit the funding of mental health costs in Alaska. Like the school trust lands, the land trust designation for mental health lands was removed by the Alaska Legislature in 1978. The legislature now provides for a percentage (1½%) of the state resource revenues to feed the mental health trust fund in place of mental health trust land revenues.

The Alaska Statehood Act of 1959 (P.L. 85-508) transferred the largest amount of land from federal state ownership. Section 6(b) of the Alaska Statehood act provided for a grant of 102,550,000 acres to the State of Alaska. Much of the uplands in the District were selected under this authority and patented to the State. (Pocket Map #3). The selection process for state land contains three distinct steps prior to final acquisition of the federal patent by the State. The process includes selected lands, tentative approved selected lands and patented lands.

Selected and tentative approved selected status on a tract of land does not necessarily mean that the State will get the final patent.

In addition to the lands granted to the State under the Alaska Statehood act, the Submerged Lands Act of 1953 (P.L. 85-303 and 508) conveyed all tidelands, submerged lands and shorelands under all navigable waters to Alaska upon statehood. These lands are available for lease only and cannot be sold under existing state law. Only those persons using such tidelands and cities existing prior to statehood were given a preference to purchase.

The State is the largest land holder within the District. (Pocket Map #3). With the exception of State lands accessible by the Glenn or Parks highway, Borough roads or the Burma road, most state lands in the District are remote and accessible only by plane, boat or foot. Three State game refuges and the Nancy Lakes State Recreation Area are located within the District. In addition, the majority of lands in the District west of the Susitna are in State ownership with minor private and Borough holdings.

Borough land

When the Matanuska-Susitna Borough was incorporated in 1964 it received the right to select up to 10% of the vacant, unappropriated, unreserved State land within the Borough's boundary. The Municipal Land Entitlement Act of 1978 (AS 29.18.201-.213) has since restricted Borough land entitlement to a maximum of 355,210 acres of State land. Borough lands within the District are divided into selected lands, tentative approved lands and patented lands. (Pocket Map #3). The tentative approved lands lack the patent document for technical reasons only (e.g. lack of exterior boundary survey). Conditional disposals of tentative approved lands can be made with prior approval of the Department of Natural Resources. Approved selections on surveyed lands indicates a wait for the State's patent document processing to be completed. Pending unapproved selections are in the adjudication process and could be denied if the Borough has over-selected its entitlement.

Borough title does not include the mineral rights to the land or title to any navigable water bodies. The State also retains public access to and along all water bodies. With the exception of some school sites and administrative facilities, all of the Borough land was acquired from the State.

Borough lands within the District are predominantly located west of the Susitna River and between the Little Susitna River and the Susitna River. (Pocket Map #3). Most of the larger parcels of Borough land are adjacent to lakes and streams with high recreational value accessible by plane, boat, foot or 4 wheel drive vehicle. Smaller parcels of Borough land are located throughout the Palmer, Wasilla and Big Lake areas as well as along the Parks and Glenn Highway Corridor.

Private land

Private land ownership in the District, other than Native land, has evolved through Federal land allocation laws, State land sales and Borough land sales. (Pocket Map #3). The most prominent Federal program was the Homestead Act. Fee ownership gained through the Federal homesteading procedure passed the most complete bundle of rights to the private land owner. The Federal patent usually included the mineral rights to the land. In 1958, the Homestead Act was changed to reserve the mineral rights from homestead entries in Alaska. The State has since acquired those reserved mineral rights under the homestead lands where there is a mineral potential. Private lands obtained through State and Borough land sales do not include mineral rights which were retained by the State.

Generally, private land holdings within the District (other than native corporations) are concentrated along the Glenn and Parks highway corridor and along the road network of the Palmer-Wasilla area, Big Lake area and along Knik Road. (Pocket Map #3). Numerous small private landholdings are scattered throughout the remote portions of the District west of the Susitna River as a result of State and Borough land sales. Private lands in remote areas are often waterfront holdings or

near airstrips which allow for access. Overall, the majority of private lands in the District are of high value capable of supporting development.

Native land

The Alaska Native Claims Settlement Act (ANCSA) of 1971 (P.L. 92-203) provided for a land settlement to the Native villages within the District. ANCSA and a subsequent amendment (Terms and Conditions for Land Consolidation and Management in the Cook Inlet Area) provides for Federal and State land to satisfy the village and region entitlements. Most of the lands conveyed to Native corporations have been identified, however, litigation is pending for many of the acres selected by Eklutna, Inc. As a result, dual ownership occurs for much of the land south of the Knik River area including the Duck Flats in the Palmer Hay Flats State Game Refuge (T16N, R1-4E, S.M.). The Alaska National Interest Lands Conservation Act (P.L. 96-487) which became law in December, 1980 provides for the state and Eklutna, Inc. to exchange lands to allow for Native selections in the Jim-Swan Lakes area of the Knik/Matanuska River Floodplain (T17N, R3E, S.M.).

Native lands within the District are restricted to small parcels of village selected lands in the Palmer Hay Flats and Jim-Swan Lakes areas and tracts of conveyed land to Cook Inlet Regional Corporation (CIRI) in the western portion of the District (Beluga area). The lands in the Beluga area were selected because of their high value development potential.

Permits, claims and leases

All of the tide and submerged lands along Knik Arm in the District have been filed on for offshore prospecting. Most of the activity is in the permit application stage and the balance in terminated permits. An offshore prospecting permit is an exclusive mining right to all of the locatable minerals found offshore. The permit must be approved before any exploration work can be done. If the permittee finds any minerals, the permit must be converted to a lease before any mining is done. The

Department of Natural Resources has not approved any permits since about 1975 and does not intend to process any until new regulations are adopted.

The State retains the mineral rights to all land sold or conveyed. If the State has not closed the mineral estate to location or entry, the right to prospect and stake claims on the disposed surface estate still exists. In such instances, the prospector is subject to damage claims of the surface estate. Mining claims on both State and Federal land must be filed with the mineral estate owner in addition to filing the claim in the appropriate recording district. This requirement became effective in 1974 on State lands and in 1976 on Federal lands. Both Federal and State land records now reflect claim locations. A number of mining claims have been filed along rivers in the western portion of the Susitna Flats State Game Refuge.

There are a small number of shore fishery leases in the tidal areas west of the Susitna River. The shore fishery lease gives the leaseholder a priority area for setting nets during salmon runs. Shore fishery leases are issued by the Department of Natural Resources. The possessory interest of a lease must be considered by any competing use in the area.

All land in State ownership in the District, both onshore and offshore, is available for oil and gas leasing. Very little interest has ever been shown in the eastern portion of the District. The oil and gas lease sales for Upper Cook Inlet in May, 1981 did not include any new areas. Areas that are currently not under lease, mostly because of expired leases, have been offered for lease in the past. To date, the only commercial quantity of gas is found in the vicinity of Theodore Creek, located west of the Susitna River.

LAND USE

Generalized land use within the District is divided between settlement areas (those areas adjacent to the Parks and Glenn highway corridors and the Palmer-Wasilla-Big Lake road network) and those remote areas

accessible only by plane, boats or foot. Settlement related uses and activities are dominant in the Palmer-Wasilla-Big Lake area and along the Parks and Glenn highway corridor. Such settlement uses include residential subdivision, local businesses, commercial and industrial services, recreational use, timber processing, tourism and agriculture. Uses most prevalent in the remote reaches of the District include recreational, hunting, fishing, placer mining, commercial trapping and bush settlement.

Agriculture

The period from 1910 through 1914 represented the first period of active agricultural homesteading in the Matanuska-Susitna Valley. Significant commercial agricultural production did not develop until the 1950's and 1960's after the establishment of the Alaska Agricultural Experiment Station in Palmer. The emphasis of the Station was on milk, forage, potatoes and vegetable production and set the pace for the fast growing agricultural industry which peaked in 1962. Since then increasing costs, competition, taxes, aging farmers and decrease in markets has led to a decrease in agricultural activity. Although the bulk of cultivable soils lie between the drainages of the Yentna and Susitna Rivers, the majority of farming currently takes place around Palmer and the Matanuska River Valley.

Agriculture potential in the Borough is a function of the demand for local agricultural products and competing uses for agricultural lands (e.g. subdivision, speculation, commercial development etc.). The impacts of high labor and production costs on the ability of Alaskan farmers to compete with outside suppliers and the development of a necessary production and distribution infrastructure, including roads, processing plants and marketing facilities continues to place Matanuska-Susitna Borough farmers at an economic disadvantage when compared to outside farmers.

Despite such factors, the potential exists for future increased agricultural production in the Borough. The Point MacKenzie

Agricultural and Dairy Project (Pocket Map #3) has recently attempted to reestablish the local agricultural economy within the Borough. The establishment of a State and Borough land base for agriculture and the development of road access into prime agricultural areas are prerequisites for a sound agricultural presence in the Matanuska-Susitna Borough.

Timber Processing

The Matanuska-Susitna Borough forests are not particularly dense; stands of birch, spruce, and limited poplar species including aspen, cottonwood and balsam poplar are interspersed with swampy areas. Additionally, the District's tree species are small when compared to the coastal species.

Many of the timber lands within the Borough are in State ownership. The State makes lands available at a fee considerably less than Washington and Oregon. There are several factors which have constrained the development of a major timber industry in the Borough including high logging, transportation and milling costs. In addition, much of the logging operation must be restricted to sporadic operation during the winter months when swamps are frozen.

The Borough imports most of its lumber and has historically been unable to meet the increasing demands for firewood, houselogs and finished lumber. The lack of access and necessary infrastructure, lack of timber sales on public forest lands, the small size of individual private forest areas, and the high costs of logging, transportation and milling have and will continue to constrain forestry potential in the Borough.

There are a number of conditions which are prerequisites to the further development of the local forest industry including a committed resource base from which a relatively continuous supply of commercial quality raw material can flow. Loggers and mill operators will not risk capital on the current tenuous and intermittent supply of timber. In addition, one of the major reasons why the industry has been unable to develop a

market for processed products (finished limber, veneer, etc.) is that they have been unable to guarantee a continuous supply of the products.

It is also important that sale contracts be let for periods longer than a single season. Existing loggers and mill operators complain of being uanble to borrow money bacause of not being able to show a guaranteed source of timber for a few years. This can only be done through longer term timber contracts (3 to 5 years).

Subsurface Minerals

Most of the Borough has low potential for oil and gas development. Only noncommercial traces of gas have been found to date in the Susitna basin. Oil and gas leases are dispersed throughout the Susitna basin with concentration heaviest in the southern portion which adjoins the Upper Cook Inlet basin. Industry interest in the Susitna basin portion of the state oil and gas lease sale no. 33 (May 1981) was low. Several tracts were leased but most of the sale activity occurred in the Upper Cook Inlet basin where commercial oil and gas finds exist. State lease sales no. 40 and no. 49, scheduled for 1983 and 1986 respectively, will include lands not previously offered or areas not leased in the basin.

The known coal resources of the District include the Susitna and Beluga Coal Fields. (Pocket Map #6). Due to topography and limited access routes, exploration and exploitation of these resources has been minimal. The quality of the coal in the Susitna Coal Field ranges from sub-bituminous to lignite. The majority of this field has low potential for coal development. Attention has recently been focused on coal deposits in the Beluga area, especially at the western edge of this field which is outside of the District boundary. Beluga coal has high potential for near term development because its large reserves have close proximity to tidewater for transportation and there appears to be developable Pacific-Rim markets for this resource. There are an estimated 500 million tons of coal which could be surface mined in the Beluga deposits and an estimated gross potential of 55 billion tons in the entire Susitna Coal Field Range.

Recreation

The District and adjacent lands within the Borough are richly endowed with natural resources providing unlimited opportunities for recreational uses and activities. The majority of the District is considered remote and without road access. Areas accessible by road, particularly along the Parks and Glenn Highway Corridors and the Palmer-Wasilla-Big Lake road network are extremely important in providing access for the greatest amount of people to the most varied recreational opportunities including boating, overnight camping, picnicing, berry picking, fishing, hunting, cross-country skiing, snowmachining, dog mushing, wildlife viewing and hiking. Access via air, river, snow machine, horse, foot or all-terrain vehicles to the remote reaches of the District and adjacent Borough lands provides a rustic and natural experience for the recreational enthusiast.

Increasing competition from other land uses, and increasing user demands both in terms of number of users and range of recreational opportunities sought by these users, place limitations upon the ability of the natural recreational resources to meet the public need. The enhancement and creation of recreational facilities, such as parks, is one method of responding to this need. Development of Boroughwide trail and river access programs, expansion of existing recreational facilities and cooperative State and local management of recreational opportunities are also methods of responding to this need.

Although the Matanuska-Susitna Borough has area-wide parks and recreation authority, these powers have historically not been exercised to the degree available. Typically local parks and recreation projects such as playgrounds and ballfields are built and maintained by the Cities of Palmer, Wasilla and Houston, non-profit organizations and the Borough School District. State recreational facilities within the Borough are under the jurisdiction of the Alaska State Park System.

Tourism

Outdoor recreation is the primary drawing force for the Matanuska-Susitna Borough's tourist industry. Hundreds of lakes, miles of river bank and a great diversity of wildlife create a setting for hunting, fishing, boating and camping. Fishin and boating are popular on the many lakes and streams in the Borough. Hunters are attracted to the region by the abundance of moose and caribou and by various waterfowl found in the extensive tidal marshes bordering Knik Arm. Other attractions include historic sites at Wasilla and Knik, skiing and snowmobiling and scenic vistas found Borough wide.

The out-of-state tourist visiting the Borough has been increasing. Out-of-state tourists typically consist of parties driving through the Borough along the Glenn Highway to or from Anchorage; parties visiting friends in Anchorage and on weekend excursions; or tour buses from Anchorage (in the summer). Hunters using the Matanuska-Susitna Borough are principally from Anchorage.

The Glenn and Parks Highways are the principal take-off points for hunting, fishing and most other activities. Consequently most lodges, facilities, etc., are located at regular intervals along those transportation routes. Other points of destination in the Borough include State and local public campgrounds, Nancy Lake State Recreation Area, Denali State Park, Hatcher Pass, Talkeetna and Lake Louise.

Tourism and recreation is, and will continue to be, an important and expanding sector of the Borough economy. As the Borough experiences significant population growth in the years ahead, tourism will increase the demand for recreational oopportunities. It is important for the Borough to establish and secure an adequate land base to provide recreational opportunities as more public land becomes private. (Note: A tourism study for the Borough entitled Phase II Development Plan, Overall Tourism Development Program for the Matanuska-Susitna Borough, was completed in March, 1982 by Peat, Marwick, Mitchell and Co.).

POPULATION

Populational trends

Population levels within the Matanuska-Susitna Borough in recent years have been volatile. Growth characteristics have varied greatly between 1960 and the present. During the 1960's, the population of the Borough increased by over 25% from 5,188 in 1960 to 6,509 people in 1970. The majority of the increase occurred between 1960 and 1966 when the population reached 6,481. This represents a 24.9% increase. Between 1966 and 1970 the population increased only by .4%. In the 1970's the population growth levels increased rapidly but continued to fluctuate. During that decade the overall population of the Borough increased by almost 200%.

A number of different estimates have been used for the current population of the Borough. The 1980 census indicated a population of 17,776 in 1980. The Alaska Department of Community and Regional Affairs certified the estimated 1981 population as 19,123. The Department of Community and Regional Affairs determined the 1982 population of the Borough to be 26,002.

Even the lowest of these figures indicates a strong growth during the previous decade. Figure 2-3 shows the percent of growth per year between 1970 and 1982. This table is based upon the Matanuska-Susitna Borough's census counts and population estimates.

Figure 2-3

ANNUAL GROWTH RATES

1970 - 1981

Year	Population	Growth Rate
1970	6,509 (census)	--
1971	7,337 (estimate)	12.7%
1972	7,176 (estimate)	-2.2%
1973	8,170 (census)	13.9%
1974	9,600 (estimate)	17.5%
1975	10,848 (estimate)	13.0%
1976	14,606 (count)	34.6%
1977	16,724 (estimate)	14.5%
1978	20,370 (estimate)	21.8%
1979	23,177 (estimate)	13.8%
1980	17,776 (census)	-23.3%
1981	19,123 (estimate)	7.6%
1982	26,002 (sample census)	35.2%

The overall growth trend shown in figure 2-3 indicates a strong underlying population base development while still allowing for significant fluctuation. In the early 1970's a strong growth of 12% and 14% per year reflected the overall growth in the southcentral region that resulted from anticipation of the pipeline development. As the pipeline was delayed for construction the growth declined in the 1972-1973 period. As the pipeline construction began in full swing through the mid-1970's, pipeline-associated growth in the Borough increased rapidly with a peak of growth in 1976 of over 34%. The total growth between 1973 and 1977 was over 100%. Communities throughout the State have historically been characterized with boom and bust economies which has made it difficult for governmental planning and long term business investment to succeed. The Borough's growth rate has been more on the plus side and less on the "bust" side.

TRANSPORTATION

The Borough, as part of its comprehensive planning process, conducted a

study to evaluate transportation needs in the Borough and coastal management district. (Pocket Map #4). The study inventoried nonstate roads and made recommendations for improvement of the existing Borough maintained transportation system and projected future transportation needs at the local level. Copies of this plan are available from the Borough Department of Planning.

Roads

The Borough contains 746 miles of state maintained primary and secondary roads. The two principal roads in the Borough are the Glenn Highway which runs east and west, and the Parks Highway, which runs north and south. The two routes join south of Palmer, cross the Matanuska and Knik Rivers and continue into Anchorage. Completion of the Parks Highway in 1971 was an important step in land transportation by allowing access to the north half of lands west of the Susitna River. The following section contains a discussion of State DOT/PF and Borough transportation proposals within, or possibly having significant impact on the District.

STATE DEPARTMENT OF TRANSPORTATION/PUBLIC FACILITIES CONSIDERATIONS (DOT/PF)

Both short term and long term transportation possibilities are being considered. Short term refers to projects that are presently receiving serious study (e.g., preliminary feasibility/engineering studies), but are not yet funded by the legislature. Long term refers to those projects that have been only informally discussed. No decision has been made to fund long term projects; nor has an appropriate transportation mode (road or rail) been determined. Only general routes have been recommended.

Short Term Possibilities

1. Knik Arm Crossing: The crossing has been under consideration for at least 15 years. A preliminary engineering study is

presently being done and is expected to be completed in October 1984. If the state legislature decides to fund the project, the crossing is expected to be completed within five years after construction begins. The cost of the project will depend on the type of structure built. Preliminary costs for one alternative have been estimated at $300-700 million.

The crossing would tie Anchorage to Point MacKenzie, and provide a route that would shorten the distance between Anchorage and Fairbanks by 30-50 miles depending upon which alternative route is built. Past studies indicate that the crossing would bring substantial residential development pressures in the southern portion of the District and stimulate economic development, including a possible industrial port/park area site at Point MacKenzie.

2. Susitna Hydroelectric Project Access Road: A chosen corridor for rail and road leads from the existing Parks Highway and Alaska Railroad at Gold Creek and extends to the Devil Canyon Dam site. It is proposed that the Watana Dam site will be accessed by a south bound spur road from the Denali Highway.

3. Susitna River Access: DOT/PF has developed a scheme for providing access to lands west of the Susitna River consisting of either a road, rail or both from the Parks Highway or Alaska Railroad west across the Susitna River in the vicinity of Alexander. On the west side of the river, one spur would head northwest through Rainy Pass towards McGrath. The second spur would travel south to Beluga, and from there west along the Chakachatna River, through Merrill Pass toward the Kuskokwim River. Although the system described is a long term possibility only, the District portion of the route between the Parks Highway and east side of the Susitna River is proposed for construction to provide access to agricultural lands in the Fish Creek area within the next 10 years.

Long Term Possibilities

1. Susitna Road: The Susitna Road would provide access into 18,000 acres along the east side of the Susitna River from near Willow to the Susitna Game Flats. The Willow Subbasin Plan designates this area for commercial timber management with some agricultural and grazing use. The recommended route branches off the Parks Highway and travels south and parallel to the Susitna River for 24 miles. The primary use of this road would be for forestry and hunting activities, and therefore would not need to be of the same quality of other regional roads.

MATANUSKA-SUSITNA BOROUGH

The Borough has requested the FY'84 legislature to fund two categories of roads: those of regional significance and local roads and trails.

Roads of Regional Significance

1. Fish Creek Access -- Phase 1: The Borough requested $2,500,000 from the legislature to fund the engineering and construction of a road leading from Point MacKenzie west across the Little Susitna River. This segment would be the beginning of a road that would provide access to the proposed agricultural project on Borough and state lands in the Fish Creek drainage area. In addition, the Department of Natural Resources is currently preparing a detailed road layout which provides access into various portions of the Fish Creek area. (This is the first portion of a possible transportation corridor leading further west discussed under the DOT/PF proposed roads short term possibilities section.)

LOCAL ROADS AND TRAILS

The Borough requested state funds to construct seven connector roads to increase the efficiency of the existing road network. The Borough also requested funding for trail maintenance, right-of-way acquisition, design and construction.

The monies requested are intended for construction and maintenance of separated pathways (off road bike paths) along state maintained roads and for other off-road trails. The highest priority paths are those along the Old Glenn Highway and near schools along Bogard Road and the Palmer-Wasilla Highway.

Off road trails within the Borough serve both regional and local needs. The trails which are of regional significance include the following: (1) the first 10 miles of the Iditarod Trail off of Knik Road; (2) the Chickaloon-Knik-Nelchina Trail system and (3) the Skwentna Ice Trail (Moose Creek to Skwentna). Trails proposed for construction which are primarily of local significance are along the west and south sides of Lazy Mountain, in the Keplar-Bradley Lake area and near Bogard-Trunk Road.

Railroads

The Alaska Railroad is the only railroad serving Alaska, was built by the federal government between 1914 and 1922 and to date, remains the only federally operated railroad in the country. One mainline runs north and south through the District and provides access to Fairbanks, Anchorage and Seward. A spur also serves Palmer and its industrial park. The railroad has been historically important in the development of the Borough. Many small towns have developed around important locations along the rail route. The Parks Highway was built paralleling the railroad line. The primary function of the railroad in the Borough is the delivery of goods, particularly gravel and timber. A passenger service is provided that allows access to Denali National Park. For residents who live beyond the end of the roadways and scheduled stopping

points, the train still stops on request. A future spur has been planned to Pt. MacKenzie supporting potential industrial and agricultural development in the Point MacKenzie area. Although there are no construction plans, analysis of a rail crossing at Knik Arm (possibly at Point MacKenzie) will be included in DOT/PF's preliminary engineering study of the Knik Arm Crossing to be completed in 1984.

Air transportation

There are approximately 30 small air fields which have been classified for public use in the Borough. Approximately 14 others are restricted or are in poor or uncertain condition. Lakes and other bodies of water are used for float planes, or ski planes in the winter months. Air transportation is a primary means of access to remote areas of the Borough for Anchorage recreational visitors. The largest airport in the District is the Palmer Municipal airport, which has a 5,000 foot runway capable of accommodating Hercules 130 aircraft as part of general access to the Palmer Industrial Park. Elsewhere, air transportation is considered equally important in transportation of passengers and cargo.

Water transportation

There is no substantial use of waterways for anything other than pleasure craft and recreation in the District at this time. Feasibility studies are underway on possible commuter service by hovercraft via Knik Arm to Anchorage. Additionally, Anchorage is the principal port in the area for cargo bearing ships.

CULTURAL FACILITIES

Cultural facilities within the District include libraries and museums. Library services are provided by the Cities of Palmer and Wasilla, and non-profit library associations. The two cities have library powers within their respective communities and contract with the Borough to provide similar services to Borough residents who live outside of the Boundary.

The Knik Museum and Mushers Hall of Fame, the Wasilla Historical Museum, the Transportation museum and the Talkeetna Historical Museum are the major museums in the Borough. An additional historical museum is located in the Palmer Visitor's Center.

Knik Museum

The Knik Museum and Mushers Hall of Fame is located along the Knik Road approximately 14 miles south of Wasilla. The museum is housed in one of only two original structures remaining from Knik townsite. The museum, operated by the Wasilla-Knik-Willow Creek Historical Society under lease from the Borough, specializes in artifacts, paintings and photographs of Iditarod Trail races and mushers.

Wasilla Museum

Located in Wasilla, the Wasilla Museum is housed in a log structure built in 1931 as a community hall. Since remodeling in 1967, the building has served as both museum and visitors information center. The museum showcases a wide variety of utensils, tools and other personal items used by the area's settlers. The Wasilla-Knik-Willow Creek Historical Society also operates this facility which is leased from the City of Wasilla.

Transportation Museum

The Transportation Museum is located on the fairgrounds of the Alaska State Fair in Palmer. Its inventory of transportation oriented vehicles and machinery ranges from antique snowmobiles to full restored historical aircraft. The historic items are housed within an Alaskan Railroad passenger train, itself a historic means of transportation, and a recently constructed building located among the fair's complex of permanent structures.

The small museum located within the Palmer Visitors Center offers tourists and visitors a view of historic items relating to the farm

colony era of the Matanuska Valley. The Homesteaders Museum, which housed artifacts from the homesteading days of Alaska, was destroyed by fire in late November 1982.

HISTORICAL RESOURCES

A Boroughwide inventory of historic sites, commissioned by the Matanuska-Susitna Borough Historical Preservation and Restoration Commission, was completed in December 1981. The purpose of the survey was to locate, identify, photograph, catalogue and research a preliminary number of historic and prehistoric sites within the Borough's boundaries. The survey concentrated on sites and structures established prior to the arrival of Matanuska Valley colonists in 1935. The report provides information valuable to the preservation of the Borough's cultural heritage.

Four buildings in the District are known to be on the National Register of Historic Places: The original Wasilla Elementary School; Teeland's Store; the Wasilla Depot; and the Knik Pool Hall/Museum in Knik. Two other structures, the Wasilla Museum and the Independence Mine, are under consideration for inclusion. The major recommendations of the 1981 survey are to develop a Comprehensive Historic Preservation Plan which would incorporate, but are not limited to, the following:

1. Initiate nomination of important buildings, sites, and structures for inclusion on the National Register of Historic Places. Buildings meeting the 50-year requirement and deemed suitable for nomination to the National Register at this time are listed below:

    a. Fairview School;
    b. Werner Farm;
    c. John Springer Cabin and Barn;
    d. Lakeview School;
    e. Dave Reedy Cabin;
    f. Woodward Cabin and Barn;
    g. Forks Roadhouse;
    h. Chickaloon House (Lucas Place);
    i. Chickaloon House (Gladson House);

j. Felton Fishhook House and Cabins;
k. Felton Store and Post Office;
l. Palmer Depot;
m. Willow Section House;
n. Sunshine Section House;
o. Talkeetna Section House, Tool Sheds, & Depot;
p. Talkeetna Historic District;
q. University Experimental Farm;
r. Austin Meek Hunting Cabin
s. Roy Cornelius Homestead;
t. Jake Metz Cabin;
u. Wrinkle-Faced Swanson Cabin;
v. Howard Ross Cabin and Warehouse; and
w. Tyone Village.

The final report also states that all of the Colony farms office buildings, stores and churches from the 1930's colonization, will meet the 50-year requirement for nomination to the National Register in 1985, at which time the list of eligible sites will immediately double or triple.

2. Coordinate the Comprehensive Historic Preservation Plan with the overall planning efforts of the Borough including the MSBCMP, the Comprehensive Development Plan and capital improvement planning.

3. Seek funding sources to hire an Executive Director for the Comprehensive Historic Preservation Plan project and as staff to the Historic Preservation Commission.

Chapter 3
Issues, Goals, Objectives

ISSUES, GOALS AND OBJECTIVES

INTRODUCTION

Issues, goals and objectives are the major elements that make a district coastal management program local. Issues are identified by local people and evolve from local circumstances. They are what is important within the planning area or the major concerns that must be addressed in the planning process. They ask for resolution, or at least principal consideration as decisions are made concerning the future. Goals derive from issues. They are the long range purposes of the district program which in attempting to resolve local issues give the program its direction or philosophical base. Objectives are more specific and shorter range statements of aims, similar to interim goals. Usually a set of objectives is constructed with the overall aim of achieving a larger purpose or goal. Since objectives are capable of measurement and evaluation, progress toward their achievement can be perceived.

Policies are the next logical construct in this chain of more and more detailed consideration of local coastal management program issues. Policies are specific courses of action which, when adopted by the responsible level(s) of government, are designed to influence and determine decisions and actions in such a way as to help achieve one or more of a plan's objectives. The District program for policy development is addressed in Chapter 5 of this plan. It is important to note here that the District's coastal resource issues are interrelated; goals may very directly support one another; each objective may aid in the accomplishment of more than one goal; and each policy may affect more than one objective.

ISSUES OF THE MSBCMP

Issues of the Matanuska-Susitna Borough Coastal Management Program (MSBCMP) have been identified relative to natural and cultural resources

within the District. Uses and activities of concern to coastal management programming in Alaska as defined by the Alaska Coastal Management Act (ACMA) have also been included where appropriate. The issues of the MSBCMP overlap with concerns of the other major planning efforts developing within the Borough such as the Borough Draft Comprehensive Development Plan and the Alaska Department of Natural Resources Matanuska-Susitna- Beluga Area Plan. The major purpose of the District coastal management program is balanced management of coastal land and water resources. The balance is between development and protection of the natural and cultural resources of the Borough's coastal district. The MSBCMP is a policy statement which directs development needs associated with the District.

Sources of issues of the MSBCMP are:

1. Local coastal resource inventory and analysis.
   Resource sensitivities, use incompatibilities, development limitations and abilities were identified through this process.

2. Local attitudes toward coastal land and water resources and their use. These attitudes were determined through direct efforts of this program (Appendix B - Public Participation Summary) and from public input gained through other planning efforts.

3. Program generated.
   Issues were identified by applying mandated ACMA guidelines to the District resource inventory, and identifying potential conflicts between these guidelines, pressures and needs for development.

The following is a listing of issues identified through one or more of the above mentioned sources and which relate to the development of the District coastal management program.

1. Related to General Program

   a. There is a strong desire for local influence over District coastal resource management and for increased local control of the resolution of issues related to coastal resource development.

2. Coastal Development

   a. There will continue to be increasing and competing pressures for development within the District and for use of its coastal resources.

   b. The District has long sought to develop an industrial port/park complex at Point MacKenzie on the Knik Arm.

   c. The District continues to encourage cooperative planning and development of the Knik Arm Crossing.

   d. Coastal development which is water dependent, such as public access, should be encouraged in the District.

3. Energy Facilities

   a. There is a need to cooperatively identify, plan and develop energy facilities within the District for local, regional and national interests.

   b. There is a need to minimize adverse environmental and social effects while satisfying the need for increasing energy consumption levels.

   c. There is a need to site hydroelectric facilities so as to minimize impact to important wildlife habitat.

4. Fisheries, Commercial Fishing, Fish and Seafood Processing

   a. Hatcheries and fisheries are important existing uses of the District's coastal resources.

5. Timber Harvest and Processing

   a. Insufficient land in the District is currently committed to sustained yield, long-term timber management, for the development and support of a significant and integrated local timber industry.

b. Demand for firewood and other personal use timber products is currently greater than the ability to provide accessible supply. Demand for accessible supply will increase with the rapid residential growth being experienced in the District.

c. Lack of access limits timber development and management.

d. Agricultural and settlement pressures compete with needs of any potential forest industry.

e. Development of a timber industry in the District degrades wildlife habitat, viewshed, recreational values and water quality.

6. Mining and Mineral Processing

a. Incompatible surface use reduces the potential for mineral development within the District and increases the cost of such development.

b. Several methods of mineral extraction have the potential for destruction or degradation of fish and wildlife habitat, air, land, water quality and recreation potential.

c. There is an increasing awareness of the need to provide access to areas with mineral development potential.

7. Transportation

a. Access is critical to the development of coastal land and water resources and is now inadequate.

b. Identification and reservation of appropriate material sites (sand and gravel) is essential to road, railroad, airport and port development.

c. Construction of transportation facilities adversely affects water quality through increased runoff, sedimentation and damages important habitat such as wetlands.

8. Utilities

a. The District is heavily impacted by current use and demand for utility lines and corridors. If uncoordinated, this will lead to serious waste of land and capital, interference with other development needs, creation of unnecessary visual pollution and degradation of important scenic values.

9. Agriculture

a. There is a need for more land in agricultural production to establish an industrial critical mass and to provide for agricultural self-sufficiency.

b. Land suitable for agricultural cultivation is limited and site specific and is also in competition with other resource uses such as timber, wildlife habitat, historic, transportation, utilities and settlement.

c. There is lack of road access to several acres of potential agricultural land.

d. Agricultural practices are detrimental to water quality, habitat and air quality.

e. Agricultural development in the District has historical significance to the original settlement of the area.

10. Recreation

a. Inadequate facilities exist to meet demand for outdoor recreational experiences.

b. There is inadequate public access to fishing streams, rivers, lakes and the District coastline.

c. Important viewsheds are threatened by insensitive development.

d. Existing trails are being lost through transfer of title to land without reservation of right of way or easement through development.

e. Tourism is widely valued in the District and requires development to attract and support this resource.

f. Littering is a problem and is associated in part with inadequate maintenance of public recreational areas in the District.

g. Poorly planned State land disposals threaten recreational values and access to recreational opportunities.

h. Development immediately adjacent to major rivers and streams is not desireable and can be detrimental to public access.

11. Subsistence

a. Inappropriate State land disposals are interfering with a subsistence way of life in the District including excessive density compared to fish and game resources, impractical size compared to natural development limitations, poor design, obstruction of traditional access and general deterioration of environmental quality.

b. State sports hunting and fishing laws are not compatible with the District's subsistence needs.

c. The subsistence way of life depends upon the carrying capacity of the land to support it.

d. The subsistence way of life is dependent upon good fish and wildlife management practices including habitat protection.

e. The subsistence way of life equates with preservation and wise management of the natural environment.

f. The heart of the District's subsistence community, Skwentna and Tokosha, should be recognized with special land use district designations.

12. Offshore Areas and Estuaries

a. Anadromous fish activity is dependent upon offshore and estuarine habitat and in potential conflict with oil and gas resource exploration within this coastal resource.

13. Wetlands and Tideflats

a. Wetlands as District habitat are important elements of the hydrological cycle and are threatened by development and resource use including construction of public facilities.

b. There is a lack of definition within the District of critical wetlands which must be protected to distinguish them from others which are more expendable or at least less sensitive.

c. Hunting pressure is concentrated in the District's wetlands where there is also a need for additional access to these habitats.

d. Runoff from agricultural activities, including feedlots and fields to which pesticides and herbicides have been applied, is a threat to wetland habitat and water quality.

e. Wetland habitat is being lost through drainage caused by human activities and natural tidal action.

14. Rocky Islands and Sea Cliffs (Condition does not exist in the District).

Vegetated Bluffs (Replaces Rocky Islands and Sea Cliffs)

a. The District's vegetated bluffs offer spectacular scenic opportunities and are highly attractive for coastal development including public access.

b. Seismic activity, wind and water erosion and landslides can create hazards in the development of these bluffs.

15. Barrier Islands and Lagoons (Condition does not exist in the District).

16. Exposed High Energy Coasts (Condition does not exist in the District).

17. Rivers, Streams and Lakes

a. Issues related to rivers, streams and lakes are interrelated to all other habitats, water quality, geophysical hazards, coastal development and subsistence issues.

b. Public access to fishing streams, rivers and lakes is limited, and associated recreational facilities are inadequate.

c. Public access to rivers, streams and lakes is continually lost through land conversions to private ownership without easement.

d. The environmental and recreational quality of major lakes, river and stream corridors within the District is seriously degraded by poor quality development and construction.

18. Important Upland Habitat

a. Domestic livestock utilizing upland habitat can damage spawning beds for anadromous fish.

b. Public access to valuable upland hunting areas is lost to private property development without retention of public access.

c. Limited road access to upland game areas increases the resource and habitat pressures and detracts from the recreational experience.

d. Development activities in the upland habitat can affect wetlands and river corridor habitat because of their ecological link.

19. Air, Land and Water Quality

a. Air quality issues in the District are interrelated and complicated by the proximity of metropolitan Anchorage.

b. Development poses serious threats to water quality through improper timing of activities, wastewater disposal, improper development within floodplains, wetland encroachment, destruction of watershed and

inadequate construction setbacks from shorelines and stream banks.

c. Scattered settlement without adequate public transportation encourages air pollution through increased commuter traffic.

d. Growth of development within the District increases the competition for ground and surface water resources.

e. Wind borne dust from silt bars in the major braided river channels of the Knik, Matanuska and Susitna Rivers is the chief air pollutant in the District.

f. Air inversions occur in the District causing air quality problems because of certain types of industrial development, increased engine emissions and agricultural burns.

20. Historic, Prehistoric and Archeological Resources

a. Areas of the District which are important to the study, understanding or illustration of national, state or local history must be identified and protected.

b. There is a need for the promotion and development of a Comprehensive Historic Preservation Plan.

c. There is a need for revitalizing and utilizing the District's historic resources.

21. Geophysical Hazards

a. Hazardous situations are created by ignoring geophysical and other hazards which are significant in the Distict. Development within these areas generally amplifies the hazard such as within floodplains or seismic areas.

GOALS AND OBJECTIVES OF THE MSBCMP

Issues related to one resource or use of concern within the District program often relate to others: Water quality concerns relate to the use of streams and wetlands and to mineral extraction and processing activities. This phenomena is a function of the difficulty of discretely

categorizing coastal resources, the relationship between these resources, their wise use and the ecological system which draws elements of the natural environment into mutually supportive relationships. It is also apparent that specific issues have a need for conflict resolution and that issues such as lack of adequate access which affect several resource values can be summarized by providing access to all. The goals and objectives statements which follow should be viewed as interrelating to the entire list of District issues as well as to a specific resource or use issue.

GOAL I: Maximize local control over coastal land and water resource use and development decisions within the District.

Objectives

a. Encourage the development of the District coastal management program which addresses local needs.
b. Facilitate permit procedures for all levels of government by simplifying local process, coordination and centralizing permit applications at the local level.
c. Encourage public agencies to assist contractors in obtaining required permits prior to granting of permit.
d. Review and update the MSBCMP at least every five years to keep it current.
e. Integrate the goals and objectives of the District coastal management program with local community plans of the Borough and the Borough Draft Comprehensive Development Plan.
f. Identify State and Federal actions which affect the District's coastal areas and points of coordination and standards for consideration.

GOAL II: Reserve and develop adequate and appropriate space for water dependent activities adjacent to coastal waters.

Objectives

a. Identify and designate coastal areas meriting special attention within the District.
b. Encourage the development of adequate water dependent public facilities and utilities to serve transportation, industrial, port, recreational and community needs.
c. Identify, reserve and develop adequate public access to the District's coastal water resources.

GOAL III: Incorporate design requirements for geophysical and other hazards into the development activities within the District.

Objectives

a. Inventory, analyze and update data relative to the implementation of development hazards within the District.
b. Encourage the development, adoption and implementation of the Federal Emergency Management Act floodplain maps (1982) relating to flood hazards within the District.

GOAL IV: Develop public recreational facilities which are adequate to meet local, regional and tourist demand ensuring public access to coastal land and waters resources.

Objectives

a. Encourage the development of all outdoor recreation plans involving the District including State and Borough sponsorship.
b. Encourage the development of public land management policies such as right-of-way or easement provisions which designate and retain public access to important scenic values and natural resources.

c. Encourage the development of a public recreational access plan for the District.

d. Inventory, identify and provide for adequate easements across all public lands for trails within the District.

e. Ensure that important potential recreational areas such as Borough-wide trail corridors are not lost through public or private development projects.

f. Promote the development of information systems which help create public access to recreational opportunities within the District.

g. Promote, coordinate and develop tourism planning within the objectives of the District coastal management program.

GOAL V: Where feasible and prudent, encourage the development of energy facilities within the District for local, regional and national needs.

Objectives

a. Promote energy facility development which minimizes negative environmental and recreational impacts through facility design and selection of transmission corridors.

b. Encourage and support coordination and a cooperative working arrangement between the State, Federal and Borough involved in energy facility planning, siting and development.

c. Encourage the consolidation of energy facility corridors where feasible and prudent.

d. Support the identification and development of energy facilities of local, regional and national interest including the use of coastal land and water resources for the siting of ports, mining and mineral processing sites and hydroelectric power sites.

1. Susitna River Hydroelectric Project
2. Point MacKenzie Industrical Port/Park Site

3. Beluga Coal Fields
4. Susitna Coal Fields
5. Enstar Natural Gas Pipeline

GOAL VI: Where feasible and prudent, promote the continued economic development and coordination of short and long term transportation and utility plans for the Borough including the coastal management district.

Objectives

a. Encourage the development of transportation and utility plans which coordinate design alignment and construction with State and private transportation and utility plans.
b. Encourage the development of road and rail access plans for currently non-accessed areas of the District, especially those areas containing resources of significant economic potential such as agriculture, mining, forestry, recreation and fish and game.
c. Encourage the identification and reservation of material sites (i.e. sand and gravel) for road, railroad, airport and port development.
d. Coordinate trails planning and design with transportation and utility development within the District.
e. Encourage transportation and utility development policies which support the protection of important viewsheds and scenic values within the District.

GOAL VII: Identify and designate areas of the District suitable for location and development of facilities related to fisheries and hatcheries.

Objectives

a. The District encourages the State administration and State

Legislature to adequately fund fisheries rehabilitation and enhancement work for the streams north of Anchorage, particularly within the drainage of the Susitna River in the Borough.

b. The District encourages the State and Alaska Power Authority to invest monies in fisheries and rehabilitation work that will demonstrate the feasibility of maintaining and enhancing existing fish runs produced in the Susitna River.

GOAL VIII: Where feasible and prudent, support, encourage and develop sound economic timber management practices within the District.

Objectives

a. Increase land committed to sustained yield, long term timber management within the District.
b. Identify and manage areas for personal use wood products such as firewood and house logs.
c. Identify and improve access to areas with timber management potential.
d. Encourage the commitment to the consideration of wildlife habitat, viewshed, recreational values and water quality in the development of sound timber management practices.

GOAL IX: Where feasible and prudent, promote the economic development of mining and mineral processing activities within the District while reducing the potential for conflicting environmental concerns.

Objectives

a. Reduce the potential for incompatible surface uses with mining and mineral processing activities through early coordinated planning.

b. Encourage the provision of increased access to areas with high mineral development potential.

c. Encourage the consideration of lost opportunities of wildlife habitat, air, land and water quality and recreation potential through mineral and mining processing activities.

d. Encourage the development of mitigation policies addressing water sedimentation and groundwater depletion activities.

GOAL X: Where feasible and prudent, identify, establish and develop an economically viable agricultural industry within the District which contributes to the State and local economy.

Objectives:

a. Encourage the development of an agricultural preservation program for the aquisition of development rights in agricultural lands in the District to maintain agricultural lands in agricultural productim.

b. Continue to develop access to lands through roads, railroads, ports and other transportation facilities with high potential for agricultural use in the District.

c. Regulate adequately agricultural practices which may result in environmental impacts posing threats to wildlife, habitats or human activities.

GOAL XI: Recognize and protect the subsistence way of life in the District.

Objectives:

a. Encourage wildlife management practices which support the subsistence way of life.

b. Encourage and support State and Borough remote settlement policies which provide for and protect the subsistence way of life.

c. Identify and plan for subsistence areas containing sufficient resources to support subsistence communities while recognizing the carrying capacity of the land.

d. Discourage development in subsistence areas which is not supportive of the subsistence way of life such as access roads and high population densities.

e. Subsistence activities should be designated with a special land use district classification prohibiting activities which would adversely impact this resource.

GOAL XII: Manage District habitats so as to maintain or enhance the biological, physical and chemical characteristics of the habitat which contribute to its capacity to support living resources.

Objectives:

a. Adopt State Standards (6 AAC 80.130) for habitats including offshore and estuarine areas, wetlands and tideflats, vegetated bluffs, rivers, streams and lakes and important upland habitat.

b. Retain natural streambanks and shoreline habitat as wildlife corridors where feasible and prudent.

c. Minimize and control development activities in important upland game habitat as identified by Alaska Department of Fish and Game.

GOAL XIII: Recognize and protect air, land and water quality in the District.

Objectives:

a. Incorporate into the District coastal management program the statutes pertaining to and the regulations and procedures of

the Alaska Department of Environmental Conservation with respect to the protection of air, land and water quality.

b. Encourage the development of policies for the identification and management of important watersheds in the District.

c. Encourage the District participation in The South Central Clean Air District and The Upper Cook Inlet Clean Air Authority.

d. Support the continued development of a public transportation system linking the District with Anchorage.

e. Encourage the development of policies to mitigate wind borne particles originating from unvegetated sand and silt bars in the District's braided river channels.

GOAL XIV: Support and encourage the identification of historic resources, their protection, development and management.

Objectives:

a. Encourage the Borough-wide development and implementation of a Comprehensive Historic Preservation Plan .

b. Encourage the development of specific preservation policies addressing the preservation, restoration and reuse of historic, prehistoric and archeological resources such as trails, sites and structures in the Borough.

c. Encourage the collaboration of the City of Palmer, the City of Wasilla, the City of Houston and the Borough in promoting recreation, tourism and historic preservation activities Borough-wide.

Chapter 4
Coastal District Boundary

COASTAL DISTRICT BOUNDARY

The preliminary inland and seaward extent of the Matanuska-Susitna Borough coastal district was based on Biophysical Boundaries of Alaska's Coastal Zone published by the Office of Coastal Management and the Alaska Department of Fish and Game (ADF&G, 1978). With the passage of the Alaska Coastal Management Act in 1977, ADF&G was charged with the enormous task of defining coastal boundaries for Alaska's extensive shoreline. The coastal boundaries developed by ADF&G were based on a regional review of available information concerning the geology, oceanography and biology for each major segment of the coastline (e.g., Upper Cook Inlet, Prince William Sound, Bering Sea, etc.). The boundaries were then defined in environmental/biological terms rather than attempting to actually draw or define boundaries based on land use, political boundaries, or legislative actions.

The Alaska Coastal Management Program requires coastal districts to base their initial inland and seaward coastal management boundaries on the biophysical boundaries developed by ADF&G. Final inland and seaward coastal management boundaries may diverge from the initial boundaries (biophysisical boundaries developed by ADF&G) if the final boundaries:

1. Extend inland and seaward to the extent necessary to manage uses and activities that have or are likely to have a direct and significant impact on marine coastal water; and

2. Include all transitional and intertidal areas, salt marshes, saltwater wetlands, islands, and beaches.

Providing the above criteria was met, the Borough was able to adjust its coastal management boundaries to reflect new or more detailed resource information. The inland extent of the Borough coastal district could then be based on political jurisdictions, township

lines, cultural features, planning areas, watersheds, topographic features (e.g.contour lines), uniform setbacks, or the dependency of uses and activities on water access.

AREAS OF DIRECT INTERACTION AND DIRECT INFLUENCE

The rationale developed by ADF&G for determining inland and seaward coastal boundaries views the coast as a highly dynamic continuum. The intensity of biological and physical land/sea exchanges within this continuum can be visualized as a gradient which decreases landward and seaward from the coastline. The total landward and seaward extent of this gradient is divided into areas of direct interaction and areas of direct influence, with each area reflecting the respective degree of biological and physical interaction between the land and sea.

As defined by ADF&G, the area of direct interaction is that area of the coast, where physical and biological processes are a function of the direct contact between land and sea. The seaward extent of the area of direct interaction in the Borough coastal district is defined as the area of nearshore sediment transport and deposition out to the 18-foot depth contour. This is a high energy region which is actively perturbed by tidal currents, ice scour,breaking waves, sediment dynamics, and freshwater dilution.

The landward limit of the area of direct interaction in the District is defined to include the extent of saltwater intrusion into marshes and rivers and areas of active coastal erosion (e.g. vegetated bluffs fronting Knik Arm). Saltwater intrusion occurs up to 6 miles inland in the Susitna Flats and as far as 20 miles upstream in the Susitna River. The vegetated coastal bluffs experience rapid erosion and range in height from less than 10 feet to over 100 feet. Areas of salt spray, ice coating, intertidal spawning, vegetative transitions and important wildlife habitat also occur within the area of direct interaction in the District.

The area of direct influence is that area of the District which extends

inland and seaward from the area of direct interaction. While this area is not subjected to the dynamics of land/sea energy dissipation characteristics of direct interaction, it is closely affected and influenced by the close proximity between land and sea. The seaward extent of the area of direct influence in the District includes the marine waters of Upper Cook Inlet south to Kalgin Island (actual Borough boundary in Upper Cook Inlet). Turbulent mixing between marine water and freshwater takes place in the vicinity of Kalgin Island. The characteristic marine waters of Upper Cook Inlet, which include high turbidity and low salinity, interface with the waters of Lower Cook Inlet in this region.

The landward limit of the area of direct influence in the District is defined where the bulk of anadromous fish spawning and rearing takes place, where some moose seek out lowland areas for overwintering and calving and where coastal wetland habitat attracts a large number of nesting birds and small mammals. Direct influence includes all coastal drainages, their primary tributaries, and adjacent wetlands to the 1000-foot elevation contour. The area of direct influence extends up the main stem of the Susitna River to include Devil Canyon and includes important uplands which directly support or impact coastal processes. The upland extent of direct influence in the District is delineated by the 200-foot upland elevation contour.

The Matanuska-Susitna Borough initially adopted the biophysical boundaries established by the Alaska Department of Fish and Game as its coastal area boundary. This boundary included all areas within the 200-foot coutour, except on major river drainages such as the Susitna River, where the boundary was set at the 1000-foot contour.

During the development of the coastal management program the biophysical boundaries were reviewed by the Matanuska-Susitna Borough Coastal Management Program Citizen/Agency Joint Forum, Borough Planning Department and the Borough Planning Commission. Three different options for coastal boundaries were developed. Coastal boundary option 1 included both the biophysically determined areas of direct

interaction and direct influence within the 200' contour. Coastal boundary option 2 was based on biophysical characteristics up to the 1000-foot elevation contour in the Borough. Coastal boundary option 3 was developed as a mid-range alternative between the 200' contour biophysical coastal boundary and the 1000-foot elevation contour in the Borough. The inland extent of the coastal boundary for boundary option 3 was based on survey lines (township, range, and sections) and highways, thereby providing a definite "hard" easily identifiable boundary for coastal management decision making.

Coastal boundary option 3, with minor survey line adjustments, was selected by the Citizen/Agency Joint Forum. (Pocket Map #1). In addition, Forum members agreed to include within this coastal boundary all major drainages and their primary tributaries up to the 1000-foot elevation contour. This action was taken primarily to protect anadromous fisheries of the Borough. The Matanuska-Susitna Borough Planning Commission reviewed the coastal boundaries set by the Citizen/Agency Joint Forum and adopted the recommended management area boundaries for coastal management purposes.

The total area included within the Planning Commission adopted Borough coastal district is approximately 4000 square miles. The District includes approximately 200 square miles of offshore area and approximately 75 miles of coastline. Appendix D includes the legal description of the District and the inland extent of the coastal boundary.

Where the coastal management boundary intersects the below listed rivers and creeks, the boundary extends to the 1000 foot contour level. The width of this extended boundary is the width of the water course and 200 feet on each side as measured from the ordinary high water mark:

Skwentna River	Montana Creek
Yentna River	Sheep Creek
Kahiltna River	Kashwitna Creek
Chulitna River	Little Willow Creek
Susitna River	Willow Creek
Talkeetna River	Little Susitna
Matanuska River	

Chapter 5
Policy Development

POLICY DEVELOPMENT

INTRODUCTION

The purpose of this chapter is to provide policies and environment management guidelines for Borough, State and Federal decisions for coastal land and water uses in the District. The policies and standards listed in this chapter are adopted as the enforceable rules of the District coastal management program and will be used to evaluate proposed developments and other actions. The Borough's evaluation of State and Federal actions will result in a written recommendation to the proper State offices either recommending (with conditions), or not recommending, the approval of a proposed development use within the District. The decision on whether or not to approve a proposed federal action is made by the Alaska State Office of Management and Budget, incorporating the District's review comments. The Matanuska-Susitna Borough's contribution to that decision is an advisory statement which carries great weight in the final outcome.

SUBJECT USES AND ACTIVITIES

All uses and activities that are dependent upon coastal access or that would affect coastal habitats and processes, coastal air, land and water quality, historical and recreational values are subject to the Matanuska-Susitna Borough Coastal Management Program. These include all commercial and industrial uses and all residential development requiring the application of Borough Code Title 16 requirements. At a minimum, these uses and activities include:

1. Coastal Development
    - Industrial and port development
    - Commercial development
    - Residential development including State land disposals
    - Dredging and filling

2. Energy Facilities
    - Exploratory drilling vessels
    - Petroleum production platforms
    - Pipelines and rights of way
    - Petroleum or coal separation, treatment and storage facilities
    - LNG plants and terminals
    - Oil terminals and other port development for the transfer of energy products
    - Petrochemical plants, refineries and associated facilities
    - Hydroelectric projects
    - Other electric generating power plants
    - Transmission lines
    - Geothermal facilities
    - Tidal power

3. Fisheries, Fish and Seafood Processing
    - Fishery enhancement
    - Aquaculture and hatcheries
    - Seafood processing

4. Timber Harvest and Processing
    - Firewood and houselog cutting
    - Sustained yield forest management activities

5. Mining and Mineral Processing
    - Sand and gravel extraction
    - Coal mining and development

6. Transportation
    - Airports, landing strips and float plane bases
    - Ports and docks
    - Highways and roads

7. Utilities
    - Oil, gas pipelines and rights of way
    - Hydroelectric power corridors and rights of way

Communication facilities
Parking facilities
Navigation improvements and aids
Utility lines
Sewer treatment plants
Water and sewer lines
Solid waste disposal
Communication facilities
Watercourse and flood control facilities

8. Agriculture
   Commercial agricultural production

9. Recreation
   Consumptive development
   Non-consumptive development

10. Subsistence

PROPER AND IMPROPER USE DETERMINATION

The Matanuska-Susitna Borough adopts the following criteria to determine if proposed uses and activities or land and water use designations (including uses of State concern) within the District are considered proper or improper. Proposals subject to the District coastal management program must meet the following criteria before approval. Chapter 7 includes a description of the procedural methods that will be used for program implementation.

1. MSBCMP Policies, Guidelines and Enforceable Rules: Uses and activities shall be consistent with the policies and rules in this chapter of the MSBCMP. These policies adopt and expand upon State standards for uses and activities and will be incorporated into Title 17 of the Matanuska-Susitna Borough Code.

2. Water Dependency: Priority use of the shoreline (including lakes, rivers, streams and coastline) shall be accorded to uses and activities which are water dependent or water-related and to those uses and activities which are neither water-dependent or water-related for which there is no feasible and prudent inland alternative to meet the public need for the use or activity.

FEDERAL AND STATE ACTIONS AFFECTING THE PROGRAM

Federal and State actions, including permitting, construction, planning and financial assistance within the coastal management boundary are subject to consistency reviews. In addition, actions of Federal and State agencies outside of the coastal management boundary, but within the Borough boundary, can be reviewed by the District if "spillover" effects occur that have an effect on the coastal management District.

State Actions

All State actions directly affecting the District will be reviewed for consistency with the adopted MSBCMP. The State is most likely to affect the coastal area through direct activities, licenses, permits, leases and state spending.

1. Direct state activities: Development projects, including planning, construction, modification or removal of public works or facilities and state land disposals and classifications are examples of actions which might be taken directly by the State that could produce major changes in the District. State agencies conducting such activities shall decide whether they directly affect the District and shall determine whether the proposed actions are consistent with the State's coastal management standards and, where applicable, with the MSBCMP.

2. Licenses, permits and leases: Licenses, permits and leases

that the State issues and that might directly affect the state's coastal area include the following:

a. Department of Commerce and Economic Development, Alaska Public Utilities Commission: certificates of public convenience and necessity required for any individual, association or corporation to own, operate, manage or control a public utility (systems for the transmission or transportation of water, electricity, gas, steam, sewage and refuse) AS 42.05; 3 AAC 48); Alaska Power Authority: reconnaissance and feasibility study (AS 44.83).

b. Department of Environmental Conservation: Air quality permits required to operate (AS 46.03; 18 AAC 50); Air quality permits to open burn (AS 46.03.020; AS 46.03.710; 18 AAC 50); Surface oiling permits (AS 46.03.740; 18 AAC 75); Granting of a hazardous waste permit regulating the handling, transportation, treatment, storage and disposal of hazardous wastes (AS 46.03.302; 18 AAC 75.130); Approval of subdivision plans of six or more lots for adequacy of water supply and sewage disposal (AS 46.03; 18 AAC 72); Approval of plans for construction, modification or operation of a sewage system or treatment works (AS 46.03; 18 AAC 72); Certificates of reasonable assurance that applications for federal licenses or permits which may result in discharges into navigable waters comply with appropriate requirements of state law (Section 401 of the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977); Permits for disposal of wastewater into or on Alaska land or water or into a publicly operated sewage system (AS 46.03; 18 AAC 72).

c. Department of Fish and Game: Permits for any work or development within the statutorily designated state fish and game critical habitat areas (AS 16.20); Permits to

undertake work or development within designated state fish and game critical habitat areas (AS 16.20); Permits to construct a hydraulic project or affect the natural flow of bed of a river, lake or stream specified as being important to anadromous fish, or to use equipment in such waters (AS 16.05; 5 AAC 95).

d. Department of Natural Resources: Permits for off-shore locatable mineral prospecting (AS 38.05; 11 AAC 82, 86, 88); Leasing state-owned upland, tideland and submerged land for the purposes other than for the extraction of natural resources (e.g., cargo docks and small boat harbors) (AS 38.05; 11 AAC 58, 11 AAC 62); Granting of requests for Conditional Use Permits and Variances to existing state zoning regulations (11 AAC 91.100; 11 AAC 91.090); Granting of requests for Land Use Permits for surface activities and the usage of equipment on Special Use Lands (AS 38.05.330; 11 AAC 96, 11 AAC 58, 11 AAC 86, 11 AAC 62); Granting of a Right-of-Way or Easement Permit for the construction of a road, trail, ditch, pipeline, telephone line or similar use or improvement on State land (AS 38.05.330; 11 AAC 58.200); Permits for general use of state-controlled tideland and submerged land (e.g., float homes and log storage) (AS 38.05; 11 AAC 62); Permits to appropriate water occurring in a natural state in Alaska (AS 46.15; 11 AAC 93); Permits to modify any body of nonmarine surface water (AS 46.15; 11 AAC 93); Material applications using DNR form 10-143(155) (AS 38.05; 11 AAC 76); Planning and land classification (AS 38.04, AS 38.05; 11 AAC 55); Land disposals (AS 38.05; 11 AAC 67); Oil and gas leasing (AS 38.05; 11 AAC 83); Coal prospecting permits and leasing (AS 38.05; 11 AAC 84, 11 AAC 90); Geothermal resources' prospecting permits and leasing (AS 38.05; 11 AAC 84); Mining leases for locatable metallic ores (AS 38.05; 11 AAC 86); Grazing leases (AS 38.05; 11 AAC 60); Shore fisheries (AS 38.05;

11 AAC 64); Mineral lands lease (AS 38.05; 11 AAC 82); Oil and gas lease plan of operation approval (AS 38.05; 11 AAC 83); Oil and Gas Lease Unit plan of operations approval (AS 38.05, 11 AAC 83); Timber sale contracts (AS 38.05; 11 AAC 76); Material sales contract or permit (AS 38.05; 11 AAC 76).

e. Department of Transportation and Public Facilities; Permits for placement, modification or maintenance of an encroachment across or along a state highway, or a highway funded in whole or in part by Federal funds (AS 19.25; 17 AAC 10); Permits to place or maintain utilities (railroads, public utilities, publicly owned fire and police signal systems and street lighting systems) under, on, in or over a state highway right-of-way (AS 42.05; 3 AAC 48).

f. The Matanuska-Susitna Borough reserves the right to amend this listing of licenses, permits and leases upon consultation with the appropriate State agencies.

3. State spending: State spending is guided by two budgets: (1) State agency budget, and (2) six-year capital improvements program for DOTPF. To the extent that they affect the District, actions supported by either budget must be consistent with the State's coastal management program and, consequently, the MSBCMP (where applicable).

Federal Actions

Federal actions that will be reviewed for consistency include (1) direct Federal activities, (2) Federal licenses and permits and (3) Federal assistance programs that significantly affect the District. The Alaska Division of Policy Development and Planning has signed memoranda of understanding with most of the key Federal agencies that conduct activities in the State's coastal area. While the memoranda of

understanding specify actions that will most likely directly affect the State's coastal area, it is, nevertheless, the Federal agencies themselves that decide whether a consistency determination is warranted in any given instance.

1. Direct Federal Activities: If a Federal agency decides that any of the following activities would directly affect the State's coastal area, it would determine whether the proposed action complies with the State's coastal management standards and, where appropriate, the MSBCMP. Direct Federal activities that could affect coastal resources include: All development projects, which includes planning, construction, modification or removal of public works or facilities; Acquisition, use or disposal of land or water resources; Federal waste disposal plans for a Federal facility; Federal agency activities requiring a Federal license or permit; Federal assistance for housing development to entities other than State or local governments (e.g. private interests or native organizations); Environmental impact statements required under the National Environmental Policy Act for all major projects involving Federal funds.

2. Federal Exemptions: Federal activities on Federal lands are exempt from the Federal consistency requirement unless such activity can be determined to have a spillover effect outside those lands. Direct Federal activities may also be exempt if other Federal laws or unforseen circumstances prevent Federal agencies from being fully consistent with State standards and with the MSBCMP. For example, a natural disaster may call for quick responses from Federal agencies in ways that might not always be consistent with State standards and approved district programs. Federal permits, licenses or assistance may also be excused from the consistency requirement if the proposed activity is in keeping with the objectives and purpose of the Federal Coastal Zone Management Act and is vital to national security.

The escape clause in the consistency provision of the Federal Coastal Zone Management Act is not as easy to use as it may seem at first glance. Congress did not forsee many instances in which federal agencies would not be able to comply with State and local coastal management programs. The intent of the Federal act is that differences are to be ironed out before State and local programs are approved and that later exemptions from the consistency requirement are to seldom occur, and then only under unusual circumstances.

3. Federal Licenses and Permits: Certain Federal licenses and permits may directly affect the District. If the Federal agency that would issue the license or permit decides that the activity would directly affect the coast, it would direct the applicant to certify that the proposed activity would be consistent with the State's coastal management standards and also with approved district programs. Listed below are licenses and permits that might directly affect the District.

   a. Department of Agriculture, U.S. Forest Service: Permits for water easements on USFS lands. Permits for construction on USFS lands. Permits for mineral materials extraction from USFS lands. Special use permits where the activity would significantly affect the coastal zone.

   b. Department of Defense, Army Corps of Engineers: Permits under Sections 9 and 10 of the Rivers and Harbors Act, authorizing the construction of bridges, causeways, dams and dikes and obstruction of navigable waters. Permits under Section 4(F) of the Outer Continental Shelf Lands Act and amendment, authorizing artificial islands or fixed structures on the outer continental shelf. Permits under Section 404 of the Federal Water Pollution Control Act, authorizing discharges of dredge or fill material into navigable waters (also subject to State certificate of reasonable assurance).

c. Department of Energy, Federal Energy Regulatory Commission: Licenses for the construction and operation of nonfederal hydroelectric power developments and associated transmission lines under Sections 4(e) and 15 of the Federal Power Act (16 U.S.C. 787(c) and 808). Orders for interconnection of electric transmission facilities. Certificates of public convenience and necessity required for the construction and operation of natural gas pipeline facilities, including both interstate pipeline and LNG terminal facilities under Section 7(c) of the Natural Gas Act (15 U.S.C. 717(c)). Permission and approval for the abandonment of natural gas pipeline facilities under Section 7(b) of the Natural Gas Act (15 U.S.C. 717(f)(b)).

d. Department of the Interior: Permits and licenses for drilling and mining and related facilities on public lands (BLM). Permits for pipeline rights-of-way on public lands and the outer continental shelf. Permits and licenses for rights-of-way on public lands.

e. Department of Transportation, U.S. Coast Guard: Permits for construction or modification of bridge structures and causeways across navigable waters. Permits for siting, construction and operation of deepwater ports. Permits for facilities and vessels to handle hazardous materials.

f. Environmental Protection Agency: Permits required under Section 311 of the 1972 Federal Water Pollution Control Act as amended for oil spill prevention, containment and countermeasure plans. Permits required under Section 402 of the 1972 Federal Water Pollution Control Act as amended, authorizing discharge of pollutants into navigable waters (also subject to State certification of reasonable assurance). Permits required under Section 405 of the 1972 Federal Water Pollution Control Act as

amended, authorizing disposal of sewage sludge. Permits for new sources or for modification of existing sources and waivers of compliance allowing extensions of time to meet air quality standards under Section 112 (c)(1), of the 1972 Clean Air Act. Permits for the construction or modification of certain designated sources of air emissions to prevent significant deterioration of air quality in areas cleaner than required by the National Ambient Air Quality Standards and to fulfill the requirements of the Clean Air Act, Sections 160-169, as amended in 1977. Exemptions granted under the Clean Air Act for stationary sources.

g. Nuclear Regulatory Commission: Permits and licenses for the siting, construction and operation of nuclear facilities.

h. The Matanuska-Susitna Borough reserves the right to amend this listing of licenses, permits and leases upon consultation with the appropriate Federal agencies.

4. Federal Assistance Programs: Certain Federal financial assistance programs could also directly affect the District and, moreover, enable the Borough to finance ports, water supply projects, sewer systems and other projects through which the Borough could implement the MSBCMP. Applications for Federal assistance are subject to consistency review only if the Federal agency from which they would be obtained decides that the activities financed by the requested assistance would directly affect the coastal area.

Federal financial assistance programs that might directly affect the State's coastal area are not listed. The departments that administer the pertinent Federal programs are listed below:

a. Department of Agriculture
b. Department of Commerce
c. Department of Health, Education and Welfare
d. Department of the Interior
e. Department of Transportation
f. Environmental Protection Agency

USES OF STATE CONCERN

The MSBCMP recognizes that certain uses and activities are of State concern and will not arbitrarily or unreasonably restrict or exclude these uses. Uses of State concern are those land and water uses that significantly affect the long-term public interest. These uses, subject to Alaska Coastal Policy Council definition of their extent, include:

1. Uses of national interest, including the resources for the siting of ports and major facilities which contribute to meeting national energy needs, construction and maintenance of navigational facilities and systems, resource development of Federal land, and national defense and related security facilities that are dependent upon coastal locations;

2. Uses of more than local concern, including those land and water uses which confer significant environmental, social, cultural or economic benefits or burdens beyond a single coastal resource district;

3. The siting of major energy facilities or large-scale industrial or commercial development activities which are dependent on a coastal location and which, because of their magnitude or the magnitude of their effect on the economy of the State or the surrounding areas, are reasonably likely to present issues of more than local significance;

4. Facilities serving statewide or interregional transportation and communication needs; and

5. Uses in areas established as State parks or recreational areas under AS 41.20 or as State game refuges, game sanctuaries or critical habitat areas under AS 16.20.

District Issues of State Concern

Among the most important of the uses of State concern in the Matanuska-Susitna Borough Coastal Management District, but not limited to, are:

1. Conservation and maintenance of general air, land and water quality;
2. The siting of major energy facilities such as the Susitna River Hydro Project;
3. Large scale industrial, commercial and community port development, such as at Point MacKenzie;
4. Transportation development such as the Knik Arm Crossing and functional highway and road transportation systems;
5. Development, management and enhancement of fish and wildlife resources;
6. Conservation of established State game refuges and critical habitats;
7. Conservation of anadromous fish waters;
8. Harvest of fish and wildlife;
9. Disposition of forest and mining resources;
10. Agricultural development and protection;
11. Development and management of a viable tourism and recreational industry; and
12. Management of historic, prehistoric and archeological resources.

ENFORCEABLE RULES

The District's coastal management boundary encompasses extensive reserves of natural and cultural resources. The ability of these coastal lands and resources to adapt to development pressure varies throughout the District which results from measures such as

geophysical constraints, biological resources and coastal habitat. The policies identify Borough-wide goals and objectives within the District coastal management program and are designed to guide activities and resource use by assessing the natural abilities of the District's coastal lands and resources. These policies are a guide for the programming and actions of agencies and organizations currently carrying on, or anticipating, development activities within the District coastal management boundary. Appropriate enforceable rules of specific coastal resource uses apply to all coastal uses and activities where applicable.

COASTAL DEVELOPMENT

1. The State standard (16 AAC 80.040) is adopted as part of the MSBCMP.

2. General policies for coastal development include:

   In planning for and approving development in coastal areas, the District shall give, in the following order, priority to:

   a. Water-dependent uses and activities on rivers, lakes, streams and its coastline;
   b. Water-related uses and activities on rivers, lakes, streams and its coastline; and
   c. Uses and activities which are neither water-dependent nor water-related for which there is no feasible and prudent inland alternative to meet the public need for the use or activity.

3. The placement of structures and the discharge of dredged or fill material into waters of the coastal management area must, at a minimum, comply with the standards contained in Parts 320-323, Title 33, Code of Federal Regulations, Vol. 42, No. 138, July 19, 1977. Specifically, the standards of Part 320.4, General Policies for Evaluating Permit Applications, will be utilized as applicable to the review of all development proposals. The District development proposal review process will include consideration of potentially

adverse effects of dredging or filling on the coastal ecosystem. Fisheries resource habitats and non-fisheries values, in development of the coastal zone, will be considered in light of dredging and filling activity. Dredging and filling shall be minimized in productive tideflats and wetlands, subtidal areas important to anadromous water important for migration, spawning and rearing of salmon and other sportfish species. The Catalog of Waters Important for Spawning, Rearing and Migration of Anadromous Fishes, April 1982, ADF&G will be used to identify and protect important anadromous waters in the District.

4. Development must be sensitive to the ecosystem in which it is located and incorporate mitigating measures into its design to minimize adverse impacts on that ecosystem.

5. Development shall be located, designed, constructed and managed to wisely use natural features which are valuable or scarce in the District, and to facilitate appropriate human use of such features while conserving them, including but not limited to wetlands, surface water, native plant and animal life and shoreline processes.

6. The type and concentration of development in an area shall be dictated by the physical limitations and opportunities of the area. Physical conditions such as soil characteristics, slopes, geological features, surface and sub-surface drainage, water tables, floodplains and shoreforms shall be taken into consideration when planning development in an area. Emphasis shall be given to development within already developed areas and areas designated for future development by the Borough Comprehensive Development Plan.

7. The District recognizes existing areas of development and nonconforming uses within the coastal management boundary. Such recognition does not imply the allowance of similar uses and activities in the District in the future.

In addition to the above general policies, for all coastal development, policies and enforceable rules for industrial, commercial and port development include:

1. Excavation, shoreline alteration and disturbance of anadromous streams, tideflats and wetlands shall be minimized in the construction and operation of port, dock, commercial and industrial facilities.

2. Industrial users of the shoreline shall minimize the negative aesthetic impact of their use and activities, shall enhance and maintain the positive visual aspects of their development and provide recreational opportunities for public viewing of such positive aspects whenever practical and safe.

3. Preference will be given to industrial, commercial or port uses which promote physical and visual access to the shoreline, when such access does not cause interference with operation or hazards to life and property.

In addition to the above general policies for all coastal development, policies and enforceable rules for residential coastal development include:

1. Recognizing that premature and scattered development needlessly consumes rivers, lakes and coastline open space, conflicts with other appropriate uses and causes extra public costs for public services, new development shall be encouraged to locate in developed areas or in areas planned for residential growth as determined by the Borough Comprehensive Development Plan.

2. State land disposals for subdivisions outside the road-served areas of the Borough shall be designed so that density will not exceed the carrying capacity of the area. In addition, the following resources shall be available for all remote subdivisions:
   a. Feasible access. Feasible access must be economically

feasible and must be consistent with the applicable policies of the MSBCMP. Physical access must be provided to all parcels.

b. Energy resources, such as a feasible supply of cordwood for individual heating purposes.

c. Water supply.

d. Environmental suitability for sewage and garbage disposal.

ENERGY FACILITIES

1. The State standard (6 AAC 80.070) is adopted as part of the MSBCMP. This standard requires that the State and District cooperatively identify sites that are suitable for the development of major onshore, nearshore and offshore energy facilities.

2. Criteria identified in 6 AAC 80.070 will be used for siting and approving energy facilities in the District including:

   a. Site facilities so as to minimize adverse environmental and social effects while satisfying industrial requirements;

   b. Site facilities so as to be compatible with existing and subsequent adjacent uses and projected community needs;

   c. Consolidate facilities;

   d. Consider the concurrent use of facilities for public or economic reasons;

   e. Cooperate with landowners, developers and Federal agencies in the development of facilities;

   f. Select sites with sufficient acreage to allow for reasonable expansion of facilities;

   g. Site facilities where existing infrastructure, including roads, docks and airstrips, is capable of satisfying industrial requirements;

   h. Select harbors and shipping routes with least exposure to reefs, shoals, drift ice and other obstructions;

   i. Encourage the use of vessel traffic control and collision avoidance systems;

   j. Select sites where development will require minimal site clearing, dredging and construction in productive habitats;

k. Site facilities so as to minimize the probability, along shipping routes, of spills or other forms of contamination which would affect fishing grounds, spawning grounds and other biologically productive or vulnerable habitats, including marine mammal rookeries and hauling out grounds and waterfowl nesting areas;

l. Site facilities so that design and construction of those facilities and support infrastructures in coastal areas of Alaska will allow for the free passage and movement of fish and wildlife with due consideration for historic migratory patterns and so that areas of particular scenic, recreational, environmental or cultural value will be protected;

m. Site facilities in areas of least biological productivity, diversity and vulnerability and where effluents and spills can be controlled or contained;

n. Site facilities where winds and air currents disperse airborne emissions which cannot be captured before escape into the atmosphere;

o. Select sites in areas which are designated for industrial purposes and where industrial traffic is minimized through population centers; and

p. Select sites where vessel movements will not result in overcrowded harbors or interfere with fishing operations and equipment.

3. Adequate precautions shall be taken in the design, development and operation of energy facilities to minimize adverse impacts on aquatic and terrestrial species using affected habitats. In particular, the development and operation of energy facilities must be sensitive to habitat requirements, the passage of anadromous fish and to the effect that streamflow alteration may have on downstream environments.

4. Energy facilities shall be developed and operated in a manner that is compatible with surrounding land uses and that minimizes adverse environmental and aesthetic impact. Adverse impacts to scenic

values shall be discouraged with mitigation plans for their protection encouraged.

5. The District shall foster the consultative process as an exchange of information among major project developers including State agencies, and the District to ensure that potentially adverse socioeconomic impacts are recognized and, to the extent reasonably practicable, minimized, and that positive impacts of the project are enhanced.
   a. Energy facility developers shall provide to the District, in a timely manner, nonproprietory information, reports, transportation and logistics plans and summaries of studies in sufficient detail for its planning purposes.
   b. The District shall provide energy facility developers with information and advice about its plans for improving infrastructure or public services that might be used to support the project.

6. The District encourages the economic development of energy facilities that are most efficient and practical for the Borough.

FISHERIES

1. The State standard (6 AAC 80.090) is adopted as part of the MSBCMP.

TIMBER HARVEST AND PROCESSING

1. The State standard (6 AAC 80.100) and superceding provisions of the Alaska Forest Resources and Practices Act (11 AAC 95.050 through 11 AAC 95.180) are adopted as part of the MSBCMP.

2. Timber harvest activities shall be planned and managed so as to:
   a. Minimize adverse environmental impacts on wildlife and habitats;
   b. Assure free passage of fish in coastal waters;
   c. Minimize conflict with recreational uses and activities; and
   d. Minimize sedimentation, erosion and interference with drainages.

3. Mitigation plans for scenic value protection are encouraged where timber harvest activities are planned and managed so as to mitigate the degradation of viewshed.

4. Mitigation plans are encouraged where timber harvest activities are planned and managed so as to protect riverbanks, streambanks and other shorelines from adverse visual impacts.

5. The District encourages access to, and the economic development of, sufficiently large acres of land for viable, sustained yield and long term timber management practices.

MINING AND MINERAL PROCESSING

1. The State standard (6 AAC 80.110) is adopted as part of the MSBCMP. The State policy requires mining and mineral processing to be consistent with all elements of this program and any State and Federal regulations.

2. Sand and gravel extraction from coastal waters or intertidal areas shall be allowed where there is no feasible and prudent alternative to coastal extraction. Excessive and uncontrolled development of gravel pits District-wide shall be discouraged.

3. Mining and mineral processing activities shall be planned and managed so as to avoid degradation of wildlife habitat, air and water quality and recreational values.

4. The District encourages access to, and the economic development of, viable mining and mineral processing activities within the Borough.

TRANSPORTATION

1. The State standard for transportation (6 AAC 80.080) is adopted as a part of the MSBCMP.

2. Transportation routes in the District shall be sited, designed and constructed in a manner which is consistent with the other issues, goals, objectives and policies expressed in the District coastal management program and the Borough Comprehensive Transportation Plan. Transportation corridors shall be designed to be compatible with environmental and recreational values of areas they serve.

3. Transportation routes shall be sited inland from the shoreline and completely avoiding important habitat areas unless no feasible or prudent alternative exists to meet the public need for the route.

4. Highway, road and airport design and construction shall minimize alteration of wildlife habitat, water courses, wetlands and aesthetic resources. Adequate provisions for wetland drainage, wildlife habitat requirements and viewshed protection shall be required.

5. The District supports provision of access to economic, recreational and other coastal resources. The following transportation projects are encouraged by the District:
   a. Knik Arm Crossing between Anchorage and the Matanuska-Susitna Borough;
   b. Point MacKenzie Industrial Port/Park including port facilities, rail access and community development; and
   c. Transportation development to Willow Creek Corridor recreation area.

UTILITIES

1. The State standard for utilities (6 AAC 80.080) is adopted as a part of the MSBCMP.

2. Where feasible and prudent, utility corridor development shall be consolidated. In establishing corridors, adequate space shall be reserved to allow additional use where it is projected. In evaluating options for consolidation of utility corridors, each

applicant shall document said options during the planning process. A documented visual impact analysis shall also be encouraged.

3. Where feasible and prudent, important wildlife habitat, scenic and recreational values shall be retained when establishing utility corridors. A documented mitigation plan for these resources shall be required.

4. The District supports sensible development of utility facilities and corridors to encourage economic development of the region and State.

AGRICULTURE

1. The District encourages the economic development of road accessed agricultural lands to assist in establishing State-wide agricultural self-sufficiency.
2. Agricultural practices which are detrimental to air, land, water quality, wildlife habitat and recreational values shall be mitigated through the Borough-wide application of policies as identified in the Willow SubBasin Plan, (October 1982).

RECREATION

1. The State standard (6 AAC 80.060) is adopted as a part of the MSBCMP. The standard requires districts to designate areas for recreational use. It also requires that high priority be given to maintaining and, where appropriate, increasing public access to coastal water.

2. The following areas are designated as recreational areas:
   a. Susitna Flats State Game Refuge
   b. Palmer Hay Flats State Game Refuge
   c. Goose Bay State Game Refuge
   d. Nancy Lake Recreation Area
   e. Willow Creek Corridor

f. Little Susitna River Corridor
g. Iditarod Trail
h. State waysides and campgrounds
i. Multi-use trails as identified by the Draft Borough Trails Plan.

3. High priority shall be given to maintaining, and where appropriate, increasing public access to rivers, lakes, streams and shoreline for fishing, scenic values and other recreational activities.

4. High priority shall be given to developing and maintaining multi-use trail systems. Easements, right-of-way and other means shall be used in acquiring and maintaining trail access during land transfers. The Draft Borough Trails Plan shall be used in the identification and reservation of Borough-wide trail corridors.

5. High priority shall be given to the economic development of:
   a. Areas receiving significant use by persons engaged in recreational pursuits;
   b. Areas that are a major tourist attraction; and
   c. Areas having potential for high quality recreational use because of physical, biological, cultural or historical features.

SUBSISTENCE

1. The State standard (6 AAC 80.120) is adopted as a part of the MSBCMP. The State standard requires that districts recognize and identify any areas that are used for subsistence activities. Subsistance activities are currently present in the District community of Skwentna.

2. High priority shall be given to coastal land and water activities which enhance, maintain and protect the subsistence way of life.

COASTAL HABITATS

1. The State standard (6 AAC 80.130) is adopted as part of the MSBCMP. The following habitats are subject to coastal management standards:
   a. Offshore areas and estuaries;
   b. Wetlands and tideflats;
   c. Vegetated bluffs;
   d. Rivers, streams and lakes including a minimum two-hundred foot (200') buffer along the water line; and
   e. Important upland habitat.

2. Coastal habitats are interdependently linked by flows of energy, water and nutrients. These habitats shall be managed using a holistic approach which maintains and enhances the physical, biological and chemical characteristics of those habitats, contributing to their capacity to support living resources.

3. Upland habitats shall be managed, to the extent feasible, to retain natural drainage patterns and vegetation cover on steep slopes and along rivers, lakes and stream shorelines, to prevent excessive runoff and erosion, protect surface water quality and natural groundwater recharge areas and provide for open space, scenic and recreational value.

4. Activities which accelerate wetland drainage; intercept incoming nourishment; or decrease the wetland habitat's resource capability shall be mitigated.

5. Compensation techniques for activities along, and in, rivers, lakes and streams shall include replacing stream bank foliage where possible; creation of settlement systems prior to development runoff entering stream corridors thereby decreasing sedimentation; and mitigation of any changes in stream flow regions.

AIR, LAND AND WATER QUALITY

1. The State standard (6 AAC 80.140) is adopted as part of the MSBCMP.

2. Notwithstanding any other provisions of this chapter, the statutes pertaining to, and the regulations and procedures of, the Alaska Department of Environmental Conservation with respect to the protection of air, land and water quality are incorporated in the ACMP and as administered by that agency, constitute the components of the MSBCMP with respect to those purposes.

3. Land clearing, grading, filling and alteration of natural drainage features and landforms shall be managed and limited to the minimum necessary. Surfaces cleared of vegetation and not developed shall be replanted as soon as possible with native plants to deter erosion.

4. Water quality shall not be lowered below State Standards on a long-term basis by development or any industrial, commercial or residential activity.

HISTORIC, PREHISTORIC AND ARCHAEOLOGICAL RESOURCES

1. The State standard (6 AAC 80.150) is adopted as a part of the MSBCMP.
2. All development shall meet historic preservation objectives of the District as outlined by the Historic Preservation Survey (1981) including revitalization and utilization of historic resources.

HAZARDOUS AREAS

1. The State standard (6 AAC 80.050) is adopted as a part of the MSBCMP.

2. Known geophysical hazard areas and areas of high development potential in which there is a substantial possibility that geophysical hazards may occur are:

a. Knik/Matanuska River Floodplains;

b. Susitna and Little Susitna River Floodplains; and

c. Point MacKenzie vegetated bluffs and coastline.

3. Development in areas identified above may not be approved by the appropriate State authority or District until siting, design and construction measures for minimizing property damage and protecting against loss of life have been provided.

4. Development shall be precluded in rapidly eroding, slide prone or geologically unstable shorelines. Any development in these areas shall be based upon a geotechnical investigation attesting to the safety of the area and specific engineering practices or structures that would alleviate or mitigate the hazard.

5. Surface modification that would induce excessive erosion, undermine the support of nearby land or unnecessarily scar the landscape shall be limited.

Chapter 6
Areas Meriting Special Attention

AREAS MERITING SPECIAL ATTENTION

INTRODUCTION

Inherent in the Alaska Coastal Management Act and the Alaska Coastal Management Program is the realization that all coastal areas and resources are not homogenious. As a result of unique aesthetic, ecological, recreational, geophysical or industrial values present, certain coastal areas and resources warrant additional "special" management resources. These areas where a demonstrated need for special management efforts exist may be designated as "areas which merit special attention" (AMSA).

The Alaska Coastal Management Act defines areas which merit special attention as:

> "... a delineated geographic area within the coastal area which is sensitive to change or alteration and which, because of plans or commitments or because a claim on the resources within the area delineated would preclude subsequent use of the resources to a conflicting or incompatible use, warrants special management attention, or which, because of its value to the general public, should be identified for current or future planning, protection, or acquisition..."

Criteria used as a basis for designating a coastal area as an area which merits special attention include:

A. Areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance;

B. Areas of high natural productivity or essential habitat for living resources;

C. Areas of substantial recreation value or opportunity;

D. Areas where development of facilities is dependent upon the utilization of, or access to coastal waters;

E. Areas of unique geologic or topographic significance which are susceptible to industrial or commercial development;

F. Areas of significant hazard due to storms, slides, floods, erosion or settlement;

G. Areas needed to protect, maintain, or replenish coastal land or resources, including coastal flood plains, aquifer recharge areas, beaches, and offshore sand deposits;

H. Areas important for subsistence hunting, fishing, food gathering, and foraging;

I. Areas with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities; and

J. Potential estuarine or marine sanctuaries.

The responsibility of designating areas which merit special attention to be included within a coastal district program rests with the District. Six coastal areas within the District have been recommended for consideration as areas which merit special attention (Pocket Map #2):

1. Susitna Flats State Game Refuge;

2. Goose Bay State Game Refuge;

3. Palmer Hay Flats State Game Refuge;

4. Knik/Matanuska River Floodplain;

5. Nancy Lake State Recreation Area; and

6. Point MacKenzie Industrial Port/Park Site;

In accordance with Alaska Coastal Management Program Standard 6 AAC 80.160, the following information is to be provided for each area which merits special attention and so designated in a district coastal management program:

1. The basis or bases for designation under AS 46.40.210(1) and 6 AAC 80.160(b);

2. A map showing the geographic location, surface area and, where appropriate, bathymetry of the area;

3. A description of the area which includes dominant physical and biological features;

4. The existing ownership, jurisdiction, and management status of the area, including existing uses and activities;

5. The existing ownership, jurisdiction, and management status of adjacent shoreland and sea areas, including uses and activities;

6. Present and anticipated conflict among users and activities within or adjacent to the area, if any; and

7. A proposed management scheme which includes a description of proper and improper uses and activities of land and water resources within the area, a statement of policies which will be applied in managing the area, and an identification of the authority which will be used to implement the management scheme.

Management schemes for areas which merit special attention must preserve, protect, enhance, or restore the value or values for which the area was designated. The three State Game Refuges have been proposed as areas which merit special attention because of their extraordinary value to fish and wildlife habitats and populations and due to the intense public recreational usage of the fish and wildlife resources within the refuges. The Knik-Matanuska River Floodplain area has also been proposed as an area which merits special attention because it provides essential habitat for waterfowl and wildlife resources as well as substantial recreational opportunities for residents of the District.

The Borough proposes these four areas as areas meriting special attention and encourages future development of management plans for each area. More detailed management schemes for these four areas are beyond the scope of this document. Designation of these areas as AMSA's and approval of management plans for them would be a significant amendment to this program.

The District proposes Nancy Lake State Recreation Area as an area meriting special attention. This recommendation is made to encourage the existing development of the joint management efforts for this area by the Alaska Department of Natural Resources Division of Parks and the Matanuska-Susitna Borough. This designation should be considered as recognition and an endorsement of the on-going cooperative State and Borough management planning efforts for this site.

The development of a management plan for the sixth AMSA, the Point MacKenzie Industrial Port/Park site, will begin in Spring, 1983 upon conceptual approval of the District coastal management program. By adding special area identification elements to the District coastal management program, the future financial and management resources of the District and its coastal management program may be focused on these areas.

SUSITNA FLATS STATE GAME REFUGE

1. Primary Values and Bases for Designation:

The primary value of the Susitna Flats State Game Refuge AMSA designation is to protect, maintain, enhance and manage the Susitna Flats State Game Refuge fish and wildlife populations and habitats with other components of the ecosystem assuring the provision of sustained opportunities for public recreational use. Also included in this primary value is the provision for specific commercial uses of the refuge which do not adversely affect fish and wildlife resources or the public usage of such resources.

The bases for this AMSA designation under the Alaska Coastal Management Act and Program includes areas of unique, scarce, fragile, or vulnerable natural habitat, cultural value, historical significance, or scenic importance; areas of high natural productivity or essential habitat for living resources; areas of substantial recreational value or opportunity; and areas needed to protect, maintain, or replenish coastal land or resources, including coastal floodplains, aquifer recharge areas, beaches, and offshore sand deposits.

2. Geographic Location and Description:

Coastal Region: Upper Cook Inlet Coastal Region

Area: 301,950 acres

Coordinates: Susitna River 61° 17' 23" N, 150° 34' 05" W

USGS QUADRANTS: 1:250,000 Tyonek; 1:63,360 Tyonek A1, A2, A3, B1, B2, and B3

The Susitna Flats State Game Refuge is an expansive coastal lowland on the northwest side of Upper Cook Inlet (Figure 6-1). The refuge

is located predominantly within the District and encompasses some 301,950 acres of which 22 percent is subtidal, 11 percent is occasionally flooded salt marsh and meadow, and 67 percent is a combination of lakes, bogs, low shrub, and mixed lowland forest. The State Game Refuge extends for approximately 35 miles from Point MacKenzie westward to past the Beluga River. The mouth of the Susitna River, 24 miles west of Anchorage, divides the refuge in half. The eastern half of Susitna Flats is bisected by the Little Susitna River while the western half is transected by the Ivan, Lewis, Theodore and Beluga Rivers.

The Susitna Flats lowland coastal marshes are important resting and staging areas for waterbirds during spring and fall migrations. The Susitna Flats State Game Refuge area also provides for fishing, hunting of waterfowl, moose, bear and wildlife viewing, photography and other seasonal recreational opportunities. The Alaska State Legislature created the Susitna Flats State Game Refuge in 1976 to ensure protection and adequate management of this area.

3. Existing Ownership, Jurisdiction and Management:

The Susitna Flats State Game Refuge is State owned and managed by the Alaska Department of Fish and Game. Private inholdings exist within the refuge. The legislation which established the Susitna Flats State Game Refuge prohibits State aquisition of private inholdings by eminent domain and ensures access to inholdings by private property owners. The Alaska Department of Natural Resources was given authority under AS 44.62 to adopt zoning regulations when necessary to ensure the intended uses of the refuge are maintained.

4. Present Uses and Activities, Anticipated Conflicts:

The Alaska Department of Fish and Game is legislatively mandated to protect, maintain, enhance and manage the fish and wildlife resources and habitats of the Susitna Flats State Game Refuge while

providing for public recreational uses of the fish and wildlife resources and habitats. Examples of public usage of the refuge include waterfowl hunting, big game hunting, sports fishing, commercial fishing, trapping, wildlife viewing, photography, and other recreational activities. The intensity of public usage of the refuge varies directly with access limitations to certain portions of the refuge. As road transportation and access to the Susitna Flats State Game Refuge area increases, public recreational opportunities in the Refuge will increase accordingly.

In addition to the public recreational uses, oil and gas exploration and development activities are underway in portions of the Refuge. Oil and gas lease sales for the Susitna Flats State Game Refuge area were held prior to the passage of legislation establishing the Refuge. Exploration and development activities operate under the terms of pre-existing leases and have resulted in a number of test wells and all-weather road systems in the western portion of the Refuge. Oil and gas exploration and development activities in the Susitna Flats State Game Refuge is likely to increase in the future as a result of State oil and gas lease sales in Upper Cook Inlet. Future lease agreements are expected, if found compatible with the multiple-use management concept of the Refuge.

Anticipated conflicts continue to arise over proposed developmental scenarios for lands and water systems near or adjacent to the Susitna Flats State Game Refuge. Development of the Beluga Coal Field and related transportation corridors, the proposed Point MacKenzie Industrial Port/Park and potential associated residential development, the Point MacKenzie Agricultural Project, the Susitna Hydro Project and Enstar natural gas pipeline could all have significant impacts on fish and wildlife resources in the Refuge and public usage of those resources.

5. Proposed Management Scheme:

This coastal management plan does not develop a proposed management scheme for the Susitna Flats State Game Refuge. It encourages the cooperative planning efforts of the Borough, State and Federal governments in the future development of a potential management scheme including a statement of proper and improper uses in the area; a statement of policies to be applied in managing the area; and an identification of the authority to implement the management scheme.

GOOSE BAY STATE GAME REFUGE

1. Primary Values and Bases for Designation:

The primary value of the Goose Bay State Game Refuge AMSA designation is to protect, maintain, enhance and manage the Goose Bay State Game Refuge fish and wildlife populations and habitats with other components of the ecosystem and to assure the capability of providing sustained opportunities for public recreational uses.

The bases for this AMSA designation under the Alaska Coastal Management Act and Program includes areas of unique, scarce, fragile, or vulnerable natural habitat, cultural value, historical significance, or scenic importance; areas of high natural productivity or essential habitat for living resources; areas of substantial recreational value or opportunity; and areas needed to protect, maintain, or replenish coastal land or resources, including coastal floodplains, aquifer recharge areas, beaches, and offshore sand deposits.

2. Geographic Location and Descriptions:

Coastal Region: Upper Cook Inlet Coastal Region

Area: 13,262 acres

Coordinates: Goose Creek 61° 22' 30" N, 149° 52' 57" W

USGS Quadrants: 1:250,000 Anchorage and Tyonek; 1:63,360 Anchorage B-8 and Tyonek B-1

Goose Bay and the wetlands adjacent to Goose Creek are located along the western shore of Knik Arm, 12 miles north of Anchorage and 30 miles southwest of Palmer. The Goose Bay State Game Refuge is located entirely within the boundaries of the District and encompasses some 13,262 acres (Figure 6-2).

The lowland coastal marshes of the Goose Bay area are important resting and staging areas for waterfowl and shorebirds during spring and fall migrations. In addition, the Goose Bay area is an important recreational area for wildlife viewing, photography, waterfowl hunting, and other recreational uses. The Alaska State Legislature created the Goose Bay State Game Refuge in 1975 to ensure protection and adequate management of the area.

3. Existing Ownership, Jurisdiction and Management:

The Goose Bay State Game Refuge is State owned and managed by the Alaska Department of Fish and Game. Private, university, and federal inholdings exist within the Refuge, however, Refuge restrictions only apply to State-owned land and adjacent waters in the Refuge.

4. Present Uses and Activities, Anticipated Conflicts:

The Alaska Department of Fish and Game is legislatively mandated to protect, maintain, enhance and manage the fish and wildlife resources and habitats of the Goose Bay State Game Refuge area while providing for public recreational uses of the fish and wildlife resources and habitats. Examples of public usage of the refuge include wildlife viewing, photography, waterfowl hunting and other recreational activities.

Anticipated increased public usage of the refuge will occur as a result of proposed development of an industrial port/park complex at Point MacKenzie, proposed Knik Arm Crossing and the existing Point MacKenzie Agricultural Project.

5. Proposed Management Scheme:

This coastal management plan does not develop a proposed management scheme for the Goose Bay State Game Refuge. It encourages the cooperative planning efforts of the Borough, State and Federal governments in the future development of a potential management scheme including a statement of proper and improper uses in the area; a statement of policies to be applied in managing the area; and an identification of the authority to implement the management scheme.

PALMER HAY FLATS STATE GAME REFUGE

1. Primary Values and Bases for Designation:

The primary value of the Palmer Hay Flats State Game Refuge AMSA designation is to protect, maintain, enhance and manage the Palmer Hay Flats Refuge fish and wildlife populations and habitats with other components of the ecosystem and to assure the capability of providing sustained opportunities for public recreational use.

The bases for this AMSA designation under the Alaska Coastal Management Act and Program includes areas of unique, scarce, fragile, or vulnerable natural habitat, cultural value, historical significance, or scenic importance; areas of high natural productivity or essential habitat for living resources; areas of substantial recreational value or opportunity; and areas needed to protect, maintain, or replenish coastal land or resources, including coastal floodplains, aquifer recharge areas, beaches, and offshore sand deposits.

2. Geographic Location and Description:

Coastal Region: Upper Cook Inlet Region

Area: 25,340 acres

Coordinates: Palmer Slough 61° 30' 00" N, 149° 25' 00" W

USGS Quadrants: 1:250,000 Anchorage; 1:63,360 Anchorage B-7 and C-7

The Palmer Hay Flats is a large coastal lowland area along the north shore of Knik Arm, 10 miles southwest of Palmer and 28 miles northeast of Anchorage (Figure 6-3). The refuge is located within the District and encompasses some 25,340 acres, nearly all of which is coastal marsh and shrub-bog habitat. The Palmer Hay Flats State Game Refuge is bounded on the east by the Matanuska and Knik River Floodplains, on the south by Knik Arm and on the west and north by District and private property.

The Palmer Hay Flats lowland coastal marshes are extremely important resting and staging areas for waterfowl and shorebirds during spring and fall migrations. In addition, the Palmer Hay Flats area provides for excellent fishing in Rabbit Slough and Wasilla Creek, waterfowl hunting throughout the entire refuge, and unmatched opportunities for wildlife and waterfowl viewing and photography. The Alaska State Legislature created the Palmer Hay Flats State Game Refuge in 1975 to ensure protection and adequate management of the area.

3. Existing Ownership, Jurisdiction, and Management:

The Palmer Hay Flats State Game Refuge is State owned and managed by the Alaska Department of Fish and Game, however, the refuge legislation includes uplands that have not been conveyed to the State. Uplands within T16N, R1E, S.M. have been selected by

Eklutna, Inc. and include most of the area known as Duck Flats. Final refuge boundary determinations will depend upon negotiations between the State and Eklutna, Inc. Other State lands adjacent to the refuge have been classified as to their habitat resource importance, however, no legislation has been introduced to include these areas in the refuge.

Refuge restrictions apply to State-owned land and adjacent waters in the refuge. The District has long recognized the importance of the Palmer Hay Flats as a recreational area. In 1974, the Borough Assembly adopted the Palmer Hay Flats Recreational Area Special Use District. This district includes an area larger than the State Game Refuge and affects the use of private land adjacent to the refuge (Figure 6-3). Permitted uses within the Palmer Hay Flats Recreation Area Special Land Use District include single-family residences, produce and fruit production, home occupations and campgrounds.

4. Present Uses and Activities, Anticipated Conflicts:

The Alaska Department of Fish and Game is legislatively mandated to protect, maintain, enhance and manage the fish and wildlife resources and habitats of the Palmer Hay Flats State Game Refuge while providing for public recreational uses of the fish and wildlife resources and habitats. Recreation is the major use of the Palmer Hay Flats area including waterfowl hunting, fishing, wildlife viewing and photography.

As a result of good access and close proximity to the Anchorage metropolitan area, the Palmer Hay Flats State Game Refuge receives a higher intensity of usage when compared with Susitna Flats and Goose Bay State Game Refuges. This intensity of usage of the Palmer Hay Flats area will increase in the future as a result of increasing development to the southwest of this area. The potential impacts of increased recreational use include modifications to terrain, disturbance of wildlife, reduction of

aesthetic resources and conflicts with other resource users.

5. Proposed Management Scheme:

This coastal management plan does not develop a proposed management scheme for the Palmer Hay Flats State Game Refuge. It encourages the cooperative planning efforts of the Borough, State and Federal governments in the future development of a potential management scheme including a statement of proper and improper uses in the area; a statement of policies to be applied in managing the area; and an identification of the authority to implement the management scheme.

KNIK/MATANUSKA RIVER FLOODPLAIN

1. Primary Values and Bases for Designation:

The primary value of the Knik/Matanuska River Floodplain AMSA designation is to acknowledge severe flood hazard potential along the Knik/Matanuska River Floodplain. Flat topography makes this area highly susceptible to flooding. In addition, the potential exists for severe floods resulting from an outburst of glacial-dammed Lake George. Lake George has flooded the Knik River annually from 1918 through 1966, except for 1963. Since 1966, the Knik Glacier has failed to form an ice dam and no glacial outburst flooding has occurred, however, a series of positive ice balances may stimulate the glacier to advance and dam the lake. The Knik/Matanuska River Floodplain also contains areas of essential habitat for waterfowl and wildlife resources and areas of substantial recreational opportunities for residents of the District.

The bases for this AMSA designation under the Alaska Coastal Management Act and Program includes areas of unique, scarce, fragile, or vulnerable national habitat, cultural value, historical significance, or scenic importance; areas of high natural

productivity or essential habitat for living resources; areas of substantial recreational value or opportunity; areas of significant hazard due to storms, slides, floods, erosion or settlement; and areas needed to protect, maintain, or replenish coastal land and resources, including coastal floodplains, aquifer recharge areas, beaches, and offshore sand deposits.

2. Geographic Location and Description:

Coastal Region: Upper Cook Inlet Coastal Region

Area: Approximated 54,000 acres

Coordinates: Knik/Matanuska River 61° 30' 00" N, 149° 15' 00" W

USGS Quadrants: 1:250,000 Anchorage; 1:63,360 Anchorage B5, B6, and C6

The Knik/Matanuska River Floodplain encompasses the large coastal lowland floodplains situated at the head of Knik Arm (Figure 6-4). These two major rivers share a common floodplain which is approximately five miles wide at the point of entry into Knik Arm. Both rivers originate at glaciers and carry large volumes of glacial sediment into Knik Arm and Upper Cook Inlet, resulting in extensive mud and tideflats at the head of Knik Arm.

The extent of the Knik/Matanuska River Floodplain AMSA boundaries are contiguous with the known 100-year floodplain for the Knik and Matanuska River and extend up the Knik River to the District boundary and up the Matanuska River to Sutton, which is outside of the District boundary. The western boundary of the Knik/Matanuska River Floodplain AMSA is approximated by the Glenn Highway.

Included within the Knik/Matanuska River Floodplain is the area known as the Jim-Swan Lakes. This is a wetlands area with several

large shallow lakes in various stages of succession. The Knik/Matanuska River Floodplain, including the Jim-Swan Lakes area, contains valuable natural habitat for fish, waterfowl and wildlife. The floodplain area is also one of the fastest growing regions of the District containing residential development, farms, and the major transportation corridor between Anchorage and the interior.

3. Existing Ownership, Jurisdiction and Management:

The Federal Submerged Lands Act of 1953 (PL85-303 and 508) conveyed all tidelands, submerged lands and shorelands under all navigable waters to the State of Alaska upon statehood. The submerged lands and shorelands of the Knik and Matanuska River are considered State public domain and cannot be sold. State interest lands are found in the Jim-Swan Lakes area east of Bodenburg Butte.

Extensive private holdings exist throughout the Palmer and Bodenburg Butte area with smaller private holdings south of the Knik River. Borough tentatively-approved and Borough-patented lands occur throughout the floodplain area with the largest holding of Borough-patented land located adjacent to the south shore of the Matanuska River within the District, east of Bodenburg Butte.

Native selected lands are extensive throughout the floodplain area. The Alaska Native Claims Settlement Act and a subsequent amendment (Terms and Conditions for Land Consolidation and Management in the Cook Inlet Area) provided for federal and State lands to satisfy Native village and region entitlements. Litigation is pending for many of the acres selected by Eklutna, Inc., resulting in dual State-Native ownership for much of the land in T16N, R1E-R4E, S.M. (This area includes most of the Knik River south to the District boundary.) In addition, the Alaska National Interest Lands Conservation Act (PL 96-487) provides for the State of Alaska and Eklutna, Inc. to exchange lands to allow for Native selections in T17N, R3W, S.M. (This includes the Jim-Swan Lakes area.)

4. Present Uses and Activities, Anticipated Conflicts:

Present uses in the Knik/Matanuska River Floodplain are diverse and include recreational uses, agricultural uses, residential development, transportation and mineral extraction, including gravel. Recreational uses in the Knik/Matanuska Floodplain area include waterfowl hunting, moose hunting, fishing, trapping, boating, wildlife viewing and photography. Winter recreation in the area includes snowmachine use, cross country skiing and dog mushing.

Anticipated conflicts arise as a result of increased development in the area. The area's close proximity to Anchorage makes it attractive for suburban residential development. The potential for renewed advance of the Knik Glacier and glacial outburst flooding from Lake George is uncertain. The flat topography of this floodplain area makes it susceptible to seasonal flooding.

5. Proposed Management Scheme:

This coastal management plan does not develop a proposed management scheme for the Knik-Matanuska River Floodplain Area. Rather, it encourages the cooperative planning efforts of the Borough, Federal and State governments in the future development of a potential management scheme including a statement of proper and improper uses in the area; a statement of policies to be applied in managing the area; and an identification of the authority to implement the management scheme. It should be noted that the U.S. Fish and Wildlife Service has already completed two studies concerning the Knik Arm wetlands, one of which recommends an AMSA designation for portions of this area.

NANCY LAKE STATE RECREATION AREA

1. Primary Values and Bases for Designation:

The primary value and purpose of a state recreation area is to provide a maximum level of outdoor recreational opportunity based on the natural values of the area and its ability to sustain use without adverse affects on natural systems.
The basis for the AMSA designation under the Alaska Coastal Management Act and Program includes areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance and areas of substantial recreational value or opportunity.

2, Geographic Location and Description:

Coastal Region: Upper Cook Inlet Region

Area: Approximately 22,685 acres

Coordinates: 61° 42' N, 150° 01' W (Nancy Lake State Recreational Area Entrance)

USGS Quadrants: 1:250,000 Anchorage and Tyonek; 1:63,360 Anchorage C-8 and Tyonek C-1

The Nancy Lake State Recreation Area, which includes the waters of Nancy Lake and more than 130 other lakes and ponds, is located in the heart of the lower Susitna Valley in the District (Figure 6-5). The entire Nancy Lake State Recreation Area lies within the boundaries of the District. The Susitna River runs approximately four miles to the west-northwest of the recreation area; the Little Susitna River cuts through the southeast corner of the recreation area; and the Parks Highway passes to the northeast of Nancy Lake. The community of Willow is situated three miles to the north of the recreation area.

Water is the dominant feature in the Nancy Lake State Recreational Area with lakes, ponds, streams, and wetland habitat occupying close to half of the total acreage of the recreation area. Over 9,000 years ago, retreating glaciers resulted in the formation of elongated lakes, hills, and ridges orientated in a northeast to southwest direction within the recreation area.

The significance of the recreation area lies in its quiet, graceful and natural beauty and the relatively easy access from populated areas. The State Division of Parks estimates that over 80 percent of the visitors to the recreation area are from the Anchorage area, located seventy miles to the southeast.

3. Existing Ownership, Jurisdiction and Management:

The State of Alaska is the dominant land owner within the Nancy Lake State Recreation Area. There are twenty nine separate private parcels, containing 305 acres of private land within the boundaries of the recreation area. Private recreational cabins exist on a number of the parcels. Access to private parcels within the recreational area exists and is assured until such time when the individual parcels are acquired by the Division of Parks. The State of Alaska retains the right to the subsurface estate beneath all land and water in the recreation area.

The existing ownership of lands adjacent to the Nancy Lake State Recreation Area is varied. Mixed Borough and State land holdings are found in the Susitna corridor area to the west and the Ronald Lake area to the east of the recreation area. Borough land is also found in the Moraine Ridge area south of Red Shirt Lake. Lands adjacent to the Little Susitna River southeast of the recreation area are primarily in State ownership. Major private land holdings exist north of the recreation area and adjacent to the shores of Nancy Lake and Red Shirt Lake.

The State of Alaska Department of Natural Resources, Division of Parks is the lead agency charged with the responsibility for the management of the recreation area. The Nancy Lake State Recreation Area was originally established by the Alaska Legislature and approved by the Governor on April 7, 1967. This act reserved all of the acreage within the recreation area for public recreation and protected the recreation area from uses incompatible with public recreation. The Matanuska-Susitna Borough established a special land use district for the Nancy Lake State Recreation Area in 1974. The land use district's purpose is to reinforce legislative intent in establishing the recreational area and discourage nonrecreational development and uses.

4. Present Uses and Activities, Anticipated Conflicts:

Present land and water uses in the Nancy Lake State Recreation Area are predominantly recreation orientated. Examples of such uses include camping, picnicing, hiking, canoeing, fishing, wildlife viewing, cross-country skiing, snowmachining and dog mushing.

Future increases in local and regional population will have the greatest impact and influence on the Nancy Lake State Recreation Area. Factors which could influence the population of the District include construction of the Susitna hydroelectric projects; the proposed Knik Arm Crossing; potential coal development; and the proposed Point MacKenzie development. These development projects would induce population growth in the District and a resultant increase in the demand for recreational areas and facilities such as those found at Nancy Lake State Recreation Area.

With the increase in demand for recreational facilities and areas, land use conflicts will arise within the Nancy Lake State Recreation Area. These include a need to maintain quiet and natural areas from those areas which allow motorized vehicles and are more developed due to their proximity to the main park road; use of private lands within the recreation area boundaries may

result in conflict if such areas are utilized for nonrecreational purposes; adjacent private development near the recreation area would result in increased access to private lands within the recreation area, obtrusive development along the entrance to the recreation area, undesirable noise and other encroachment problems that could significantly reduce the value and enjoyment of public recreation; overhead powerlines planned as part of the power delivery system from the Susitna Hydroelectric Project would cause significant impact if routed through the recreation area; future road networks planned to serve areas surrounding the recreation area would open up undesirable new access and introduce visible and audible transportation corridors that would jeopardize future management and public option for recreational development and use of the recreation area.

5. Proposed Management Scheme:

This coastal management plan does not develop a management scheme for the Nancy Lake Recreation Area. This designation as an area meriting special attention should be considered as recognition and an endorsement of the current and on-going cooperative State and Borough planning efforts for this area which include a statement of proper and improper uses in the area; policies to be applied to managing the area; and identification of the authorities to implement the management scheme.

POINT MACKENZIE INDUSTRIAL PORT/PARK SITE

1. Primary Values and Bases for Designation:

The primary value of the Point MacKenzie Industrial Port/Park site is that it offers adequate acreage and location for an industrial port/park facility on Knik Arm. This site also represents the only opportunity for a water-dependent and water-related industrial port/park facility in the District. It also has the potential for providing a feasible location for coastal recreational access

through a mixed use industrial port/park development plan including community development.

The basis for this AMSA designation under the ACMP includes areas where development of facilities is dependent upon the utilization of, or access to, coastal waters.

2. Geographic Location and Description:

Coastal Region: Upper Cook Inlet Coastal Region

Area: Approximated 26,000 acres

Coordinates: 61° 16' 57" N, 149° 55' 20" W

USGS Quadrants: 1:250,000 Anchorage and Tyonek; 1:63,360 Anchorage A-8, B-8, and Tyonek A1, B1

The Point MacKenzie Industrial Port/Park site is located near the mouth of Knik Arm in Upper Cook Inlet (Figure 6-6). The entire Point MacKenzie Industrial Port/Park site area is located within the boundaries of the District. This area is bounded on the north by the Goose Bay State Game Refuge, on the east and south by the waters of Knik Arm and Upper Cook Inlet respectively, on the west by the Susitna Flats State Game Refuge, and on the northwest by the Point MacKenzie Agricultural Project. The proposed Point MacKenzie Industrial Port/Park site is located approximately four miles northwest, across Knik Arm, from the Port of Anchorage (T14N, R4W, SM, Sections 24 and 25).

The main topographic feature in the Point MacKenzie area is the Elmendorf Moraine, resulting in 50 to 100 foot vegetated bluffs near the head of Knik Arm. Mudflats, lowland coastal marshes, bogs, small lakes, low shrubs and mixed lowland forests are found throughout the area. Waterfowl and wildlife are also present in the area but not in the abundance found in adjoining State game

refuges. The major rivers near the area are the Little Susitna River and Goose Creek which lie approximately ten miles west and north of the Point MacKenzie area, respectively. Major lakes in the area include Lake Lorraine, Lost Lake, and Twin Island Lake.

3. Existing Ownership, Jurisdiction and Management:

Ownership of land throughout the Point MacKenzie area is predominately mixed with Borough, State, university, private, and Native corporation holdings. Borough-patented lands are concentrated along Knik Arm in the immediate vicinity of the industrial port/park site (T14N, R4W, SM, Sections 24 and 25). Borough-selected lands and Borough tentative-approved lands are found extensively throughout the Point MacKenzie area.

University holdings are contained within the large block of Borough-patented land adjacent to Knik Arm. Smaller private and Native holdings are found throughout the greater industrial port/park site location. Additional private holdings are found in the Twin Island Lake and Lost Lake areas and along the southern tip of the Point MacKenzie area. State public domain and State agricultural lands are found primarily in the western portion of the Point MacKenzie area, adjacent to the Susitna Flats State Game Refuge.

4. Present Uses and Activities, Anticipated Conflicts:

Present land uses in the Point MacKenzie area consist of scattered homesites, recreational sites and a few private airstrips. Design of road construction has been underway for extension of a road through the Point MacKenzie area from Knik Arm Road, pending location of the proposed Knik Arm Crossing.

Point MacKenzie has been considered by the District as a desirable site for a large-scale industrial port/park complex serving the Borough, South Central Alaska and the Interior. Development in

the Point MacKenzie area will result in the development of a new town around the industrial port/park complex on Knik Arm and within the AMSA designation. The industrial complex and adjacent town would serve as the major regional export facility for resources such as coal, timber, ore, and petroleum products, and as the major import facility for equipment and supplies to the Interior.

In 1980 the Dow-Shell Group considered Point MacKenzie as one of six possible locations for a petrochemical facility in Alaska. They anticipated that a number of new and largely permanent jobs would develop for residents of the District through this development. At this time the Dow-Shell Group estimated that employment during the construction phase would exceed 2,400, while employment during the operation phase of the initial plants would number about 1,000.

In addition to a petrochemical facility at Point MacKenzie, a West German firm considered Point MacKenzie as an export center for Beluga coal. The firm indicated that low grade Beluga coal could be utilized in a coal-fired generation plant at Point MacKenzie, providing electricity to industries in the area, while high-grade Beluga coal would be exported to foreign markets.

Anticipated conflicts arise over impacts on air and water quality attributed to the potential development of an industrial port/park complex at Point MacKenzie. Operation of a coal-fired generation plant and a petrochemical facility at this site might seriously affect air quality standards in the Anchorage metropolitan area, four miles southeast of Point MacKenzie. In addition, development of a new town, support facilities and new transportation routes would place increased recreational and developmental pressures on fish and wildlife habitats and resources in the area and in the adjacent State game refuges.

5. Proposed Management Scheme:

Development of a proposed management scheme for the Point MacKenzie Industrial Port/Park site will begin in Spring, 1983, pending local concept approval of the District coastal management program. The proposed scheme will include a statement of proper and improper uses in the area; policies to be applied to managing the area; and identification of the authorities to implement the management scheme.

Chapter 7
Implementation

IMPLEMENTATION

INTRODUCTION

The challenge in implementing a district coastal management program is how to maximize the use of existing land and water use controls to achieve improved management of the coastal zone while minimizing the need for additional controls. The Matanuska-Susitna Borough Coastal Management Program attempts to address land and water uses within its coastal area while maximizing the use of existing Federal, State and local regulations and controls. It is only where those controls are inadequate to meet Federal and State coastal management requirements that additional local guidelines and policies have been added by the District.

REGIONAL GOVERNMENT

The Matanuska-Susitna Borough was incorporated as a second class Borough on January 1, 1964 as a result of the Mandatory Borough Act. The legislative body is comprised of a seven-member Assembly. A mayor, elected at large, presides at Assembly meetings. (Figure 7-1).

At the time of incorporation, the Borough automatically assumed three mandatory powers. These are: (A) education, (B) planning and zoning, and (C) assessment and collection of taxes. These powers are called "areawide" because the Borough exercises them throughout the total area within its boundaries both within and outside of incorporated cities. No city located within the Borough may exercise any of these powers. Figure 7-1 depicts the organization of the Borough.

A. Education

The Borough's assumption of educational powers and functions enlarged the local service area over 100 times from the 212 square miles of the old Palmer Independent School District to

Matanuska-Susitna Borough Organization

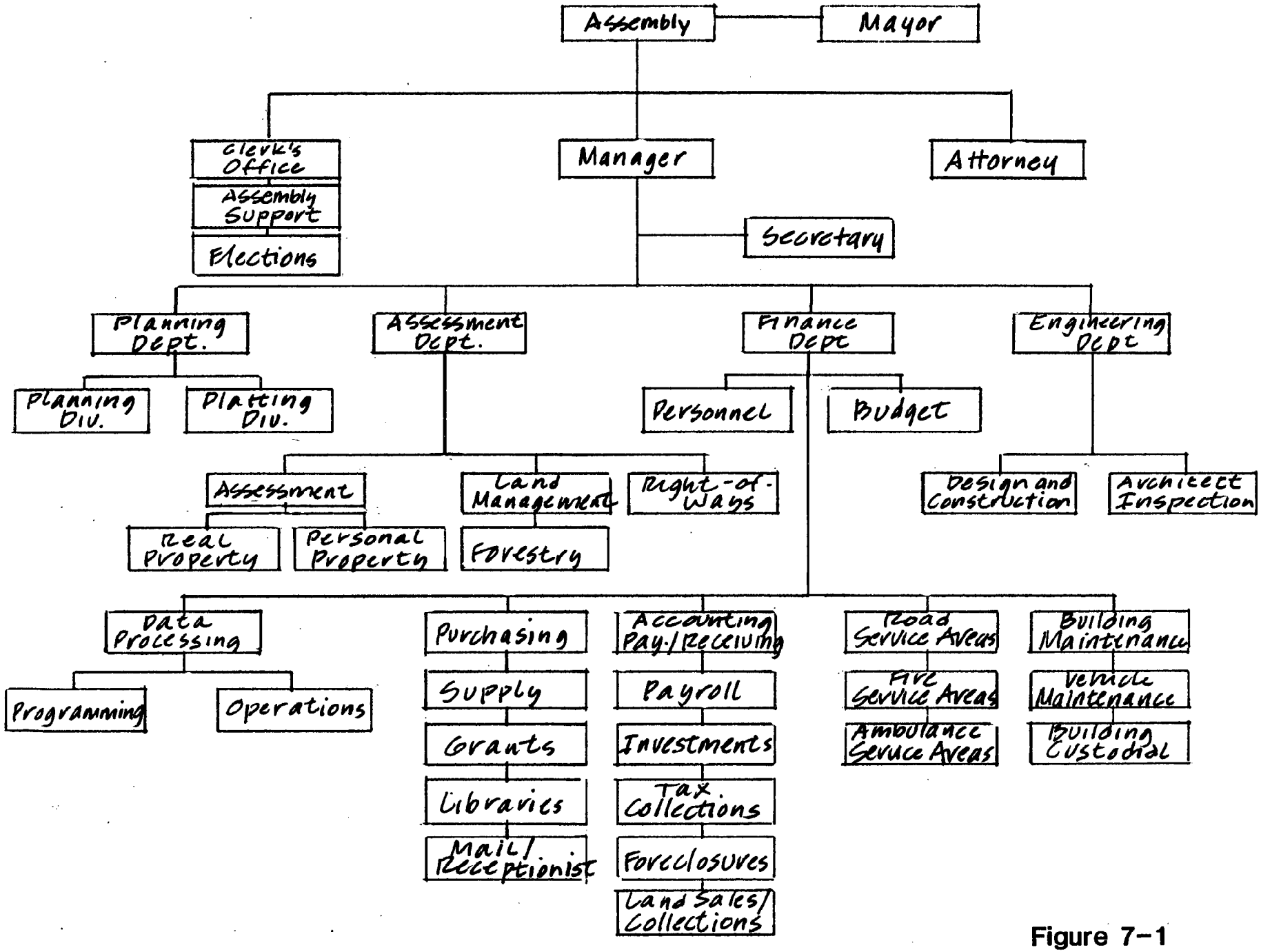


Figure 7-1

the 23,000 square miles of the Borough of which the coastal management District encompasses 4,000 square miles.

B. Planning and Zoning

The areawide power of planning includes (1) preparation of comprehensive plans, (2) adoption of zoning ordinances, (3) adoption of subdivision regulations and approval of subdivision plans, (4) adoption of building and housing codes, (5) enforcement of these codes and ordinances, (6) assistance in public land selection for Borough purposes and (7) planning for Borough capital improvements. The Borough Planning Department, Planning Commission and a Platting Board appointed by the Mayor, on approval of the Borough Assembly, accomplishes these functions. An ordinance establishing the Borough-wide platting regulations was adopted on May 4, 1965 and updated in 1973.

The Borough Planning Department and Planning Commission have recently given much consideration to the development of the District coastal management program and Borough Comprehensive Plan.

C. Assessment and Collection of Taxes

Exercise of Borough power of assessment and tax collection has been an essential prerequisite to the Borough functioning in other areas. On December 1, 1964, the Borough took over the function of property assessment and tax collection within the City of Palmer and the Palmer Independent School District. Because of the shortage of time and funds, the initial property assessment outside of the area that had comprised the Independent School District was conducted by use of "self-assessment" forms.

Additional areawide powers assumed by the Borough include fireworks control, harbor, wharves and marine facilities so that an industrial port/park facility at Point MacKenzie could be planned. In 1966, the

citizens of the Borough voted to add parks and recreation as an areawide power.

In addition to areawide powers, each organized borough in Alaska has certain "non-areawide" powers it may exercise outside of cities. As a second class Borough, the "non-areawide" powers of the Matanuska-Susitna Borough are limited to those powers which are (1) granted by law to first class cities and (2) specifically approved by the voters residing outside of cities. The Matanuska-Susitna Borough has non-areawide powers of solid waste disposal and libraries.

Service areas are created within the framework of Borough government to provide special services such as fire protection, medical protection, police protection and road maintenance. Once a service area has been created by vote of the affected citizens, the Borough Assembly may authorize the levying of taxes, charges or assessments within the service area to finance the desired services.

DISTRICT ORGANIZATION FOR MSBCMP IMPLEMENTATION

The Borough Manager is the chief administrative officer within the Borough. The Planning Director, reporting to the Borough Manager, is charged with administrative functions of the District coastal management program and has final responsibility for a decision to deny, approve or conditionally approve an application. The Planning Director will have administrative assistance through the Planning Department to manage and supervise the certification of consistency and technical review. Application review and evaluation, consistency recommendations and field checks will be accomplished by Planning Department staff under the direction of the Planning Director.

METHODS AND AUTHORITIES USED FOR IMPLEMENTATION

The MSBCMP uses a wide range of methods and authorities to implement its goals and objectives. Borough ordinances and resolutions are one critical element. Title 15 of the Borough Code regulates planning, the

comprehensive plan process and establishes the Planning Commission. Title 16 regulates subdivision activities. Title 17 establishes zoning for the Cities of Palmer, Houston and Wasilla (performance standards), and establishes special land use districts for:

1. Nancy Lake State Recreation Area;
2. Palmer Hay Flats Recreation Area;
3. Denali State Park;
4. Creekside Estates;
5. Talkeetna Mountains;
6. Flood Hazard Use Districts;
7. Moose Creek Reserve;

and zoning regulations for planned unit developments (P.U.D.). These ordinances include many performance standards which complement the policies and rules of the MSBCMP.

The MSBCMP relies heavily upon State and Federal statutes and regulations as authorities behind its policies and rules. These are compiled in the Alaska Coastal Land and Water Use Guide (1982) published by the Office of Coastal Management. In addition, the MSBCMP shall establish application review procedures which are coordinated with those State and Federal agencies having jurisdiction over the uses, activities or habitats affected.

The enforceable rules of the MSBCMP are those set forth in Chapter 5. The Borough Planning Director will review proposals for activities within the District and determine consistency of the proposals with the District plan. The Planning Director will reach a determination of consistency within 30 days of receipt of all proposals. The nonconsistency determination decisions will include conditions and reasons for finding proposals not consistent with the District program. The roles played by the Planning Department, Planning Commission and Borough Assembly are discretionary and strictly operational. Appeals of Planning Department consistency determinations can be reviewed by the Planning Commission and Assembly if necessary (Figure 7-2).

CONSISTENCY REVIEW PROCESS AND PROCEDURES

Local Projects

Local projects will enter the coastal management review process at the time of application for a special land use permit (Title 17), subdivision or short plat approval (Title 16) or through comprehensive plan consistency (Title 15). Applications must contain sufficient information addressing compliance with Borough adopted ordinances and codes including a brief description of proposed activity with an appropriately scaled map showing location and plan of proposed development. Appendix E includes the MSBCMP Review Checklist which will be used by the Planning Director for consistency determinations.

The Planning Department will respond to the applicant within ten (10) working days as to whether the information submitted is complete or if more information is required. Such supplemental information may include additional drawings, plans, specifications, project management schedules and data and statements of anticipated impacts on coastal resources. The entire consistency review process for local projects will be completed within 30 days by the District.

The Planning Department will review each application specifically in terms of the MSBCMP Review Checklist. The Planning Department will then determine whether or not the application is consistent with District Ordinances, Codes and Regulations. Applications which are not at variance with the Code may be approved immediately by the Planning Director and the Planning Department may report the action to the Planning Commission during its regular meetings. Applications for which a formal and written consistency analysis is not needed must meet all of the following criteria:

1. The project or action is found to be in compliance with all rules applicable to special land use districts or geographic areas significantly affected by the proposed action;

2. The project or action is consistent with all rules applicable to the affected uses, activities, habitats and resources; and

3. The project or action is consistent with the management plan for any AMSA which it will significantly affect.

If any one of those criteria is not satisfied by an application, then a Written Analysis will be required and will become a record of how and on what basis the consistency determination has been made. There are three instances when a written analysis addressing the consistency of the proposed project or action with the approved District program shall be prepared:

1. For all State and Federal consistency determination recommendations (including activities listed under uses of State concern) which are sent to the State and which are to receive great weight;

2. For all major activities within the District requiring local approval such as major subdivision or platting approvals (Title 16);

3. When the balancing provisions of the District program are to be applied. The balancing provisions of the program refer to those rules which state that development can occur provided that some standard of performance is reached or state that activities which do not meet the standard can occur under certain circumstances. For example, fill in a wetlands area could occur provided that normal water flow is not restricted. Similarly, stream crossings could occur provided spawning salmon are not disturbed.

In the course of the preparation of a Written Analysis, the following shall be included in the Planning Director's recommendation:

1. Specific stipulation(s) in the form of a performance standard(s);

2. Rationale or justification for requesting that the stipulation(s) be incorporated into the consistency determination;

3. Binding provisions of the District program cited by policy ordinance and legal reference number by chapter and section. Recommended changes to the project shall be as specific as possible indicating what, when, where and under what performance standards the activity is to be or can be conducted. Care shall be taken to use enforceable language.

The Written Analysis shall list any specific goal, objective, policy or rule with which the proposed action is not consistent and shall describe why the proposed action is not consistent with it. The Written Analysis shall state what actions the applicant could take, if any, to make the proposal consistent with the MSBCMP. This statement would then become the basis for conditional approval of the application. Conditional approvals shall comply with the guidelines for conditions and changes listed above. Projects which are found to be consistent with the MSBCMP policies and rules and which are found to contribute towards the goals and objectives of the program shall be recognized for that fact with findings explaining why the project is supported by the District. In this way, the District will positively identify and influence the approval of needed and desirable coastal development.

State and Federal Projects

Local consistency review of State actions begins when the agency forwards the materials to the District for review and comment. Materials to be reviewed are listed in Chapter 5 under Federal and State actions affecting the program. Local consistency review of Federal actions begins when licence or permit applications are received by the District from the State Clearinghouse in accordance with procedures established by the Governor's Administrative Order 54.

The Planning Director, within thirty (30) days, will conduct the consistency review process with a Written Analysis based on goals, objectives, policies and rules of the MSBCMP. This Written Analysis will be consistent with the guidelines for Written Analysis listed under Local Projects. Findings of positive consistency shall be used whenever appropriate to positively identify and influence the State and Federal permitting of needed and desireable development, since the District's views will be given "great weight" in the State or Federal Decision. Figure 7-3 highlights the coastal land and water use decision process for the MSBCMP.

MONITORING AND ENFORCEMENT

In accordance with Title 17 of the Matanuska-Susitna Borough Code it will be the responsibility of the District Planning Department to monitor all Federal, State and local activities within the District to ensure that the policies and conditions of the District program are being implemented.

There are two reasons for field checking (monitoring) the decisions which have been made based on the District program. The first is to assure that those projects which are found to be consistent with the District program are actually being conducted properly. The second is to assure that activities which require some type of consistency determination have indeed received one. Techniques for field checking of coastal activities shall include:

a. Routine field inspections by District personnel trained in implementation of the District coastal management program;
b. Periodic checking on specific projects or locations;
c. Request for copies of field reports and trip reports from State and Federal personnel commonly in a position to make field observation, and coordination of inspection of sites with these personnel; and

Implementation Mechanisms For Approved MSBCMP

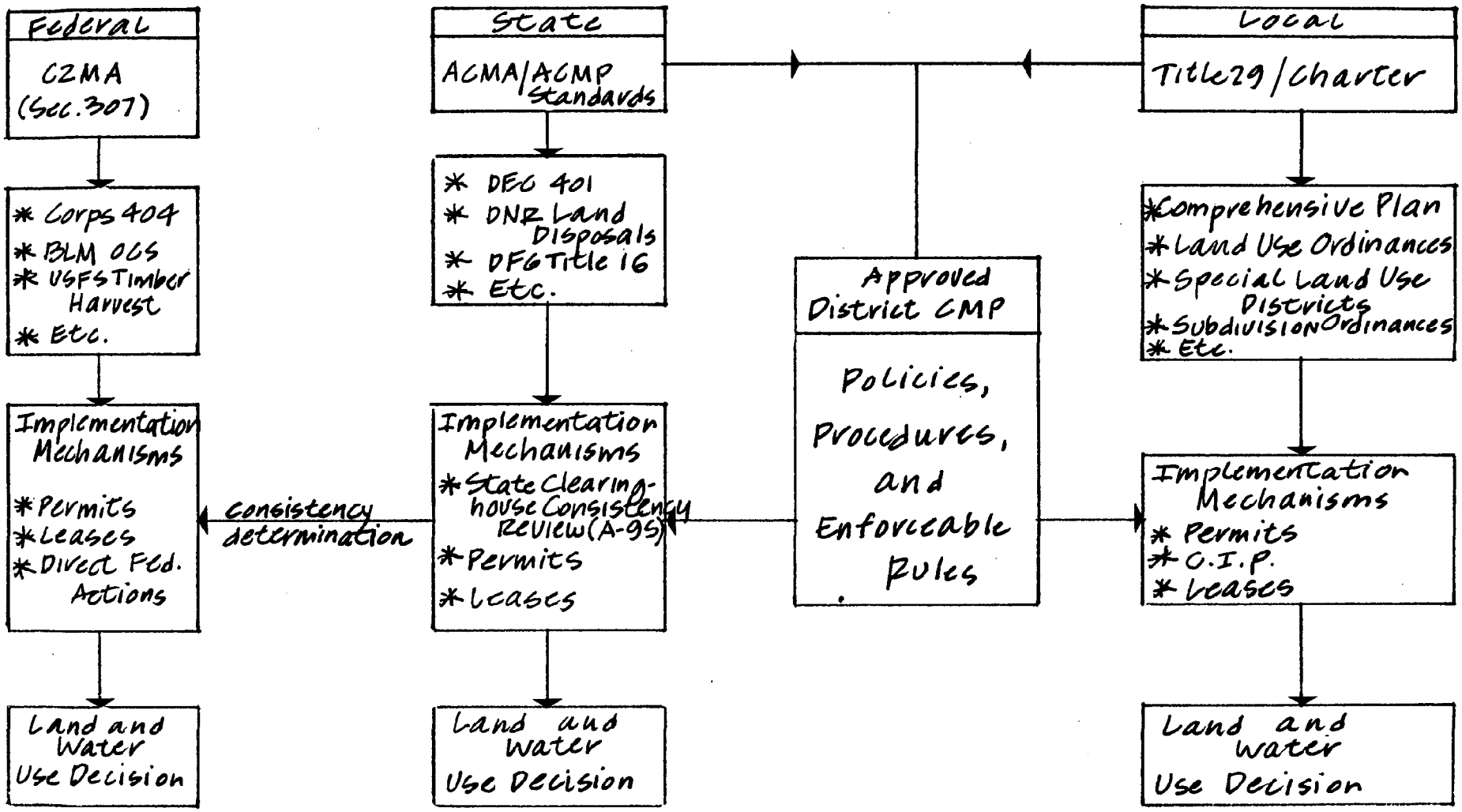


Figure 7-3

d. Regular examination of aerial photographs and other remote sensing information.

Enforcement actions are initiated when a person, organization or agency has violated the requirements of the District program ordinance or approval that included a consistency determination (including possible conditions) that are based on the District program. The first step in an enforcement action is an attempt by the District at informal resolution to the problem. This will serve in most cases to end the matter, since many people may not be aware of what the actual requirements of the District program are. If, however, informal means fail, one of three enforcement avenues shall be appropriate:

District Enforcement: The District has the power to enforce its own ordinances. If the violation of the District coastal management program occurs as part of a violation of a land use ordinance, subdivision ordinance, or local permit system, the District can gather the necessary information and the matter shall proceed in the same way enforcement of any violation of a local ordinance would.

State Enforcement: The District coastal management program is as much a part of State law as it is of local law. If the District determines that a violation of the coastal management program has occurred as part of a violation of a State permit condition, it can report the violation to the responsible State agency. The responsible state agency shall handle the matter in conjunction with the Alaska Department of Law.

Federal Enforcement: Same as State enforcement where a Federal regulatory permit process is involved.

Chapter 8
Recommendations

RECOMMENDATIONS

The following constitute key recommendations in the implementation of the MSBCMP. Implementation will enable the Borough to satisfy specific State coastal management requirements while achieving local goals and objectives. Realistically, it is expected that their implementation will take place over a period of time and on a piecemeal basis, based upon the timely availability of data and funding sources.

1. All Borough planning activities should be in conformance with the provisions of the MSBCMP and the ACMP, including but not limited to, the following:

   a. Public access, trails and recreational planning;
   b. Historic resources' planning; and
   c. Subsistence resources' planning.

2. The Planning Department should continue the development of the Draft Matanuska-Susitna Borough Trails Plan (1982) and adopt its recommendations as a Borough-wide trails plan.

3. The Planning Department should begin immediate development of a Borough-wide Comprehensive Historic Preservation Plan including the establishment of an Historic District within the Borough.

4. The Planning Department should begin immediate development of a comprehensive land management program to identify the use, disposition and development of Borough lands.

5. The communities of Skwentna and Tokosha should be individually designed as a Special Use District, through Borough Code Title 17, to protect and maintain the subsistence resources of these areas.

6. The District should designate, develop and adopt management plans for the six proposed Areas Meriting Special Attention.

7. Once Point MacKenzie has been designated as an Area Meriting Special Attention, the Planning Department should begin plans for development of an industrial port/park complex, including the recommendations from the on-going Knik Arm Crossing Study sponsored by the State Department of Transportation.

8. The Planning Department should conduct a feasibility study to determine viable applications of a geographic information system (G.I.S.) for the implementation of the MSBCMP and Borough Comprehensive Development Plan.

Appendices

PART 6.
ALASKA COASTAL POLICY COUNCIL

Chapter
80. Standards of the Alaska Coastal Management Program
85. Guidelines for District Coastal Management Programs

CHAPTER 80.
STANDARDS OF THE ALASKA COASTAL MANAGEMENT PROGRAM

Article
1. Government Process
2. Uses and Activities
3. Resources and Habitats
4. Areas Which Merit Special Attention
5. General Provisions

ARTICLE 1.
GOVERNMENT PROCESS

Section
10. Coverage of chapter
20. Public participation and information
30. Program management and coordination

6 AAC 80.010. COVERAGE OF CHAPTER. (a) This chapter contains standards for the use of and application by districts and state agencies in carrying out their responsibilities under the Alaska Coastal Management Act (AS 46.40, and AS 44.19.891 – 44.19.894).

(b) Nothing in this chapter or in any district program displaces or diminishes the authority of any state agency or local government with respect to resources in the coastal area. Uses and activities conducted by state agencies in the coastal area must be consistent with the applicable district program and the standards contained in this chapter. In authorizing uses or activities in the coastal area under its statutory authority, each state agency shall grant authorization if, in addition to finding that the use or activity complies with the agency's statutes and regulations, the agency finds that the use or activity is consistent with the applicable district program and the standards contained in this chapter.

(c) At a minimum, the council will review this chapter annually. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.020. PUBLIC PARTICIPATION AND INFORMATION. (a) The council will provide adequate, effective, and continuing opportunities for public participation from the beginning of the Alaska coastal management program. The council will give notice of when and where opportunities for public participation will be provided before adoption of guidelines and standards, review and approval of district programs and amendments to district programs, and amendments to the Alaska coastal management program.

(b) The council will not approve a district program or significant amendment of a district program unless evidence of significant opportunities for public participation at the district level has been provided.

(c) The council will make available to the public information and educational materials concerning coastal management, in understandable form, including

(1) a guide for the development of district programs;

(2) maps and narratives describing physical and biological characteristics to be used in establishing boundaries of coastal areas;

(3) areas recommended for council designation as areas which merit special attention;

(4) maps showing the distribution and abundance of coastal fish and wildlife species with commercial, recreational, subsistence, or general ecological importance;

(5) an identification of major data and information sources concerning coastal management;

(6) a summary of information regarding coastal regions;

(7) summaries of public hearings and workshops;

(8) films and slide programs;

(9) written material summarizing or explaining the Alaska coastal management program; and

(10) the council's annual report to the legislature.

(d) At public meetings concerning the Alaska coastal management program, the council will ensure that, when requested and reasonably necessary, translation into the appropriate Native language is provided. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.030. PROGRAM MANAGEMENT AND COORDINATION. (a) The Office of Coastal Management is the designated lead agency for the Alaska coastal management program. The Office of Coastal Management shall

(1) present the staff position regarding matters before the council;

(2) coordinate the activities of state agencies participating in the Alaska coastal management program; and

(3) review state and federal actions for consistency with the Alaska coastal management program, subject to council review.

(b) The council will initiate an interagency program of comprehensive resource management for each geographic region listed in AS 44.19.891(a)(1). Regional programs will

(1) assist the council and districts in identifying uses of state concern and developing management policies for these uses;

(2) provide resource, social, and economic information on a coordinated regional basis; and

(3) assist the council and districts in identifying, avoiding, or minimizing existing or potential conflicts.

(c) Plans and recommendations developed as part of the regional program described in (b) of this section must be transmitted to the district through the Office of Coastal Management. District planning efforts must demonstrate review and consideration of these plans and recommendations. If the final district program proposed does not agree with the regional program plans and recommendations, the differences will be resolved by the council.

(d) The council will prepare a manual of standards for the management of land and water uses in the coastal area to assist in the development of district and state agency programs. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

ARTICLE 2.
USES AND ACTIVITIES

Section

40. Coastal development
50. Geophysical hazard areas
60. Recreation
70. Energy facilities
80. Transportation and utilities
90. Fish and seafood processing
100. Timber harvest and processing
110. Mining and mineral processing
120. Subsistence

6 AAC 80.040. COASTAL DEVELOPMENT. (a) In planning for and approving development in coastal areas, districts and state agencies shall give, in the following order, priority to:

(1) water-dependent uses and activities;

(2) water-related uses and activities; and

(3) uses and activities which are neither water-dependent nor water-related for which there is no feasible and prudent inland alternative to meet the public need for the use or activity.

(b) The placement of structures and the discharge of dredged or fill material into coastal water must, at a minimum, comply with the standards contained in Parts 320-323, Title 33, **Code of Federal Regulations** (Vol. 42 of the **Federal Register**, pp. 37133 – 47 (July 19,

1977)). (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.050. GEOPHYSICAL HAZARD AREAS. (a) Districts and state agencies shall identify known geophysical hazard areas and areas of high development potential in which there is a substantial possibility that geophysical hazards may occur.

(b) Development in areas identified under (a) of this section may not be approved by the appropriate state or local authority until siting, design, and construction measures for minimizing property damage and protecting against loss of life have been provided. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.060. RECREATION. (a) Districts shall designate areas for recreational use. Criteria for designation of areas of recreational use are

(1) the area receives significant use by persons engaging in recreational pursuits or is a major tourist destination; or

(2) the area has potential for high quality recreational use because of physical, biological, or cultural features.

(b) Districts and state agencies shall give high priority to maintaining and, where appropriate, increasing public access to coastal water. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.070. ENERGY FACILITIES. (a) Sites suitable for the development of major energy facilities must be identified by the state in cooperation with districts.

(b) The siting and approval of major energy facilities by districts and state agencies must be based, to the extent feasible and prudent, on the following standards:

(1) site facilities so as to minimize adverse environmental and social effects while satisfying industrial requirements;

(2) site facilities so as to be compatible with existing and subsequent adjacent uses and projected community needs;

(3) consolidate facilities;

(4) consider the concurrent use of facilities for public or economic reasons;

(5) cooperate with landowners, developers, and federal agencies in the development of facilities;

(6) select sites with sufficient acreage to allow for reasonable expansion of facilities;

(7) site facilities where existing infrastructure, including roads, docks, and airstrips, is capable of satisfying industrial requirements;

(8) select harbors and shipping routes with least exposure to reefs, shoals, drift ice, and other obstructions;

(9) encourage the use of vessel traffic control and collision avoidance systems;

(10) select sites where development will require minimal site clearing, dredging and construction in productive habitats;

(11) site facilities so as to minimize the probability, along shipping routes, of spills or other forms of contamination which would affect fishing grounds, spawning grounds, and other biologically productive or vulnerable habitats, including marine mammal rookeries and hauling out grounds and waterfowl nesting areas;

(12) site facilities so that design and construction of those facilities and support infrastructures in coastal areas of Alaska will allow for the free passage and movement of fish and wildlife with due consideration for historic migratory patterns and so that areas of particular scenic, recreational, environmental, or cultural value will be protected;

(13) site facilities in areas of least biological productivity, diversity, and vulnerability and where effluents and spills can be controlled or contained;

(14) site facilities where winds and air currents disperse airborne emissions which cannot be captured before escape into the atmosphere;

(15) select sites in areas which are designated for industrial purposes and where industrial traffic is minimized through population centers; and

(16) select sites where vessel movements will not result in overcrowded harbors or interfere with fishing operations and equipment.

(c) Districts shall consider that the uses authorized by the issuance of state and federal leases for mineral and petroleum resource extraction are uses of state concern. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.080 TRANSPORTATION AND UTILITIES. (a) Transportation and utility routes and facilities in the coastal area must be sited, designed, and constructed so as to be compatible with district programs.

(b) Transportation and utility routes and facilities must be sited inland from beaches and shorelines unless the route or facility is water-dependent or no feasible and prudent inland alternative exists to meet the public need for the route or facility. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.090. FISH AND SEAFOOD PROCESSING. Districts shall identify and may designate areas of the coast suitable for the location or development of facilities related to commercial fishing and seafood processing. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.100. TIMBER HARVEST AND PROCESSING. (a) Commercial timber harvest activities in the coastal area must be conducted so as to meet the following standards:

(1) the location of facilities and the layout of logging systems must be sited so as to minimize adverse environmental impacts;

(2) free passage and movement of fish in coastal water must be assured and

(3) timber harvest and timber management activities must be planned so as to protect streambanks and shorelines, minimize adverse impacts on fish resources and habitats, and minimize adverse impacts on wildlife resources and habitats.

(b) Commercial timber transport, storage, and processing in the coastal area must be conducted so as to meet the following standards:

(1) onshore storage of logs must be encouraged where compatible with the objectives of the Alaska Coastal Management Program;

(2) sites for in-water dumping and storage of logs must be selected and these activities conducted so as to minimize adverse effects on the marine ecosystem, minimize conflicts with recreational uses and activities, be safe from storms, and not constitute a hazard to navigation;

(3) roads for log transport and harvest area access must be planned, designed, and constructed so as to minimize mass wasting, erosion, sedimentation, and interference with drainage, and must be adequately maintained until they are returned to their pre-road natural drainage patterns (put-to-bed); and

(4) stream crossings, including bridges and culverts, must be kept to a minimum number, designed to withstand seasonal high water and flooding, and must provide for free passage and movement of fish. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.110. MINING AND MINERAL PROCESSING. (a) Mining and mineral processing in the coastal area must be regulated, designed, and conducted so as to be compatible with the standards contained in this chapter, adjacent uses and activities, statewide and national needs, and district programs.

(b) Sand and gravel may be extracted from coastal waters, intertidal areas, barrier islands,

and spits, when there is no feasible and prudent alternative to coastal extraction which will meet the public need for the sand or gravel. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.120. SUBSISTENCE. (a) Districts and state agencies shall recognize and assure opportunities for subsistence usage of coastal areas and resources.

(b) Districts shall identify areas in which subsistence is the dominant use of coastal resources.

(c) Districts may, after consultation with appropriate state agencies, Native corporations, and any other persons or groups, designate areas identified under (b) of this section as subsistence zones in which subsistence uses and activities have priority over all nonsubsistence uses and activities.

(d) Before a potentially conflicting use or activity may be authorized within areas designated under (c) of this section, a study of the possible adverse impacts of the proposed potentially conflicting use or activity upon subsistence usage must be conducted and appropriate safeguards to assure subsistence usage must be provided.

(e) Districts sharing migratory fish and game resources must submit compatible plans for habitat management. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

ARTICLE 3.
RESOURCES AND HABITATS

Section
130. Habitats
140. Air, land, and water quality
150. Historic, prehistoric, and archaeological resources

6 AAC 80.130. HABITATS. (a) Habitats in the coastal area which are subject to the Alaska coastal management program include

(1) offshore areas;

(2) estuaries;

(3) wetlands and tideflats;

(4) rocky islands and seacliffs;

(5) barrier islands and lagoons;

(6) exposed high energy coasts;

(7) rivers, streams, and lakes; and

(8) important upland habitat.

(b) The habitats contained in (a) of this section must be managed so as to maintain or enhance the biological, physical, and chemical characteristics of the habitat which contribute to its capacity to support living resources.

(c) In addition to the standard contained in (b) of this section, the following standards apply to the management of the following habitats:

(1) offshore areas must be managed as a fisheries conservation zone so as to maintain or enhance the state's sport, commercial, and subsistence fishery;

(2) estuaries must be managed so as to assure adequate water flow, natural circulation patterns, nutrients, and oxygen levels, and avoid the discharge of toxic wastes, silt, and destruction of productive habitat;

(3) wetlands and tideflats must be managed so as to assure adequate water flow, nutrients, and oxygen levels and avoid adverse effects on natural drainage patterns, the destruction of important habitat, and the discharge of toxic substances;

(4) rocky islands and seacliffs must be managed so as to avoid the harassment of wildlife, destruction of important habitat, and the introduction of competing or destructive species and predators;

(5) barrier islands and lagoons must be managed so as to maintain adequate flows of sediments, detritus, and water, avoid the alteration or redirection of wave energy which would lead to the filling in of lagoons or the erosion of barrier islands, and discourage

activities which would decrease the use of barrier islands by coastal species, including polar bears and nesting birds;

(6) high energy coasts must be managed by assuring the adequate mix and transport of sediments and nutrients and avoiding redirection of transport processes and wave energy; and

(7) rivers, streams, and lakes must be managed to protect natural vegetation, water quality, important fish or wildlife habitat and natural water flow.

(d) Uses and activities in the coastal area which will not conform to the standards contained in (b) and (c) of this section may be allowed by the district or appropriate state agency if the following are established:

(1) there is a significant public need for the proposed use or activity;

(2) there is no feasible prudent alternative to meet the public need for the proposed use or activity which would conform to the standards contained in (b) and (c) of this section; and

(3) all feasible and prudent steps to maximize conformance with the standards contained in (b) and (c) of this section will be taken.

(e) In applying this section, districts and state agencies may use appropriate expertise, including regional programs referred to in sec. 30(b) of this chapter. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.140. AIR, LAND, AND WATER QUALITY. Notwithstanding any other provision of this chapter, the statutes pertaining to and the regulations and procedures of the Alaska Department of Environmental Conservation with respect to the protection of air, land, and water quality are incorporated into the Alaska coastal management program and, as administered by that agency, constitute the components of the coastal management program with respect to those purposes. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 80.150. HISTORIC, PREHISTORIC, AND ARCHAEOLOGICAL RESOURCES. Districts and appropriate state agencies shall identify areas of the coast which are important to the study, understanding, or illustration of national, state, or local history or prehistory. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.040

ARTICLE 4.
AREAS WHICH MERIT SPECIAL ATTENTION

Section
160. Areas which merit special attention

6 AAC 80.160. AREAS WHICH MERIT SPECIAL ATTENTION. (a) Any person may recommend to a district or to the council areas to be designated as areas which merit special attention. Districts shall designate in district programs areas which merit special attention. Areas which are not in districts and which merit special attention shall be designated by the council with the concurrence of appropriate state agencies, municipalities, and villages affected by the designation. Designations must include the following information:

(1) the basis or bases for designation under AS 46.40.210(1) or (b) of this section;

(2) a map showing the geographical location, surface area and, where appropriate, bathymetry of the area;

(3) a description of the area which includes dominant physical and biological features;

(4) the existing ownership, jurisdiction, and management status of the area, including existing uses and activities;

(5) the existing ownership, jurisdiction, and management status of adjacent shoreland and sea areas, including existing uses and activities;

(6) present and anticipated conflicts among uses and activities within or adjacent to the area, if any; and

(7) a proposed management scheme, consisting of the following:

(A) a description of the uses and activities which will be considered proper and the uses and activities which will be considered improper with respect to land and water within the area;

(B) a summary or statement of the policies which will be applied in managing the area; and

(C) an identification of the authority which will be used to implement the proposed management scheme.

(b) In addition to the categories contained in AS 46.40.210(1), areas which merit special attention may include the following:

(1) areas important for subsistence hunting, fishing, food gathering, and foraging;

(2) areas with special scientific values or opportunities, including those where ongoing research projects could be jeopardized by development or conflicting uses and activities; and

(3) potential estuarine or marine sanctuaries.

(c) Management schemes for areas which merit special attention must preserve, protect, enhance, or restore the value or values for which the area was designated.

(d) As used in this section, "areas which merit special attention" has the same meaning as in AS 46.40.210(1). (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

ARTICLE 5.
GENERAL PROVISIONS

Section
900. Definitions

6 AAC 80.900. DEFINITIONS. Unless the context indicates otherwise, in this chapter

(1) "barrier islands and lagoons" means depositional coastal environments formed by deposits of sediment offshore or coastal remnants which form a barrier of low-lying islands and bars protecting a salt-water lagoon with free exchange of water to the sea;

(2) "coastal water" means all water bodies in the coastal area, including wetlands and the intertidal area;

(3) "council" means the Alaska Coastal Policy Council;

(4) "district" means a coastal resource district as defined in AS 46.40.210(2);

(5) "district program" means a district coastal management program;

(6) "estuary" means a semiclosed coastal body of water which has a free connection with the sea and within which seawater is measurably diluted with freshwater derived from land drainage;

(7) "exposed high-energy coasts" means open and unprotected sections of coastline with exposure to ocean generated wave impacts and usually characterized by coarse sand, gravel, boulder beaches, and well-mixed coastal water;

(8) "facilities related to commercial fishing and seafood processing" includes hatcheries and related facilities, seafood processing plants and support facilities, marine industrial and commercial facilities, and aquaculture facilities;

(9) "geophysical hazard areas" means those areas which present a threat to life or property from geophysical or geological hazards, including flooding, tsunami run-up, storm surge run-up, landslides, snowslides, faults, ice hazards, erosion, and littoral beach process;

(10) "mining and mineral processing" means the development of mineral resources extracted in tidal rivers, coastal water, and on continental shelves of the open sea, and found in surface, subsurface, and aqueous deposits;

(11) "offshore areas" means submerged lands and waters seaward of the coastline;

(12) "rocky islands and seacliffs" means islands of volcanic or tectonic origin with rocky shores and steep faces, offshore rocks, capes, and steep rocky seafronts;

(13) "tideflats" means mostly unvegetated areas that are alternately exposed and inundated by the falling and rising of the tide;

(14) "transportation and utility routes and facilities" include power transmission lines, mineral slurry lines, oil and gas pipelines, land and marine corridors, railways, highways, roadways, air terminals, water and sewage transfer, and facilities required to operate and maintain the route or facility;

(15) "upland" means drainages, aquifers, and land, the use of which would have a direct and significant impact on coastal water;

(16) "uses of state concern" has the same meaning as in AS 46.40.210(6);

(17) "water-dependent" means a use or activity which can be carried out only on, in, or adjacent to water areas because the use requires access to the water body;

(18) "water-related" means a use or activity which is not directly dependent upon access to a water body, but which provides goods or services that are directly associated with water-dependence and which, if not located adjacent to water, would result in a public loss of quality in the goods or services offered;

(19) "wetlands" includes both freshwater and saltwater wetlands; "freshwater wetlands" means those environments characterized by rooted vegetation which is partially submerged either continuously or periodically by surface freshwater with less than .5 parts per thousand salt content and not exceeding three meters in depth; "saltwater wetlands" means those coastal areas along sheltered shorelines characterized by halophytic hydrophytes and macroalgae extending from extreme low tide to an area above extreme high tide which is influenced by sea spray or tidally induced water table changes;

(20) "feasible and prudent" means consistent with sound engineering practice and not causing environmental, social, or economic problems that outweigh the public benefit to be derived from compliance with the standard which is modified by the term "feasible and prudent";

(21) "including" means including but not limited to;

(22) "major energy facility" includes marine service bases and storage depots, pipelines and rights-of-way, drilling rigs and platforms, petroleum or coal separation, treatment, or storage facilities, liquid natural gas plants and terminals, oil terminals and other port development for the transfer of energy products, petrochemical plants, refineries and associated facilities, hydroelectric projects, other electric generating plants, transmission lines, uranium enrichment or nuclear fuel processing facilities, and geothermal facilities; "major energy facility" means a development of more than local concern carried out in, or in close proximity to, the coastal area, which meets one or more of the following criteria:

(A) a facility required to support energy operations for exploration or production purposes;

(B) a facility used to produce, convert, process, or store energy resources or marketable products;

(C) a facility used to transfer, transport, import, or export energy resources or marketable products;

(D) a facility used for in-state energy use; or

(E) a facility used primarily for the manufacture, production, or assembly of equipment, machinery, products, or devices which are involved in any activity described in (A)–(D) of this paragraph. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

Chapter 85. GUIDELINES FOR DISTRICT COASTAL MANAGEMENT PROGRAMS

Article

1. Program Elements (6 AAC 85.010–6 AAC 85.110)
2. Government Process (6AAC 85.120–6 AAC 85.150)
3. General Provisions (6 AAC 85.900)

ARTICLE 1. PROGRAM ELEMENTS

Section

10. Coverage of chapter
20. Needs, objectives, and goals
30. Organization
40. Boundaries
50. Resource inventory
60. Resource analysis
70. Subject uses
80. Proper and improper uses
90. Policies
100. Implementation
110. Public participation

6 AAC 85.010. COVERAGE OF CHAPTER. (a) This chapter contains guidelines for the use of and application by districts in carrying out their responsibilities under the Alaska Coastal Management Act (AS 46.40 and AS 44.19.891 – 44.19.894).

(b) At a minimum, the council will review this chapter annually. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.020. NEEDS, OBJECTIVES, AND GOALS. Each district program must include a statement of the district's overall coastal management needs, objectives, or goals, or the district's comprehensive land and resource use plan. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.030. ORGANIZATION. Each district program must include a description of the district program organization for coastal management. Budgetary and staff needs and, where appropriate, a schedule for necessary reorganization must be included. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.040. BOUNDARIES. (a) Each district must include a map of the boundaries of the coastal area within the district subject to the district program. Boundaries must enclose those lands which would reasonably be included in the coastal area and subject to the district program if they were not subject to the exclusive jurisdiction of the federal government.

(b) Before council approval of the district program, initial boundaries must be based on *Biophysical Boundaries of Alaska's Coastal Zone* (published by the Office of Coastal Management and the Alaska Department of Fish and Game, 1978, a copy of which is on file with the Office of the Lieutenant Governor, and which is available from the Office of Coastal Management) and must include the zone of direct interaction and the zone of direct influence.

(c) Final boundaries of the coastal area subject to the district program may diverge from the initial boundaries if the final boundaries

(1) extend inland and seaward to the extent necessary to manage uses and activities that have or are likely to have a direct and significant impact on marine coastal water; and

(2) include all transitional and intertidal areas, salt marshes, saltwater wetlands, islands, and beaches.

(d) If the criteria in (c) of this section are met, final boundaries of the coastal area subject to the district program may be based on political jurisdiction, cultural features, planning areas, watersheds, topographic features, uniform setbacks, or the dependency of uses and activities on water access.

(e) The boundaries of the district must be sufficiently compatible with those of adjoining areas to allow consistent administration of the Alaska coastal management program. (Eff.

7/18/78, Reg. 67; am 8/18/79, Reg. 71)
Authority: AS 44.19.893
AS 46.40.040

6 AAC 85.050. RESOURCE INVENTORY. Each district program must include a resource inventory which describes, in a manner sufficient for program development and implementation

(1) habitats listed in 6 AAC 80.130 that are found within or adjacent to the district;

(2) major cultural resources that are found within or adjacent to the district;

(3) major land and water uses and activities which are conducted within or adjacent to the district;

(4) major land and resource ownership and management responsibilities within or adjacent to the district; and

(5) major historic, prehistoric, and archaeological resources which are found within or adjacent to the district. (Eff. 7/18/78, Reg. 67)
Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.060. RESOURCE ANALYSIS. Each district program must include a resource analysis which describes, in a manner sufficient for program development and implementation

(1) significant anticipated changes in the matters identified under sec. 50 of this chapter;

(2) an evaluation of the environmental capability and sensitivity of resources and habitats, including cultural resources, for land and water uses and activities; and

(3) an assessment of the present and anticipated needs and demands for coastal habitats and resources. (Eff. 7/18/78, Reg. 67)
Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.070. SUBJECT USES. Each district program must include a description of the land and water uses and activities which are subject to the district program. The uses and activities mentioned in ch. 80 of this title are, if applicable, subject to the district program. (Eff. 7/18/78, Reg. 67)
Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.080. PROPER AND IMPROPER USES. Each district program must include a description of the uses and activities, including uses of state concern, that will be considered proper, and the uses and activities, including uses of state concern, that will be considered improper within the coastal area, including land and water use designations. This description must be based on the district's statement of overall needs, objectives, or goals, or the district's comprehensive land and resource use plan, under sec. 20 of this chapter, and must be consistent with the standards contained in ch. 80 of this title. (Eff. 7/18/78, Reg. 67)
Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.090. POLICIES. Each district program must include a summary or statement of the policies that will be applied to land and water uses and activities subject to the district program and the process which will be used to determine whether specific proposals for land and water uses and activities will be allowed. It shall be the general policy of the district to approve specific proposals for uses and activities within areas designated for those uses and activities under sec. 80 of this chapter. Districts shall use existing means appropriate for the evaluation of specific proposals to the greatest extent feasible and prudent. Policies and procedures under this section must be consistent with the standards contained in ch. 80 of this title and must meet the following criteria:

(1) comprehensiveness, so as to apply to all uses, activities and areas in need of management;

(2) specificity, so as to allow clear understanding of who will be affected by the district program, how they will be affected, and whether specific proposals for land and water uses and activities will be allowed; and

(3) enforceability, so as to insure implementation of and adherence to the district program. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.100. IMPLEMENTATION. Each district program must include a description of the methods and authority which will be used to implement the district program. Methods and authority must be adequate to insure program implementation, and any additional methods or authority which are required must be specified. Methods and authority include land and water use plans, municipal ordinances and resolutions, (including shoreline, zoning, and subdivision ordinances and building codes), state and federal statutes and regulations, capital improvement programs, the purchase, sale, lease, or exchange of coastal land and water resources, cooperative agreements, tax exemptions for nondevelopment purchase of development rights, memoranda of understanding, and coordinated project or permit review procedures. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.110. PUBLIC PARTICIPATION. Each district program must include evidence of effective and significant opportunities for public participation in program development under sec. 130 of this chapter. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030

ARTICLE 2.
GOVERNMENT PROCESS

Section
120. Submittals to council
130. Public involvement
140. Coordination and review
150. Council review

6 AAC 85.120. SUBMITTALS TO COUNCIL. (a) During program development, districts shall submit brief annual progress reports concerning program development to the council.

(b) Following adoption of the final program, districts shall submit brief annual progress reports concerning program implementation to the council.

(c) All significant amendments to the district program must be submitted to the council for approval. The Office of Coastal Management shall review proposed amendments to determine if council approval is required. This determination is subject to council review when requested by a council member.

(d) Districts shall give conceptual approval to district programs and significant amendments to district programs before their submission to the council. The district program as approved by the council becomes effective upon adoption by the district. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.130. PUBLIC INVOLVEMENT. (a) No less than two public meetings must be held within the district during program development to inform the public and receive comments concerning the program. A brief summary or report of the matters considered at the public meeting held under this subsection must be prepared by the district, made available to the public, and retained for inclusion in the record file referred to in sec. 150(c) of this chapter.

(b) At least 60 days before giving conceptual approval to the district program or significant amendment to the district program, the district shall give written notice to the council and any person who has requested such notice in writing, as well as public notice of the proposed action by conspicuous advertisement in a newspaper of general circulation within the district. In addition, notice must be given by radio and by posting in villages and municipalities within the district. The notice must specify the time and place of a public hearing on the proposed action and the availability for review of the proposed district program document or significant amendment to the district program. The public hearing under this subsection may be held not sooner than 30 days after notice is given. At the public hearing, each person must be given the opportunity to present statements, arguments, or contentions, orally or in writing. Districts shall insure that, where appropriate, translation into the appropriate Native language(s) is

provided. The district shall consider all relevant matter presented to it. A written transcript or electronic recording of the public hearing must be submitted to the council.

(c) In addition to the requirements of (b) of this section, districts shall provide publicly advertised opportunities for public involvement in the development of all program elements contained in secs. 20–110 of this chapter.

(d) Districts shall provide the public, in a timely manner and in understandable form, information explaining the district coastal management program, the requirements of public participation in program development, how and when the public may participate in program development, what information is available, and where that information may be obtained. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

6 AAC 85.140. COORDINATION AND REVIEW. Districts shall provide opportunities for coordination and review by federal, state, and local governmental agencies, including adjacent districts, and other persons with a significant interest in coastal resources or who are conducting or may conduct uses and activities that have or are likely to have a direct and significant impact on the district's coastal area. (Eff. 7/18/78, Reg. 67)

Authority: AS 44.19.893
AS 46.40.030
AS 46.40.040

6 AAC 85.150. COUNCIL REVIEW. (a) When a district program or significant amendment to a district program is given conceptual approval by the district, the program or amendment, together with the transcript or recording of the public hearing held under sec. 130(b) of this chapter and all other material on which the district based its decision, must be submitted to the council.

(b) Within 30 days after submission of the district program or amendment under (a) of this section, the Office of Coastal Management shall issue its recommendation. The recommendation may be based, in whole or in part, on matters not submitted by the district under (a) of this section. Any matters so used must be identified in the recommendation and placed in the record file under (c) of this section. The recommendation must contain findings and conclusions based on this chapter, the standards contained in ch. 80 of this title, AS 46.40.060, and AS 46.40.070. The recommendation must be served on the district, the council, all persons who testified or submitted timely written statements at the public hearing held under sec. 130(b) of this chapter, and all persons who have requested the recommendation in writing. Broad public notice of the recommendation must be given.

(c) A record file containing all matter submitted by the district under (a) of this section, the Office of Coastal Management's recommendation under (b) of this section, and all matters on which the recommendation was based must be maintained at the Office of Coastal Management and at a convenient location within the district.

(d) Within 30 days after service of the recommendation, any person served with the recommendation may serve on the council comments on the recommendation. Within 30 days after public notice of the recommendation, any other person may serve on the council comments on the recommendation. Within 10 days after the deadline for serving comments on the council under this subsection, the Office of Coastal Management may submit additional matter to the council in response to the comments. All comments served and all additional matter submitted under this subsection will be placed in the record file. The Office of Coastal Management shall respond to all comments within 30 days of receipt.

(e) Within 20 days after the deadline for the Office of Coastal Management's submission of additional matter to the council under (d) of this section, the council will approve or disapprove the district program, in whole or in part. The council's decision will contain findings and conclusions based on this chapter, the standards contained in ch. 80 of this title, AS 46.40.060, and AS 46.40.070. The council's findings and conclusions will be based upon matters contained in the record file. The council will, in its discretion, adopt the findings and conclusions of the Office of Coastal

Management by reference. The council will serve its decision under this subsection on the district and on all persons who submitted timely comments on the staff recommendation under (d) of this section, and will place the decision in the record file.

(f) If the council's decision under (e) of this section disapproves, in whole or in part, the district program, the decision will specify the date and location for the initial mediation session under AS 46.40.060(b). Mediation sessions will be held with due regard for the convenience of the participants. Any person may attend mediation sessions.

(g) If the council and district reach accord in mediation sessions held under (f) of this section, the council will, within 20 days after reaching accord, serve its modified decision on the district and all persons who were served with the council's decision under (e) of this section, and will place the modified decision in the record file. The modified decision will contain findings and conclusions, based on the record file and additional matters adduced during mediation, necessary to demonstrate that the modified decision does not violate this chapter, the standards contained in ch. 80 of this title, AS 46.40.060, or AS 46.40.070.

(h) If the council and the district do not reach an accord, the council will, within 20 days after its determination that an impasse has been reached, set the matter for an adjudicatory hearing under AS 46.40.060(c). Notice of the hearing under AS 44.62.370(c) will be served on the district and all persons who were served with the council's decision under (e) of this section. Any person served with notice of the hearing under this subsection may intervene as a party to the hearing. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg. 71)

Authority: AS 44.19.893
AS 46.40.040

On two occasions within the last six months, the Alaska Coastal Policy Council has adopted revisions to 6 AAC 85.150. The first adopted revisions effecting sections (a), (b), and (d) were submitted to the Department of Law for their review on September 12, 1980. The second adopted revisions effecting sections (f) and (h) will be submitted to the Department of Law the week of October 13, 1980. Upon completion of the Department of Law's review, the revised regulations will be filed with the Lieutenant Governor and will take effect 30 days thereafter. The following is 6 AAC 85.150 incorporating all above regulation revisions:

6 AAC 85. 150. COUNCIL REVIEW. (a) When a district program or significant amendment to a district program is given conceptual approval by the district, the district shall prepare proposed findings and conclusions based upon this chapter, the standards contained in ch. 80 of this title, AS 46.40.030, AS 46.40.060 and AS 46.40.070. The district's proposed findings and conclusions, along with a copy of the conceptually approved program, shall be submitted to the Office of Coastal Management, on a form to be provided by it, at least 30 days prior to submittal of the program or significant amendment to the council for its review. The proposed findings and conclusions and a copy of the conceptually approved program, will be served on any person who testified or submitted timely written statements at the public hearing held under section 130(b) of this chapter and to any other person upon request by that person to the Office of Coastal Management. The Office of Coastal Management shall prepare its recommendation, which must include findings of fact and conclusions based upon the authorities cited in this section, and submit its recommendations to the council as provided for under (b) of this section. The recommendation may be based, in whole or in part, on matters not submitted by the district under (a) of this section. Any matters so used must be identified in the recommendation and placed in the record file under (c) of this section. The district is responsible for submitting a sufficient number of copies of the district program or significant amendment to the Office of Coastal Management for distribution to persons enumerated in (b) of this section. The district must simultaneously submit the transcript or recording of the public hearing held under sec. 130(b) of this chapter and all other materials on which the district based its decision.

(b) Upon submission of the district program or significant amendment under (a) of this section, the Office of Coastal Management shall serve on the district, the council, and all persons who testified or submitted timely written statements at the public hearing held under sec. 130(b) of this chapter a copy of its recommendation.

(c) A record file containing all matter submitted by the district under (a) of this section, the Office of Coastal Management's recommendation under (b) of this section, and all matters on which the recommendation was based must be maintained at the Office of Coastal Management and at a convenient location within the district.

(d) Within 45 days after service of the recommendation, any person served with the recommendation may serve upon the council comments on the recommendation. Comments which are not timely filed will not be considered. Within 25 days after the deadline for serving comments on the council under this subsection, the Office of Coastal Management shall submit additional matter to the council in response to the comments. All comments served and all additional matter submitted under this subsection will be placed in the record file. Within the time provided for in this subsection the council may hold public hearings on the program or significant amendment.

(e) Within 20 days after the deadline for the Office of Coastal Management's submission of additional matter to the council under (d) of this section, the council will approve or disapprove the district program, in whole or in part. The council's decision will contain findings and conclusions based on this chapter, the standards contained in ch. 80 of this title, AS 46.40.060 and AS 46.40.070. The council's findings and conclusions will be based upon matters contained in the record file. The council will, in its discretion, adopt the findings and conclusions of the Office of Coastal Management by reference. The council will serve its decision under this subsection on the district and on all persons who submitted timely comments on the staff recommendation under (d) of this section, and will place the decision in the record file.

(f) If the council's decision under (e) of this section disapproves, in whole or in part, the district program, the unapproved portion must be sumitted to mediation as requred by AS 46.40.060(b). Mediation sessions will be conducted as follows:

(1) The parties to the mediation will be the council and the district. The parties shall within 10 days from the date of the council's decision under (e) of this section agree upon the selection of a mediator. If the parties cannot agree, they shall immediately cause a letter to be sent to the Federal Mediation and Conciliation Service asking it to appoint a mediator. If that mediator is unacceptable to either party, that party shall request the Federal Mediation and Conciliation Service to submit to the parties the names of three qualified mediators. Upon receipt of these names, each party shall strike one name from the list and the remaining name will be the mediator. Any mediator shall perform his or her duties in a manner which comports with the standards of conduct set out in the Code of Professional Conduct for Labor Mediators, 9 C.F.R. 1400 735-20, effective April 13, 1968, incorporated by reference in this paragraph. *

(2) Before the commencement of mediation, the council may call for one or more public hearings in the district concerned for the purpose of discussing those portions of the program subject to mediation. Public hearings must be preceded by 30 days notice. If public hearings are held, districts shall insure that, where reasonably requested, translation, into the appropriate Native language is provided.

(3) All public hearings must be electronically recorded. Oral or written testimony may be submitted, except that unduly repetitious testimony may be excluded. The oral testimony and written submissions constitute the hearing record, which must be transmitted to the mediator.

(4) Mediation sessions must be held within the district. The mediator shall schedule the sessions with due regard for the convenience of the parties upon at least seven days notice, except that the parties may, by mutual consent, waive the notice period. The parties shall mutually agree upon the place of the meeting.

(5) The mediator shall schedule the first mediation session to be held as soon as possible after he or she has been selected. At the initial session, the mediator shall establish reasonable rules of procedure. Mediation sessions must be conducted in a manner so that the parties will have the assurance and confidence that information disclosed to the mediator will remain confidential. The mediator shall determine the length and frequency of mediation sessions; however, if an accord is not reached within 60 days from

the initial session, an impasse will be declared by the mediator. By mutual consent of the parties and the mediator, this deadline may be extended for a period not to exceed an additional 30 days.

(6) If the mediator determines that an impasse has been reached, he or she shall notify the parties in writing within 10 days after the determination is made.

(7) If the mediator determines that an accord has been reached, he or she shall direct the parties to set out in writing the terms of the agreement. This agreement, to be signed by the parties, signifies the final settlement of outstanding disputes, subject to ratification at a public meeting by the official bodies of each party, and may be set aside only for fraud, misconduct, or gross mistake. With the approval of the parties, mediation may be used to resolve any differences which may arise as the result of such public meetings.

(h) If the council and the district do not reach an accord, the council will, within 20 days after a determination that an impasse has been reached, set the matter for an adjudicatory hearing under AS 46.40.060(c). Notice of the hearing under AS 44.62.370(c) will be served on the district and all persons who were served with the council's decision under (e) of this section. Any person served with notice of the hearing under this subsection may intervene as a party to the hearing. (eff. 7/18/78), Reg. 67; am / / , Reg.)

*The code of Professional Conduct for Labor Mediators is published at 31 Fed. Reg. 5423 (April 6, 1966).

Authority: AS 44.19.892
AS 46.19.893
AS 46.40.030
AS 46.40.040
AS 46.40.060

ARTICLE 3.
GENERAL PROVISIONS

Section
900. Definitions

6 AAC 85.900. DEFINITIONS. Unless the context indicates otherwise, in this chapter

(1) "beaches" means the area affected by wave action directly from the sea;

(2) "marine coastal water" means water adjacent to shorelines which contains a measurable quantity of seawater, including sounds, bays, lagoons, bayous, ponds and estuaries, and the living resources which are dependent on these bodies of water;

(3) "council" means the Alaska Coastal Policy Council;

(4) "district" means a coastal resource district as defined in AS 46.40.210(2);

(5) "district program" means a district coastal management program;

(6) "islands" means bodies of land surrounded by water on all sides; interior portions of major islands may be excluded from the coastal area if uses of these islands do not cause direct and significant impacts on coastal waters;

(7) "saltwater wetlands" has the same meaning as that contained in 6 AAC 80.900(19);

(8) "transitional and intertidal areas" means areas subject to periodic or occasional inundation by tides, including coastal floodplains, storm surge areas, tsunami and hurricane zones, and washover channels;

(9) "feasible and prudent" has the same meaning as in 6 AAC 80.900; and

(10) "including" has the same meaning as in 6 AAC 80.900. (Eff. 7/18/78, Reg. 67; am 8/18/79, Reg.71)

Authority: AS 44.19.893
AS 46.40.040

APPENDIX B: PUBLIC PARTICIPATION SUMMARY

The Matanuska-Susitna Borough Planning Department's approach to citizen participation encompassed public involvement with the coordination of major program elements. The creation of the Citizen/Agency Joint Forum, brought together the broad public policy interests of the community and the operational concerns of local, State, and Federal agencies with coastal management program responsibilities. The Citizen/Agency Joint Forum encouraged public participation, understanding, and feedback through workshops and public hearings, discussion, technical review, evaluation and coordination of program elements.

The Citizen/Agency Joint Forum carried out four important functions during coastal management program development. These include the following:

- The forum reviewed and evaluated previous Borough policies, goals, and objectives as a means of assembling a statement of current issues, goals, and objectives that reflect the concerns of Borough residents and governmental agencies regarding coastal development.

- The forum looked at participation functions as an educational process through promoting an understanding of the characteristics, values and roles of the coastal area. This process allowed Borough residents to view the coastal management program as a means of managing activities within the coastal area to meet the public good through the encouragement of sound development procedures, protection of environmental quality and maximizing development potentials for the community's economic well-being.

- The forum educated the consultant study team during the review process. Local familiarity with data and perceptions of the forum assisted the consultants to initially address public and agency concerns.

- The forum facilitated the administration of the Borough Coastal Management Program through participation in its development.

Sixteen Citizen/Agency Joint Forum meetings and workshops were held during the development of the Borough Coastal Management Program. A public hearing was also held during this development phase. These workshops and meetings took place between February 1981 and January 1982. Many of these meetings were jointly held with members of the Matanuska-Susitna Borough Planning Commission, staff members of the U.S. Army Corps of Engineers, Department of Natural Resources, Department of Community and Regional Affairs, the Borough Planning Department and others. This appendix contains summaries of the sixteen Citizen/Agency Joint Forum meetings and workshops. Cassette tapes of Forum discussions and actions are available from the Matanuska-Susitna Borough Planning Department.

SUMMARY

ORGANIZATIONAL MEETING

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

WEDNESDAY, FEBRUARY 4, 1981

This was the initial meeting of the Mat-Su Borough Citizen/Agency Joint Forum. The Maynard and Partch consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Department was represented by Rodney Schulling and Rick Feller. There were eight members of the Citizen/Agency Joint Forum in attendance.

The meeting consisted of an audio-visual presentation on coastal management in the Mat-Su Borough given by the Maynard and Partch consultant team. A brief question and answer period followed the presentation. The four main topics covered during the presentation were:

- Citizen/Agency Joint Forum Organization and Activities.
- Development of the Mat-Su Borough Coastal Management Program.
- Mat-Su Borough Goals and Objectives.
- Mat-Su Borough Coastal Boundaries and Definitions.

SUMMARY

WORKSHOP ON COASTAL NEEDS, GOALS, AND OBJECTIVES

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

WEDNESDAY, MARCH 4, 1981

This was the second meeting of the Mat-Su Borough Citizen/Agency Joint Forum. The Maynard and Partch/Woodward-Clyde consultant team was represented by Stuart Denslow, Michael McGuiness and John Isaacs. The Mat-Su Borough Planning Department was represented by Rodney Schulling and Rick Feller. Forum members in attendance were Jim Bird, Jack Corey, Bud Goodyear, Mitch Henning, James Herman, Barbara Lacher, Al Larson, Bob Lundell, Elsie O'Bryan, and Guy Woodings.

Bud Goodyear and Jim Bird were nominated and appointed as co-chairpersons of the Citizen/Agency Joint Forum.

The intent of the workshop session was to establish a dialogue between Forum members on coastal management issues, needs, goals, and objectives. Topics highlighted during the workshop session included:

- Mat-Su Borough coastal boundaries.
- Review of coastal issues in the Mat-Su Borough.
- Coastal management goals and objectives.

SUMMARY

WORKSHOP ON COASTAL ISSUES, GOALS, AND OBJECTIVES

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

THURSDAY, APRIL 2, 1981

This was the third meeting of the Citizen/Agency Joint Forum with the Maynard and Partch/Woodward-Clyde consultant team. The consultant team was represented by Stuart Denslow, Michael McGuiness and John Issacs. The Mat-Su Borough Planning Department was represented by Rodney Schulling. Forum members in attendance were Jay Bergstrand, Larry Engel, Bud Goodyear, Jim Hermon, Barbara Lacher, Bob Lundell and Myron Stevens.

The intent of the workshop session was for the consultant team to present a revised issues, goals, and objectives statement to the Citizen/Agency Joint Forum for review. Topics highlighted during the workshop session included:

- Acceptance of Minutes.
- Mat-Su Borough Coastal Boundaries.
- Revised Issues, Goals and Objectives.

SUMMARY

WORKSHOP ON COASTAL BOUNDARIES - LAND STATUS

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

MONDAY, APRIL 20, 1981

This was the fourth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch/Woodward-Clyde consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Department was represented by Rick Feller. Forum members in attendance were Jim Bird, Russ Cotton, Larry Engel, Bud Goodyear, James Hermon, Bob Hurley, Barbara Lacher, Bob Lundell, Elsie O'Bryan, and Myron Stevens. Ed Busch and Lamar Cotton, Alaska Department of Community and Regional Affairs (ADCRA) and Debra Clausen, Alaska Department of Fish and Game (ADF&G) were in attendance at the meeting.

The intent of the workshop session was for staff of ADCRA and ADF&G to answer Forum questions regarding coastal boundaries and to present agency positions with respect to the Mat-Su coastal boundary. Topics highlighted during the workshop session included:

- Acceptance of Minutes.
- Mat-Su Borough Coastal Boundaries.
- Resource Inventory - Land Status in the Mat-Su Coastal Area
- Policy and Technical Coordination between Mat-Su Coastal Management Program and Mat-Su Comprehensive Development Plan.

SUMMARY

WORKSHOP ON RESOURCE INVENTORY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

MONDAY, MAY 11, 1981

This was the fifth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch/Woodward-Clyde consultant team. The consultant team was represented by Stuart Denslow, Michael McGuiness, Maureen McCrea, and Larry Rundquist. The Mat-Su Borough Planning Deaprtment was represented by Rodney Schulling, Rick Feller and Lila Hemphill. Forum members in attendance were Jay Bergstrand, Larry Engel, Bud Goodyear, James Hermon, Bob Hurley, Barbara Lacher, Al Larson, Bob Lundell, Gary Silvers and Vern Ungerecht.

The intent of the workshop session was for the consultant team to continue presentation of resource inventory data to Forum members. Topics highlighted during the workshop session included:

- Acceptance of Minutes.
- Resource Inventory - Habitat Classifications in the Mat-Su Coastal Area.
- Resource Inventory - Fish and Wildlife Resources in the Mat-Su Coastal Area.
- Resource Inventory - Geophysical Characteristics in the Mat-Su Coastal Area.
- Discussions on Resource Inventory maps.

SUMMARY

WORKSHOP ON RESOURCE INVENTORY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

TUESDAY, MAY 26, 1981

This was the sixth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch/Woodward-Clyde consultant team. The consultant team was represented by Stuart Denslow, Michael McGuiness and John Isaacs. The Mat-Su Borough Planning Department was represented by Rodney Schulling and Lila Hemphill. Forum members in attendance were Jim Bird, Bud Goodyear, Barbara Lacher, Bob Lundell and Guy Woodings. Larry Reeder, Regulatory Functions Branch, U.S. Army Corps of Engineers, Alaska District, was in attendance at the meeting.

The intent of the workshop session was for the U.S. Army Corps of Engineers (COE) representative to answer Forum questions regarding COE jurisdiction over wetlands in the Mat-Su Borough and review procedures for wetland permits. Topics highlighted during the workshop session included:

- Acceptance of Minutes
- Wetlands in the Mat-Su Borough - Role of the U.S. Army Corps of Engineers.
- Resource Analysis and Geographic Classifications of Mat-Su Borough Coastal Area.

SUMMARY

WORKSHOP ON RESOURCE INVENTORY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

MONDAY, JUNE 15, 1981

This was the seventh meeting of the Citizen/Agency Joint Forum with the Maynard and Partch/Woodward-Clyde consultant team. The consultant team was represented by Stuart Denslow, Michael McGuiness and John Isaacs. The Mat-Su Borough Planning Department was represented by Rodney Schulling. Forum members in attendance were Jay Berkstrand, Jim Bird, Larry Engel, Bud Goodyear, James Hermon, Bob Hurley, Bob Lundell, Gary Silvers and Guy Woodings.

The intent of the workshop session was for the consultant team to complete presentation of resource inventory and analysis findings, discuss areas which merit special attention in the Borough and present Forum members with Phase I Completion Report of the Mat-Su Borough Coastal Management Program. Topics highlighted during the workshop session included:

- Acceptance of Minutes.
- Resource Inventory - Human and Cultural Resources in the Mat-Su Coastal Area.
- Areas Which Merit Special Attention in the Mat-Su Coastal Area.
- Presentation and Review of Phase I Completion Report, Mat-Su Borough Coastal Management Program.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

TUESDAY, JULY 14, 1981

This was the eighth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch/Woodward-Clyde consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. Forum members in attendance were Jay Bergstrand, Larry Engel, Bud Goodyear, and Guy Woodings. A quorum was not present.

The intent of the workshop session was for the consultant team to receive comments on the Phase I Completion Report and to discuss tasks to be completed during Phase II of program development. Topics highlighted during the meeting included:

- Review of Minutes.
- Technical Comments.
- Review of Scheduled Tasks and timeline for Phase II.
- Finalization of Coastal Issues, Goals, and Objectives Statement.
- Initiation of Policy Development Discussion.
- Discussion on Coastal Management Area Boundary.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

PUBLIC HEARING

THURSDAY, AUGUST 20, 1981

This was the first public hearing on the Matanuska-Susitna Borough Coastal Management Program. The Matanuska-Susitna Borough Planning Commission and Citizen/Agency Joint Forum acted as hosts for the hearing, presenting the Phase I Completion Report of the Matanuska-Susitna Borough Coastal Management Program for public review. The Borough Planning Commission was represented by Robert Tucker; the Citizen/Agency Joint Forum was represented by Bud Goodyear, Jay Bergstrand, Barbara Lacher and Elsie O'Bryan; and the Maynard and Partch/Woodward-Clyde consultant team was represented by Stuart Denslow, Michael McGuiness and Larry Rundquist.

The intent of the public hearing was to acquaint the citizens of the Matanuska-Susitna Borough with the coastal management program and to receive citizen input on the Phase I Completion Report. A summary of the Phase I Completion Report and related work efforts completed through June 30, 1981 were provided to the public. The public hearing format included:

- Formal Introductions.
- Coastal Management Program Presentation.
- Questions and Answers.
- Testimony

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

THURSDAY, SEPTEMBER 10, 1981

This was the ninth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Department was represented by Lee Wyatt. Forum members in attendance were Jay Bergstrand, Larry Engel, Bud Goodyear, Barbara Lacher (Borough Assembly), Bob Lundell, Vern Ungerecht (Borough Planning Commission), and Guy Woodings (Borough Planning Commission).

The purpose of the workshop session was for Forum members to establish a coastal management area boundary for the Mat-Su Borough Coastal Management Program. To aid discussion on and selection of a coastal management area boundary, the consultant team made a presentation on coastal boundary options available to the Mat-Su Borough. Topics highlighted during the meeting included:

- Presentation of coastal boundary options.
- Determination of coastal management area boundary.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

MAT-SU BOROUGH PLANNING COMMISSION

CITIZEN/AGENCY JOINT FORUM

POINT MACKENZIE PORT ADVISORY COMMITTEE

SEPTEMBER 22, 1981

This was the tenth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The meeting was jointly held with the Mat-Su Borough Planning Commission and the Point MacKenzie Port Advisory Committee. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Planning Commission was represented by Ken DeCamp, Robert Tucker, Vern Ungerecht and Guy Woodings. The Mat-Su Planning Department was represented by Rodney Schulling. The Point MacKenzie Port Advisory Committee was represented by Clint Dice, Wayne Burton and Roger Elliott. Forum members in attendance were Jay Bergstrand and Bud Goodyear.

The purpose of the meeting was to integrate the advisory efforts of the Citizen/Agency Joint Forum with the Mat-Su Borough Planning Commission in order to facilitate review and development of the Mat-Su Borough Coastal Management Program in a timely manner. Topics highlighted during the meeting included:

- Creation of a Coastal Management Task Group to the Planning Commission.
- Progress report by the Point MacKenzie Port Advisory Committee.
- Review and adoption of revised issues, goals, and objectives statement.
- Planning Commission adoption of coastal boundaries.
- Discussion on policies applicable to coastal management in the Mat-Su Borough.

SUMMARY OF MAT-SU BOROUGH
PLANNING COMMISSION MEETING
COASTAL MANAGEMENT PROGRAM
PORTION THEREOF
NOVEMBER 9, 1981
BIG LAKE, ALASKA

This was the eleventh meeting of the Mat-Su Borough Planning Commission Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The meeting was held with the Planning Commission as part of their regular monthly program. The consultant team was represented by Stuart Denslow. The Mat-Su Borough Planning Commission was represented by Ken DeCamp, Robert Tucker and Guy Woodings. The Mat-Su Borough Planning Department was represented by Lee Wyatt and Rodney Schulling.

The purpose of the coastal management agenda item was three-fold:

1. Continue the review, discussion and development of the policy statement for coastal management.
2. Review proposed Memoranda of Understanding between the Mat-Su Borough and the Alaska State Divisions of Policy Development and Planning implementing OMB Circular A-95 Coastal Management Act of 1972 (as amended).
3. Review proposed Memoranda of Understanding between the Mat-Su Borough and the Alaska Departments of: Natural Resources, Fish and Game, Environmental Conservation, Transportation and Public Facilities, Commerce and Economic Development and Community and Regional Affairs.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

TUESDAY, NOVEMBER 24, 1981

This was the twelfth meeting of the Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Department was represented by Lee Wyatt. Forum members in attendance were Jim Bird and Bud Goodyear.

The purpose of the workshop session was three-fold:

1. Continue the review, discussion and development of the policy statement for coastal management.
2. Review proposed Memoranda of Understanding between the Mat-Su Borough and the Alaska State Division of Policy Development and Planning implementing OMB Circular A-95 Coastal Management Act of 1972 (as amended).
3. Review proposed Memoranda of Understanding between the Mat-Su Borough and the Alaska Departments of: Natural Resources, Fish and Game, Environmental Conservation, Transportation and Public Facilities, Commerce and Economic Development, and Community and Regional Affairs.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

MAT-SU PLANNING COMMISSION

CITIZEN/ADVISORY JOINT FORUM

POLICY WORKSHOP SESSION

DECEMBER 7, 1981

This was the thirteenth meeting of the Mat-Su Borough Planning Commission - Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Commission was represented by Ken DeCamp, Robert Tucker, and Guy Woodings; the Mat-Su Borough Planning Department was represented by Lee Wyatt; and the Citizen/Agency Joint Forum was represented by Jim Bird and Bud Goodyear.

The purpose of the policy workshop session was to continue the review, discussion, and development of a comprehensive policy statement for the Mat-Su Borough Coastal Management Program. The draft policy statement from the Mat-Su Borough Coastal Management Program Phase II, Part A Progress Report was utilized as a point of discussion.

Soluble issues discussed during the policy workshop session concerned: the inclusion of a grandfather clause policy statement addressing existing areas of development and nonconforming uses in the coastal area; the authority and responsibility of the Planning Commission in making changes or alterations to the coastal management program; and the development of a glossary to help clarify terminology used in the coastal management program. In addition, specific wording changes were made to portions of the draft policy statement.

Participants of the policy workshop session agreed to hold another policy workshop session to complete review and comment on the draft policy statement and discuss proposed Memoranda of Understanding between the Borough and various state agencies. The date of the next Planning Commission/Forum policy workshop is scheduled for 2:00 p.m., December 14, 1981.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

POLICY WORKSHOP SESSION

DECEMBER 14,1981

This was the fourteenth meeting of the Mat-Su Borough Planning Commission - Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Commission was represented by Robert Tucker and Guy Woodings; the Mat-Su Borough Planning Department was represented by Lee Wyatt; and the Citizen/Agency Joint Forum was represented by Jim Bird and Bud Goodyear. Chris Beck of the Department of Natural Resources was also in attendance.

The purpose of the policy workshop session was to complete the December 7 policy workshop review, discussion and development of a comprehensive policy statement for the Mat-Su Borough Coastal Management Program. The draft policy statement from the Mat-Su Borough Coastal Management Program Phase II, Part A, Progress Report was utilized as a point of discussion.

Soluble policy issues discussed during the policy workshop concerned: the inclusion of a preamble to the policy statement which allows the Mat-Su Borough to require conditional use review of development proposals in conservation areas; the development of management area policies for Subsistence, Coastal Habitats, Geophysical Hazards, Historic Resources, and Air, Land and Water Quality; the development of specific definitions for terms utilized throughout the policy statement. Wording changes were made throughout the policy statement text. In addition, Chris Beck of the Department of Natural Resources discussed the possible interfacing between the coastal management program, the land use plan for public lands in the Borough and the Borough comprehensive plan.

A third policy workshop session has been scheduled for 1:30 p.m., January 11, 1982. The consultant team will provide the Planning Commission and the Citizen/Agency Joint Forum members with an updated coastal management policy statement prior to the workshop session. The updated policy statement will address issues and wording changes discussed in the policy workshop sessions.

Proposed Memoranda of Understanding between the Borough and various state agencies will be reviewed and discussed at the January workshop session.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

POLICY WORKSHOP SESSION

JANUARY 11, 1982

This was the fifteenth meeting of the Mat-Su Borough Planning Commission - Citizen/Agency Joint Forum with the Maynard and Partch consultant team. The consultant team was represented by Stuart Denslow and Michael McGuiness. The Mat-Su Borough Planning Commission was represented by Robert Tucker, Vern Ungerecht, and Guy Woodings; the Mat-Su Borough Planning Department was represented by Lee Wyatt; and the Citizen/Agency Joint Forum was represented by Jim Bird and Bud Goodyear.

The purpose of the workshop session was for the Planning Commission and Citizen/Agency Joint Forum members to review the revised Mat-Su Borough Coastal Management Program Policy Statement. The revised policy statement incorporated all comments and input from the December 7 and 14, 1981 policy workshop sessions.

Stuart Denslow, of the consultant team, opened the workshop session by presenting the Planning Commission and Citizen/Agency Joint Forum with the revised policy statement. Planning Commission and Forum members made minor wording alterations and additions to the revised policy statement as presented.

Acting as the Coastal Management Task Group to the Planning Commission, Planning Commission and Forum members adopted a resolution recommending conceptual approval of all coastal management program work to date, including the revised policy statement (wording alterations noted) presented at the January 11, 1982 policy workshop session. The resolution further recommended continuation of coastal management program work activities toward completion of a Matanuska-Susitna Borough Coastal Management Program Public Hearing Draft in June 1982. The Coastal Management Task Group's resolution was subsequently approved by the full Planning Commission at their regularly scheduled evening meeting on January 11, 1982.

SUMMARY

MAT-SU BOROUGH

COASTAL MANAGEMENT PROGRAM

CITIZEN/AGENCY JOINT FORUM

IMPLEMENTATION WORKSHOP SESSION

JANUARY 27, 1982

This was the sixteenth meeting of the Mat-Su Borough Planning Commission Citizen Agency Joint Forum with the Maynard and Partch consultant team. The Mat-Su Borough Planning Commission was represented by Robert Tucker and Guy Woodings; the Citizen/Agency Joint Forum by Bod Goodyear; the Mat-Su Borough Planning Department was represented by Rodney Schulling; the consultant team was represented by Stuart Denslow.

The purpose of the workshop session was for the Planning Commission and Citizen/Agency Joint Forum members to further review the overall implementation element of the Coastal Management Program. The workshop group reviewed in total the Alaska Coastal Policy Council Resolution No. 21 and the policy paper entitled "Implementing the District Program" as guidelines in further developing the implementation portion of the Mat-Su Coastal Management Program as outlined in the Phase II, Part A, progress report. Considerable discussion on enforceable rules and consistency recommendations resulted. The consultant team was directed to separate the enforceable rules from the recently adopted policy statement for Mat-Su CMP. The "model" checklist for consistency recommendations was also reviewed in detail.

The workshop group discussed field checking and enforcement in relation to current Borough permitting and enforcement requirements. A tentative agreement was reached that the Mat-Su Planning Department would be responsible for conducting consistency reviews, making consistency recommendations, field checking, and enforcement of the Borough Coastal Management Program.

APPENDIX C: TECHNICAL NATURAL RESOURCE INVENTORY

Climate Data

CLIMATIC DATA FOR SELECTED AREAS IN THE
MATANUSKA-SUSITNA BOROUGH COASTAL DISTRICT

	Summer Temp. High (°F)	Summer Temp. Low (°F)	Winter Temp. High (°F)	Winter Temp. Low (°F)	Extreme Temp. High (°F)	Extreme Temp. Low (°F)	Precip. (inches)	Snowfall (inches)	Average Wind (knots)	Extreme Wind (knots)
Wasilla	69	43	43	4	90	-30	19	51	5.8	53
Palmer	67	44	42	6	90	-35	17	64	3.8	87
Willow	70	40	33	-10	90	-56	24	-	-	-
Skwentna	69	44	40	-4	90	-50	29	119	-	-
Matanuska Agriculture Experiment Station	-	-	-	-	91	-41	21	45.4	-	-

Source: Alaska Regional Profiles: Southcentral Region. 1974

GEOPHYSICAL HAZARDS GLOSSARY

Advective process: Heat transfer by the horizontal motion of air.

Alluvial fan: A cone-shaped deposit of alluvium made by a stream where it runs out onto a level plain or meets a slower stream. The fans generally form where streams issue from mountains upon the lowland.

Andestic composition: Andesite - a type of volcanic rock composed essentially of andesine, a mineral containing sodium, calcium, aluminum, silicon and oxygen.

Arcuate fault system: Curved pattern defined by the surface expression of the faults.

Bathymetry: Study of the variation of depth of large water bodies.

Convective process: The molecular transfer of heat, density, or other fluid properties resulting from spacial variations in the property.

Coriolis effect: The intergral force caused by the earth's rotation that deflects a moving body to the right (east) in the Northern Hemisphere and to the left (east) in the Southern Hemisphere.

Drumlin: A streamlined hill or ridge of glacial drift with long axis paralleling direction of flow of former glacier.

Eolian: Applied to deposits arranged by the wind, as the sands and other loose materials along shores, etc.

Fluted ridge: Smooth gutterlike channels or deep smooth furrows worn in the face of ridges by glacial action.

Fluvial: Of, found in, or produced by a river.

Geomorphology: Study of the formation of the earth's topographic features.

Glaciolacustrine: Produced by or belonging to glacially formed lakes.

Glowing avalanche: A volcanic eruption feature; it is a highly heated mass of gas-charged lava which flows swiftly down a slope however slight the incline, by virtue of its extreme mobility and propelled by gravity.

Gyre: A circular or spiral form, ring or vortex.

Icings: Ice masses formed by the freezing of continuous or periodic water overflow on a surface.

Lacustrine: Produced by or belonging to lakes.

Lineaments: Significant lines of landscapes which reveal the hidden architecture of the rock basement; they are structurally controlled.

Megathrust: Large scale thrust fault; thrust fault is a type of reverse fault in which the angle of dip of the fault plane is less than 45 degrees.

Paludal: Pertaining to swamps or marshes, and to deposits deposited in a swamp environment.

Periglacial: Refers to areas, conditions, processes, and deposits adjacent to the margin of a glacier.

Semi diurnal tide: Tide that completes a full cycle twice per day; two high tides and two low tides are thus experienced each day.

Stamukas: Stacks of layered ice that have been beached and frozen to the beach; also referred to as ice cakes.

Subduction zone: The dragging down or sinking into the mantle of the leading edge of a crustal plate.

Till: Nonsorted, nonstratified sediment carried or deposited by a glacier.

CENOZOIC

Stratified Sedimentary and Volcanic Rocks in Part Metamorphosed

Quaternary

Qh Holocene Deposits - Alluvial, glacial, lacustrine, swamp, landslide, and beach deposits.

Qp Pleistocene Deposits - Alluvial, glacial, dune sand, loess, terrace and pediment gravel, and reworked sand and silt deposits.

Tertiary

lT Lower Tertiary Rocks - Marine and continental clastic rocks of Paleocene and Eocene age. Includes Kulthieth and Kushtaka Formations, clastic rocks of the Orca Group, and related unnamed rocks in the Gulf of Alaska area. Intensely deformed.

Continental Deposits

uTc Upper Tertiary - Sandstone, siltstone, claystone, minor conglomerate and coal beds. Includes upper part of Kenai Group in Cook Inlet area and Nenana Gravel and related unnamed rocks in west-central Alaska Range. Includes rocks ranging in age from Oligocene (?) through Pliocene.

mTc Middle Tertiary - Sandstone, siltstone, conglomerate, claystone, and coal beds. Includes the Healy Creek Formation (Oligocene and Miocene) in the central Alaska Range; the Gakona Formation (Oligocene) in the east-central Alaska Range; and the Tsadaka Formation (Oligocene) in the Matanuska Valley.

lTc Lower Tertiary - Claystone, siltstone, sandstone, conglomerate, and coal beds. Includes the Chickaloon and Wishbone Formations in the Matanuska Valley and equivalent rocks in the Cook Inlet area. Includes rocks ranging in age from Paleocene through Eocene.

Txc Paleocene - Conglomerate, arkose, sandstone, coaly shale, and shale. Consists of the Cantwell Formation in the central Alaska Range and the Arkose Ridge Formation in the Matanuska Valley.

Volcanic Rocks

Tv Tertiary - Acidic lava flows, mostly rhyolite and trachyte with some andesite south of the central Alaska Range; basalt flows and associated pyroclastic rocks in Talkeetna Mountains.

Granitic Rocks

Tg Tertiary - Epizonal to typabyssal quartz monzonites and granites in the central Alaska Range; mainly rhyolite and trachyte in the Matanuska Valley.

TKg Tertiary and Cretaceous - Granodiorite to granite in the Alaska-Aleutian Range batholith and quartz diorite and granodiorite in the Talkeetna batholith. Bath are of Late Cretaceous and early Tertiary age.

TMzg Tertiary and/or Mesozoic - Quartz monzonite, granodiorite, and quartz diorite with subordinate granite and diorite. Probably Mesozoic in age but may include rocks of Tertiary age.

MESOZOIC

Stratified Sedimentary and Volcanic Rocks in Part Metamorphosed

Cretaceous

K Cretaceous rocks - Shelf deposits of sandstone, siltstone, shale, limestone, claystone, conglomerate, mudstone, and procellanite raning in age from Early Cretaceous (Valanginian) to Late Cretaceous (Maestrichtian). Rocks of Aptian age apparently absent. Includes the Matanuska Formation in the Matanuska Valley.

uMz Cretaceous and Jurassic Rocks - Argillite, shale, graywacke, conglomerate, lava, tuff, and agglomerate; almost barren of fossils; probably includes rocks ranging in age from Early Jurassic to Late Cretaceous. In places moderately to highly (amphibolite faces) metamorphosed.

uMz_1 Cretaceous and Upper Jurassic(?) Rocks - Graywacke, slate, argillite, with minor conglomerate, volcanic detritus, and interbedded amfic volcanic rocks. Mainly of Late Cretaceous (Maestrichtian) age but includes some rocks of Early Cretaceous and possible Late Jurassic age; sparsely fossiliferous. Includes the Valdez and Yakutat Groups of the Chugach Mountains. Mildly metamorphosed, locally to greenschist facies.

uMz_2 Cretaceous and/or Upper Jurassic Rocks - A deep-water clastic sequence of siltstone, graywacke, arkose, and conglomeratic sandstone chaotically juxtaposed with a sequence containing massive pillow basalts and associated radiolarian chert, argillite, and minor ultramafic rocks and marble. Mildly metamorphosed (prehnite-pumpellyite facies). In part a melange. Consists of the McHugh Complex.

Jurrassic

lJ Lower Jurassic Rocks - Sandstone and argillite interbedded with volcanic flows and pyroclastic rocks of the Talkeetna Formation in the Cook Inlet area and southern Talkeetna Mountains.

Triassic

TP Triassic and Permian Rocks - Argillite and limestone with siltstone and conglomerate and abundant gabbroic sills along east-central Alaska Range. Includes upper part of Mankomen Group of Middle Pennsylvanian to Early Permian age.

Volcanic Rocks

Triassic

TV Triassic - Basaltic lava, commonly amygdaloidal, with local thin interbeds of volcaniclastic rocks, and local basal conglomerate. Includes the Nikolai Greenstone and related rocks of Middle and/or Late Triassic age.

Granitic Rocks

Cretaceous

Kg Cretaceous - Granodiorite with subordinate granite, quartz monzonite, and diorite. Includes extensive migmatitic granodiorites in the central Alaska Range.

Jurassic

Jg Jurassic - Quartz diorite and granodiorite of Early and Middle Jurassic age in the Alaska-Aleutian Range batholith; granodiorite with subordinate quartz monzonite and quartz diorite of probable early Middle Jurassic age in the Talkeetna batholith.

MESOZOIC AND(OR) PALEOZOIC

Ultramafic Rocks

MzPzum Mesozoic and(or) Paleozoic - Serpentinized perioditite

Metamorphic Rocks

MzPzm Mesozoic and(or) Paleozoic - Metaplutonic, metasedimentary, and metavolcanic rocks near Anchorage and amphibolite - facies schist along south side of Matanuska Valley.

PALEOZOIC

Stratified Sedimentary and Volcanic Rocks In Part Metamorphosed

Pz Paleozoic Rocks - Near Cantwell in south-central Alaska Range, limestone, slate, and conglomerate with some fossils of Devonian age. West of Chulitna River, unfossiliferous argillite and graywacke, mildly metamorphosed.

lPzp (Lower Paleozoic and(or) Precambrian Rocks - Highly metamorphosed clastic rocks. Includes Keevy Peak Formation and rocks formerly included in the Birch Creek Schist.

Permian

PP Permian and Pennsylvanian Rocks - Basaltic to andesitic lavas and their derivative volcaniclastic rocks, tuffs, minor gabbro, and local shallow-water sedimentary rocks. Includes Skolai Group of Early Permian age, equivalent rocks in the Streina Formation, the Tetelna Volcanics of Pennsylvanian age, and related unnamed rocks. In the Talkeetna Mountains, metamorphosed mainly to green-schist facies, locally to amphibolite facies.

Ultramafic Rocks

Pzum Paleozoic - Peridotite, dunite, and pyroxenite of probable Paleozoic age northeast of Anchorage.

Summary of Basic Development Constraints
Associated with Geophysical Hazards in the
Matanuska-Susitna Borough Coastal District

Hazard	Avoid Hazard Area	Design for Hazard[a]
GEOLOGIC-SEISMIC		
- Fault traces	X	X
- Liquefaction	X	X
- Ground shaking		X
- Frozen soils		X
GEOLOGIC - VOLCANIC		
- Directed explosions	X	
- Glowing avalanche	X	X
- Flash floods	X	
- Mudflows	X	X
- Landslides	X	
- Ash fall		X
GEOLOGIC - MASS WASTING		
- Landslides	X	X
- Avalanches	X	X
- Rock glaciers	X	
HYDROLOGIC - FLOODING		
- Within floodway	X	
- In floodway fringe	X	X
HYDROLOGIC - ICINGS		
- All locations	X	X
HYDROLOGIC - BANK EROSION		
- All locations	X	X
OCEANIC - ICE		
- Coastal erosion	X	X
- Coastal flooding	X	X
OCEANIC - SEISMIC		
- Coastal erosion	X	X
- Coastal flooding	X	X
OCEANIC - STORMS		
- Coastal erosions	X	X
- Coastal flooding	X	X

[a] When both avoidance and design options are identified, avoidance is preferred.

Glacial Advances in the Cook Inlet Basin

Glaciation	Age	Associated Events in Cook Inlet
Alaska	200-4,800 yrs ago[1]	Minor sea level fluctuations
Interglacial Period - High Sea Level Stand		
Naptowne	6,000-30,000 yrs ago[1]	Glacial lake
Interglacial Period - High Sea Level Stand		
Knik	38,000-65,000[2]	Glacial lake
Interglacial Period - Deep Weathering		
Eklutna	25,000[1]-110,000[2] yrs ago	Cook Inlet ice filled
Interglacial Period - Major Weathering		
Caribou Hills	Begin Retreat 155,000-190,000[2] yrs ago	Cook Inlet ice filled to 3,000 ft. above mean sea level
Interglacial Period - Deep Weathering		
Mt. Susitna	Older than 110,000 yrs ago	Cook Inlet ice filled to 4,000 ft. above mean sea level

[1] Carbon-14 date
[2] Boulder count date (estimated)

SOURCE: Susitna Basin Planning Background Report, 1980 and 7th International Congress on Quaternary... Central and Southcentral Alaska, 1977.

Water Resource Data

Average measured discharge of gaged streams in the Matanuska-Susitna Borough Coastal Management District

Name	Discharge in cubic feet per second	Discharge in acre-feet per year	Discharge in millions of gals per day
Knik River near Palmer	6,887	4,990,000	4,451
Matanuska River near Palmer	3,857	2,794,000	2,493
Cottonwood Creek near Wasilla	16	11,680	10
Little Susitna River near Palmer	203	147,100	131
Talkeetna River near Talkeetna	4,029	2,919,000	2,604
Susitna River at Gold Creek	9,612	6,964,000	6,212
Chulitna River near Talkeetna	8,748	6,338,000	5,654
Skwentna River near Skwentna	6,385	4,626,000	4,127
Susitna River at Susitna Station	48,150	34,880,000	31,120

Source: U.S.G.S. 1971.

Break-up and freeze-up dates determined from stream flow measurements

	Most probable break-up date	Most Probable freeze-up date
Knik River	April 24-May 3	Oct. 26-Nov. 4
Matanuska River	April 26-May 4	Oct. 24-Nov. 3
Little Susitna River	May 2-May 11	Oct. 22-Nov. 1
Susitna River	May 5-May 14	Oct. 16-Oct. 25

Source: Institute of Water Resources Report No. IWR-78, University of Alaska, 1977.

Estimated 100 Year Flood Discharge for Streams in the Matanuska-Susitna Borough Coastal Management District

Stream	Approximate Location	Drainage Area (mi^2)	100 Year Flood Discharge (cfs)	100 Year Flood Discharge (cfs/mi^2)
Susitna R	at Talkeetna[a]	11,035	268,000	24.3
	at Gold Creek[b]	6,160	120,000	19.5
Matanuska R	nr Palmer[b]	2,070	49,100	23.7
Talkeetna R	at mouth[a]	2,015	97,000	48.1
Little Susitna R	nr mouth[c]	320	24,200	75.6
	at Parks Highway[c]	175	15,200	86.9
	at Wasilla-Fishhook R[d]	62	8,190	132
Willow Ck	at mouth[d]	258	16,900	65.5
Little Willow Ck	at Parks Highway[c]	157	12,300	78.3

Sources: [a] Corps of Engineers, 1972; [b] Lamke, 1979; [c] Soil Conservation Service, 1980; and [d] Corps of Engineers, 1980.

Note: Discharge per unit area is <u>larger</u> for smaller drainage areas.

Maximum Known Flood Discharge on Streams in the Matanuska-Susitna Borough Coastal Management Area

Station No.	Stream	Location Latitude	Location Longitude	Drainage Area (mi^2)	Period of Record (years/dates)	Date of Maximum Known Flood	Maximum Known Flood Discharge (cfs)	Maximum Known Flood Discharge (cfs/mi^2)
15281000	Knik R nr Palmer	61°30'18"	140°01'50"	1,180	42(1935-76)	July 18, 1958	355,000a	300
-	Kings R nr Sutton	61°43'58"	148°44'52"	151	Miscellaneous	Aug. 10, 1971	9,800	64.9
-	Granite C nr Sutton	61°46'46"	148°50'12"	52.5	Miscellaneous	Aug. 10, 1971	58,600b	1,120
15283500	Eska C nr Sutton	61°43'44"	148°54'31"	13.4	7(1965-69, 1971-76)	Aug. 10, 1971	1,680	125
-	Moose C nr Sutton	61°43'32"	149°03'00"	40.7	Miscellaneous	Aug. 10, 1971	18,000	422
15284000	Matanuska R at Palmer	61°36'34"	149°04'16"	2,070	26(1949-74)	Aug. 10, 1971	82,100b	39.7
-	Wasilla C nr Palmer	61°38'47"	149°11'45"	19.3	Miscellaneous	Aug. 10, 1971	700	36.3
15286000	Cottonwood C nr Wasilla	61°34'30"	149°24'35"	28.5	6(1949-54)	July 5,6, 1949	55	1.93
15289800	Fishhook C nr Palmer	61°45'05"	149°13'40"	8.52	3(1963-66)	Aug. 23, 1963	960	113
15290000	Little Susitna R nr Palmer	61°42'32"	149°13'36"	61.9	26(1948-76)	Aug. 10, 1971	7,840	127
15292000	Susitna R nr Gold C	62°46'04"	149°41'28"	6,160	27(1949-76)	June 7, 1964	90,700	14.7
15292400	Chulitna R nr Talkeetna	62°33'31"	150°14'02"	2,570	17(1958-76)	July 20, 1967	75,900	29.5
15292700	Talkeetna R nr Talkeetna	62°20'49"	150°01'01"	2,007	13(1964-76)	Aug. 10, 1971	67,400	33.6
15292780	Susitna River nr Sunshine	62°10'35"	150°10'18"	11,500	Miscellaneous	Aug. 10, 1971	200,000	17.4
15292800	Montana C nr Montana	62°06'32"	150°03'12"	164	10(1963-72)	Aug. 10, 1971	6,970	42.5
15292900	Goose C nr Montana	62°03'42"	150°03'20"	14.5	9(1963-71)	June 1964	530c	36.5
15293000	Caswell C nr Caswell	61°56'55"	150°03'14"	19.6	14(1963-76)	Sept. 1965	207	10.6
15294025	Moose C nr Talkeetna	62°19'00"	150°26'30"	52.3	5(1972-76)	Aug. 22, 1972	1,850	35.4
15294300	Skwentna R nr Skwentna	61°52'23"	151°22'01"	2,250	17(1959-76)	June 25, 1971	50,000	22.2
15294350	Susitna R at Susitna Station	61°32'41"	150°30'45"	19,400	2(1974-76)	July 1, 1975	173,000	8.9

[a] Glacier dammed lake release flood.

[b] Rainfall flood was augmented by the release of stored water from an unnamed lake after embankment was breached.

[c] Floods from Sheep Creek overflow on 10 August 1971 reached 3,270 cfs in Goose Creek.

Summary of Documented Flood Hazard Potential in Communities in the Matanuska-Susitna Borough Coastal Management District.

Community	Flood Hazard	Frequency of Occurrence	Type of Flooding: Stream Overflow	Ice or Log Jams	Icings	Local Drainage	Coastal	Percent of Community Affected	Data Source[a]
Alexander		Ave	X	X				20	1
Butte	High[b]		X						2
Houston	Low	Low	X		X				1,2
Moose Creek		Low-Ave	X			X			1
Palmer	Low	Low	X			X		10	1,2
Sutton	Low	Low	X					60	1,2
Wasilla	Low	Low				X		10	1,2
Willow	Low-Ave	Low-Ave	X	X	X				1,2

[a] Data Source
1 Corps of Engineers, 1976
2 Corps of Engineers, 1980a

[b] High flood hazard applies to low lying areas only

Wildlife Data

Results of Survey of Opinion on the Use of Mechanized Vehicles in Refuges.[1]

	RESPONSE (%)								
	Susitna Flats			Palmer Hay Flats			Goose Bay		
Type of Use	Air Boat	ATV	Air Plane	Air Boat	ATV	Air Plane	Air Boat	ATV	Air Plane
1978 Survey:									
Unrestricted	42	31	68	33	19	52	40	25	54
Restricted	28	35	32	30	50	26	20	50	8
Prohibited	27	34	0	36	31	23	40	25	38
Number of Responses from N = 111	74	86	80	33	32	31	15	16	13
1979 Survey:									
Unrestricted	44	30	60	36	21	53	41	24	53
Restricted	30	36	34	31	50	24	18	52	7
Prohibited	26	34	0	33	29	24	41	24	40
Number of Responses from N = 117	77	92	83	36	38	34	17	21	15

Recreational Use of Cook Inlet State Game Refuges

	Susitna				Palmer Hay Flats			Goose Bay		
Activity	% of total rec. days.	Total Days	Ave. Days Per User	% of all respondents* using the refuge/activity	Total Days	Ave. Days Per User	% of all respondents* using the refuge/activity	Total Days	Ave. Days Per User	% of all respondents* using the refuge/activity
Hunt Waterfowl	59	898	11	76	277	7	32	88	6	14
Hunt Other Game	4	51	6	8	25	4	6	2	2	1
Sport Fish	11	129	6	18	93	8	10	10	5	1
Comm. Fish	6	100	33	3	10	10	0	10	10	0
Enjoy Nature	13	233	10	22	40	3	13	10	1	6
Trapping	7				150	38				

* 111 Responses received in time for tabulation.

Source: Alaska Department of Fish and Game

Fish and wildlife habitats and recreational reservation on public lands within the Matanuska-Susitna Borough Coastal District.

Name	Type of Easement
1. Little Susitna River	½-mile recreational corridor
2. Susitna River	½-mile fish and wildlife habitat corridor (all contained within Susitna Flats Refuge)
3. Theodore River	½-mile recreational corridor (all contained within Susitna Flats Refuge)
4. Yentna & Skwentna Rivers	½-mile recreational and fish and wildlife habitat corridor
5. Alexander Creek (and Sucker Creek)	½-mile recreational corridor
6. Lake Creek	½-mile recreational corridor

Source: Governor's Committee 1980

Moose Harvest in GMU's (14a, 14b, 16a, 16b) during 1970 to 1979.

Year	Number of Hunters	Number of Moose Harvested	Estimated Moose Population	Percent of Unit Harvest
1970	2603	1283	5079	25
1971	3738	1853	4832	38
1972	1699	964	3836	25
1973	3896	1367	4733	29
1974	3160	754	4297a	18
1975	1975	435	1108a	39
1976	3311	708	1358a	52
1977	4593b	987	3872a	25
1978	4654	1277	3960a	32
1979	2961	933	3570	26

a Only portions of GMU's censused.

b Data extrapolated to correct for missing reminder letters.

Source: Alaska Department of Fish and Game

Verified Moose Mortality (excluding hunting) in Alaska's Game Management Subunit 14A During the Calendar Period June 1 - May 31, 1972-73 through 1978-79.

	ROAD KILL						INCIDENTAL/TRAIN KILL						ILLEGAL KILL						WINTER KILL						TOTAL
	*Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	
1972-73	4	20	6	4	2	36	0	2	0	2	1	5	3	31	2	6	7	49	0	0	0	0	0	0	90
1973-74	2	17	7	5	2	33	1	4	2	6	1	14	1	37	2	2	7	49	1	1	2	3	0	7	103
1974-75	8	28	10	13	4	63	5	16	6	7	1	35	5	24	3	3	5	40	0	0	3	4	0	7	145
1975-76**	0	20	5	3	1	29	1	2	0	1	1	5	1	8	1	0	3	13	0	1	0	0	0	1	48
1976-77	7	28	6	15	0	56	1	4	0	1	1	7	9	6	0	0	0	15	0	1	0	1	0	2	80
1977-78	9	34	6	17	1	67	0	1	2	0	2	5	2	2	0	0	2	6	0	1	0	0	0	1	79
1978-79	15	42	8	30	13	108	3	3	1	1	4	12	4	7	1	3	28	43	0	1	1	0	7	9	172

* Ad.M = Adult Male; Ad.F = Adult Female; Calf M = Calf Male; Calf F = Calf Female; ? = Unknown Sex or Age; Tot. = Total.

** A reduced effort was made to document moose mortality this period; moose mortality along the Alaska Railroad tracks was not tallied during the springs of 1973, 1975, and 1976.

Verified Moose Mortality (excluding hunting) in Alaska's Game Management Subunit 14B During the Calendar Period June 1 - May 31, 1972-73 through 1978-79.

	ROAD KILL						INCIDENTAL/TRAIN KILL						ILLEGAL KILL						WINTER KILL						TOTAL
	*Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	Ad. M.	Ad. F.	Calf M.	Calf F.	?	Tot.	
1972-73	1	0	0	0	2	3	0	4	2	1	3	10	0	0	0	0	1	1	0	0	0	1	0	1	15
1973-74	1	3	0	1	1	6	0	1	0	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	9
1974-75	1	0	2	0	2	5	4	16	2	8	19	49	0	1	0	1	0	2	0	0	1	1	0	2	58
1975-76**	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
1976-77	1	2	3	0	1	7	0	1	0	0	1	2	0	2	0	0	0	2	0	0	0	0	0	0	11
1977-78	0	2	0	1	2	5	0	0	0	0	5	5	0	0	0	0	4	4	1	0	0	0	0	1	15
1978-79	6	16	1	10	8	41	21	39	11	9	91	171	1	4	0	0	0	5	0	0	0	0	2	2	219

* Ad.M = Adult Male; Ad.F = Adult Female; Calf M = Calf Male; Calf F = Calf Female; ? = Unknown Sex or Age; Tot. = Total.

** A reduced effort was made to document moose mortality this period; moose mortality along the Alaska Railroad tracks was not tallied during the springs of 1973, 1975, and 1976.

SOURCE: Alaska Department of Fish and Game

Number of waterfowl (other than ducks) utilizing the Matanuska-Susitna Borough wetlands and associated tideflats

			Susitna Flats	Goose Bay	Palmer Hay Flats
1972	August	Canada Goose	1450		
	September 20	Canada Goose	200		
		Swan	40		
	October 2	Canada Goose	125		
		Swan	3897		
1974	July	White-fronted Goose	60		
1975	April 29	Swan		135	124
		Canada Goose		1699	11533
		Snow Goose			3040
		White-fronted Goose			413
		Sandhill Crane			10
	May 2	Swan		911	1776
		Canada Goose		1847	1586
		Snow Goose	245		
		White-fronted Goose	125	19	
	June 2	Swan	91		11
		Canada Goose	170	28	107
		Sandhill Crane		12	43
		Common Loon			53
		Red Throated Loon	34		16
		Arctic Loon	34	9	
1976		Swan	45		
		Canada Goose	2051		315
		Sandhill Crane	45	12	
		Common Loon		25	32
1977		Swan	23		
		Canada Goose	478	75	171
		Sandhill Crane	45		
		Arctic Loon	92		21
1978	May	Swan	23		5
		Goose (all sp.)	149	52	150
		Sandhill Crane	23	18	
	August	White-fronted Goose	500		

Source: Alaska Department of Fish and Game

Numbers and Densities of Breeding Ducks in the
Matanuska-Susitna Borough Wetlands and Associated Tideflats

		Susitna Flats	Goose Bay	Palmer Hay Flats	Jim-Swan Lakes
1975	April 29		830	1510	476
	May 2		9096	2114	383
	June 2	8272	679	3267	1980
	No. of birds*/mi^2	60.9	73.8	76.5	128.1
1976		13097	427	2076	1793
	No of birds/mi^2	96.3	46.4	48.6	141.4
1977		13273	784	3427	
	No of birds/mi^2	97.6	85.5	80.2	
1978		6108	294	2293	
	No of birds/mi^2	44.9	32	53.7	

*Density for June 2 count.

Species Composition of Ducks Using the
Matanuska Susitna Wetlands

	1976	1977	1978
Dabblers (% of total duck population)	86	96	73
Percent among Dabblers			
Pintail	58	63	31
Teal	18	6	16
Mallard	11	19	26
Others (Shoveler)	13	12	27
Divers (% of total duck population)	14	4	27
Percent among Divers			
Scaups	63	99.9	53
Others	37		47

Source: Alaska Department of Fish and Game

Cook Inlet Refuge Duck Harvest 1971-1979.

Refuge	Duck Harvest 1971	1972	1973	1974	1975	1976	1971-1976 average	Percent of Statewide Duck Harvest 1971-1976	1977	1978	1979	1977-1979 average	Percent of Statewide Duck Harvest 1977-1979
Susitna Flats	7442	9696	16835	6750	9485	11836	10266	12.6	13917	16283	13182	14461	12.7
Palmer Hay Flats	5854	4677	7879	5458	7114	6326	6218	7.4	11406	3306	1261*	5324	4.9*
Goose Bay	NS	NS	2238	287	351	510	846	0.9	1570	367	459	799	0.7

1971-1976 data calculated from Statewide Waterfowl Hunter Mail Survey;
1977-1979 data calculated from USFWS collection survey.

NS = Not Surveyed

*USFWS evidently attributed harvest from Palmer Hay Flats to Upper Cook Inlet figures.

Cook Inlet Refuge Goose Harvest 1971-1979.

Refuge	Goose Harvest 1971	1972	1973	1974	1975	1976	1971-1976 average	Percent of Statewide Goose Harvest 1971-1976	1977	1978	1979	1977-1979 average	Percent of Statewide Goose Harvest 1977-1979
Susitna Flats	699	357	1030	224	173	418	478	3.3	NS	766	438	602	4.1
Palmer Hay Flats	45	65	257	112	173	72	121	0.8	NS	0	0		
Goose Bay	NS	NS	0	0	0	0	0	0.0	NS	NS	NS		

1971-1976 data calculated from Statewide Waterfowl Hunter Mail Survey;
1977-1979 data calculated from USFWS collection survey.

NS = Not Surveyed

Waterfowl Hunter Days and Average Harvest Per Day on Cook Inlet Refuges, 1971-1976.

Refuge	Hunter Days 1971	1972	1973	1974	1975	1976	1971-1976 average	Percent of State waterfowl hunter days 1971-1976	Average ducks/ day/ hunter	Average Geese/ day/ hunter
Susitna Flats	3885	3798	7060	3763	3112	5280	4473	7.9	2.3	0.05
Palmer Hay Flats	3081	3561	4861	4162	4292	4945	4150	7.3	1.5	0.02
Goose Bay	-	-	984	342	161	601	522	0.9	1.6	0.0

Calculated from Statewide Waterfowl Hunter Mail Survey.

Source: Alaska Department of Fish and Game

Knik Arm Drainage* Sport Fish Harvest and Effort by Fisheries and Species, 1980.

Water System	Days Fished	King Salmon	Silver Salmon	Land Locked	Red Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Dolly Varden1/	Lake Trout	Grayling	Burbot	Other
Little Susitna River	22,420	646	6,302	0	2,127	3,918	465	852	1,748	0	181	9	1,059
Wasilla Creek (Rabbit Slough)	5,726	0	3,555	0	0	310	9	121	189	0	0	0	0
Cottonwood Creek	9,268	0	3,375	0	2,660	0	0	1,085	439	0	0	0	0
Wasilla Lake	1,642	0	0	43	0	0	0	2,084	181	0	0	0	0
Finger Lake	6,483	0	0	10,685	0	0	0	0	0	0	0	0	0
Kepler Lake Complex	8,597	0	0	2,807	0	0	0	5,906	0	0	1,016	0	0
Lucille Lake	3,798	0	0	3,633	0	0	0	0	0	0	0	0	0
Big Lake	12,195	0	0	189	43	0	0	5,398	7,585	594	0	43	0
Nancy Lake Recreation area, including Nancy Lake	9,153	0	0	146	69	0	0	2,540	327	749	0	34	43
Others	23,248	0	2,798	1,997	775	473	60	11,382	2,015	775	8,317	224	34
Total	102,530	646	16,030	19,500	5,674	4,701	534	29,368	12,484	2,118	9,514	310	1,136

Knik Arm Drainage: All waters inside the area bounded by Little Susitna River on the north and west and the Knik Arm on the south, including all drainages of the Matanuska and Knik Rivers. (Boundary streams are included in the area.)

1/Dolly Varden & Arctic Char

East Side Susitna Drainage* Sport Fish Harvest and Effort by Fisheries and Species, 1980.

Water System	Days Fished	King Salmon	Silver Salmon	Land Locked	Red Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Dolly Varden1/	Lake Trout	Grayling	Burbot	Other
Willow Creek	29,011	289	1,207	0	83	23,698	989	1,168	636	0	1,863	0	116
Caswell Creek	4,963	215	1,124	0	77	1,663	19	154	83	0	353	26	26
Montana Creek	19,287	559	2,684	0	257	8,230	571	854	167	0	655	13	13
Sunshine Creek	5,208	13**	1,534	0	116	2,408	225	193	39	0	0	39	0
Clear (Chunilna) Creek	4,388	172	661	0	6	622	385	950	751	0	1,348	32	32
Sheep Creek	8,041	45**	430	0	0	6,362	648	385	83	0	725	45	0
Little Willow Creek	8,190	32**	494	0	77	6,420	270	353	122	0	1,156	0	13
Others	12,216	45**	2,234	1,663	257	3,403	1,445	2,658	790	267	4,854	212	520
Total	91,304	1,370	10,368	1,663	873	52,746	4,552	6,715	2,671	267	10,959	367	720

* East Side Susitna Drainage: All east side drainages of the Susitna River below its confluence with the Oshetna River. Fish taken while fishing from the east bank of the Susitna River are included in this area.

** King salmon less than 20 inches.

1/Dolly Varden & Artic Char

Source: Alaska Department of Fish and Game, Statewide Harvest Study - 1980 Data, Mills.

West Cook Inlet-West Side Susitna River Drainages* Sport Fish Harvest and Effort by Fisheries and Species, 1980.

	Days Fished	King Salmon	Silver Salmon	Red Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Dolly Varden1/	Lake Trout	Grayling	NP	Burbot	RC	Other
SALTWATER:														
Boat	928	0	69	17	17	0	0	0	0	0	0	0	0	103
Shoreline	871	0	146	9	69	0	0	0	0	0	0	0	53,934	0
SALTWATER TOTAL	1,799	0	215	26	86	0	0	0	0	0	0	0	53,934	103
FRESHWATER:														
Deshka River (Kroto Creek)	19,364	3,685	2,290	0	689	0	4,305	0	0	1,817	0	224	0	69
Lake Creek	8,325	775	2,351	267	2,101	69	2,144	121	0	1,972	103	0	0	0
Alexander Creek	6,812	1,438	999	52	809	121	1,945	353	0	1,145	0	0	0	0
Talachulitna River	2,542	121**	491	112	276	17	379	982	0	1,713	0	0	0	0
Chuit River	614	17**	258	0	69	0	301	146	0	0	0	0	0	0
Theodore River	700	17**	370	0	232	0	250	129	0	0	0	0	0	0
Lewis River	43	0	0	0	0	0	9	0	0	0	0	0	0	0
Other Rivers	4,998	129**	6,010	34	362	284	1,722	603	181	1,808	0	448	0	0
Shell Lake	414	0	0	198	0	0	103	0	69	0	0	0	0	0
Whiskey Lake	29	0	0	0	0	0	0	0	0	0	0	0	0	0
Hewitt Lake	471	0	0	0	0	0	9	0	0	0	0	0	0	0
Judd Lake	814	0	0	267	0	0	86	723	0	232	0	0	0	0
Other Lakes	2,999	0	0	181	0	0	2,092	43	198	560	129	34	0	34
FRESHWATER TOTAL	48,125	6,182	12,769	1,111	4,538	491	13,345	3,100	448	9,247	232	706	0	103
GRAND TOTAL	49,924	6,182	12,984	1,137	4,624	491	13,345	3,100	448	9,247	232	706	53,934	206

* West Side Cook Inlet-West Side Susitna River Drainages: All West side Susitna River drainages and all west side Cook Inlet waters southward to Cape Douglas. Fish taken while fishing from the west bank of the Susitna River are included in this area.

** King salmon less than 20 inches.

1/Dolly Varden & Artic Char

Source: Alaska Department of Fish and Game, Statewide Harvest Study - 1980 Data, Mills.

Lakes Stocked in the Matanuska-Susitna Borough Coastal District

Lake	Type of Fish		
	Rainbow Trout	Silver Salmon	Grayling
Kink Lake	X		
Marion Lake	X		
Rockey Lake		X	
Loon Lake		X	
Lucille Lake		X	
Finger Lake		X	
Johnson Lake	X		
Long Lake	X		
Irene Lake	X		
Bradley Lake	X		
Harriet Lake			X
Echo Lake	X		
Kepler Lake	X		
Matanuska Lake	X		
South Rolly Lake		X	
Little No Luck Lake		X	
Big No Luck Lake	X		

Source: Alaska Department of Fish and Game 1978

Rivers Identified on ADF&G Resource Maps as Critical Habitat

River or Stream	Salmon	Big Game		Furbearers
		Bear	Moose	
Little Susitna River	Co PCKS		X	
Alexander Creek	KS Co P		Winter	
Lower Sucker Creek	KS Co P		Winter	
Yentna River	KS Co CP	X		X
Lake Creek	S Co CPK			
Skwentna River	Co CPKS	X		
Red Creek	Co CP	X		
Talachalina River	Co CPK			
Deshka River (Krato R.)	Co PKS	X	X	
Trapper Creek	Co K			
Moose Creek	Co PKCHS	X		
Susitna River	KS Co PCH	X	X	X
Sheep Creek	K Co CP	X		

[1] Co - Coho (Silver, P - Pink (Humpback), C - Chum (Dog), K - King (Chinook), S - Sockeye (Red).

Source: Alaska Department of Fish and Game 1978

Mammals which may occur in the Knik Arm wetlands study area, upland habitat and within the Matanuska-Susitna Borough Coastal District.

Species	Scientific Name	Major Vegetation Types*
Masked shrew	Sorex cinerus	3-10
Dusky shrew	Sorex obscurus	3,5,6,7,8,9,10
Pigmy shrew	Microsorex hoyi	7,9,10
Red-backed vole	Clethrionomys rutilus	2-10
Meadow vole	Microtus pennsylvanicus	3-10
Tundra vole	Microtus oeconumus	3,5,6,7,8
Singing vole	Microtus miurus	5,6,7,8
Meadow jumping mouse	Zapus hudsonius	3,5,6,7,8
Little brown bat	Myotis lucifugus	1-10
Snowshoe hare	Lepus americanus	5,7,9,10
Hoary marmot	Marmota caligata	10
Arctic ground squirrel	Citellus parryi	5,7,10
Red squirrel	Tamiasciurus hudsonicus	9
Northern flying squirrel	Glaucomys sabrinus	9,10
Beaver	Castor canadensis	5,7,10
Porcupine	Erethizon dorsatus	9,10
Coyote	Canis latrans	3-10
Wolf	Canis lupus	5,7,9,10
Red fox	Vulpes fulva	3-10
Black bear	Ursus americanus	9,10
Brown bear	Ursus arctos	9,10
Pine marten	Martes americana	9
Ermine	Mustela erminea	5,7,9,10
Least weasel	Mustela rixosa	5,7,9,10
Wolverine	Gulo gulo	9,10
Lynx	Lynx canadensis	9,10
Moose	Alces alces	5,7,9,10
Dall sheep	Ovis dalli	10
Mountain goat	Oreamnos americanus	10

*(1) Aquatic vegetation, (2) Marshes, (3) Wet meadows, (4) Herbaceous vegetation of levees, bars, and mudflats, (5) Willow thickets, (6) Wet Myrica fens, (7) Alder thickets, (8) Ericaceous shrub-sphagnum bogs, (9) Black spruce forests, (10) Cottonwood, birch & white spruce forests.

Mammals which may occur in the Knik Arm wetlands study area wetlands and tidelands habitat, in the Matanuska-Susitna Borough Coastal District.

Species	Scientific Name	Major Vegetation Types*
Masked shrew	Sorex cinerus	3-10
Dusky shrew	Sorex obscurus	3,5,6,7,8,9,10
Northern water shrew	Sorex palustris	riparian
Northern bog lemming	Synapomys borealis	3,6,8
Brown lemming	Lemmus trimucronatus	3,6,8
Red-backed vole	Cleathrionomys rutilus	2-10
Meadow vole	Microtus pennsylvanicus	3-10
Tundra vole	Microtus oeconumus	3,5,6,7,8
Singing vole	Microtus miurus	5,6,7,8
Meadow jumping mouse	Zapus hudsonius	3,5,6,7,8
Little brown rat	Myotis lucifugus	1-10
Muskrat	Ondatra zibethicus	1,2,3,4,6
Coyote	Canis latrans	3-10
Red fox	Vulpes fulva	3-10
Black bear	Ursus americanus	9,10
Mink	Mustela vison	1,2,3,4,6
River otter	Lutra canadensis	1,2,3,4,6
Moose	Alces alces	5,7,9,10

*(1) Aquatic vegetation, (2) Marshes, (3) Wet meadows, (4) Herbaceous vegetation of levees, bars, and mudflats, (5) Willow thickets, (6) Wet Myrica fens, (7) Alder thickets, (8) Ericaceous shrub-sphagnum bogs, (9) Black spruce forests, (10) Cottonwood, birch & white spruce forests.

Source: Knik Arm Wetlands Study, 1981

Birds which may occur in the Knik Arm wetlands study area

Species		Observed in 1980	Status, Season[1]
Common loon	Gavia immer		R-s
Arctic loon	Gavia arctica		U-s
Red-throated loon	Gavia stellata		R-m
Red-necked grebe	Podiceps grisegna	x	C-s
Horned grebe	Podiceps auritus	x	C-s
Great blue heron	Ardea herodias		Ca
Whistling swan	Olor columbianus	x	C-m
Trumpeter swan	Olor buccinator	x	U-m
Canada goose	Branta canadensis	x	A-m
Black brant	Branta nigricans		R-m
White-fronted goose	Answer albiforms	x	U-m
Snow goose	Chen hyperborea	x	U-m
Mallard	Anas platyrhynchos	x	C-s,U-w
Pintail	Anas acuta	x	C-s
Green-winged teal	Anas Carolinensis	x	C-s
Blue-winged teal	Anas discors	x	Ca-s
Northern shoveler	Spatula clypeata	x	C-s
European wigeon	Mareca penelope		R-m
American wigeon	Mareca americana	x	C-s
Canvasback	Aythya valisineria	x	R-s
Redhead	Aythya americana		Ca-m
Ring-necked duck	Aythya collaris	x	R-m
Greater scaup	Aythya marilla	x	C-s
Lesser scaup	Aythya affinis	x	R-m
Common goldeneye	Bucephala clangula	x	U-m
Barrow's goldeneye	Bucephala islandica	x	R-m,R-w
Bufflehead	Bucephala albeolc	x	U-m
Oldsquaw	Clangula hyemalis		R-s
Harlequin duck	Histrionicus histrionicus		R-s
White-winged scoter	Melanitta deglandi		R-m
Surf scoter	Melanitta perspicillata		R-m
Black scoter	Oldemia nigra		R-m
Common merganser	Mergus merganser	x	U-m,R-w
Red-breasted merganser	Mergus serrator	x	U-m
Goshawk	Accipiter gentilis	x	U-p
Sharpeshinned hawk	Accipiter straitus	x	U-s,Ca-w
Red-Tailed hawk	Buteo jamaicensis	x	U-s
Rough-legged hawk	Buteo lagopus	x	U-m
Golden eagle	Aquila chyrsaetos	x	U-m
Bald eagle	Haliaeetus leucocephalus	x	C-m,U-s,R-w
Marsh hawk	Circus cyaneus	x	C-m,U-s
Osprey	Pandion haliaetus	x	R-m
Gyrfalcon	Falco rusticolus		Ca-w
Peregrine falcon	Falco peregrinus		R-m
Merlin	Falco columbarius	x	R-s-Ca-w
American kestrel	Falco sparverius	x	R-m
Sandhill crane	Grus canadensis	x	C-m,U-s
American coot	Fulica americana	x	Ca
Semi-palmated plover	Charadrius semipalmatus	x	U-s
Kildeer	Charadrius Vociferus		U-s
American golden plover	Pluvialis dominica	x	U-m
Black-bellied plover	Squatarola squatarola		R-m
Hudsonian godwit	Limosa haemastica		C-s
Marbled godwit	Numerius phaeopus		Ca
Whimbrel	Numerius phaeopus		U-m
Upland sandpiper	Bartramia longicauda		Ca
Greater yellowlegs	Totanus melanoleucus	x	C-s
Lesser yellowlegs	Totanus flavipes	x	C-s
Solitary sandpiper	Trigna solitaria	x	U-s
Spotted sandpiper	Actitis macularia	x	C-s
Wandering tattler	Heteroscelus incanum		U-s
Ruddy turnstone	Arenaria interpres		R-m
Northern phalarope	Lobipes lobatus	x	C-s
Common snipe	Capella gallinago	x	C-s
Short-billed dowitcher	Limnodromus griseus	x	C-s
Long-billed dowitcher	Limnodromus scolopaceus		R-m
Sanderling	Crocethia alba		R-m
Semi-palmated sandpiper	Ereuhetes pusillus		R-m
Western sandpiper	Ereuhetes mauri		U-m
Least sandpiper	Erolia minutilla		C-s
Baird's sandpiper	Erolia bairdii		R-m
Pectural sandpiper	Erolia melanotos		U-m
Dunlin	Erolia alpina		R-m
Parasitic jaeger	Stercorarius parasiticus		R-m
Long-tailed jaeger	Stercorauius longicaudus		R-m
Glaucous gull	Larus hyperboreus		R-v
Glaucous-winged gull	Larus glaucescens		C-s,U-w
Herring gull	Larus argentatus	x	C-m,R-w
Mew gull	Larus canus	x	A-s
Bonaparte's gull	Larus philadelphia	x	C-s
Arctic tern	Sterna paradisaea	x	C-s

[1] R = resident, U = uncommon, s = summer, f = fall, w = winter, m = migrant, C = common, p = permanent resident, Ca = casual.

Birds identified in the Knik Arm wetlands study area and which probably occur throughout the Matanuska-Susitna Borough Coastal District uplands

Species		Observed in 1980	Status, Season[1]
Black-capped chickadee	Parus atricapillus	x	C-p
Boreal chickadee	Parus hudsonicus	x	C-p
Red-breasted nuthatch	Sitta canadensis		U-p
Brown creeper	Certhia femiliaris		U-p
Dipper	Cinclus mexicanus	x	U-p
Winter wren	Troglodytes troglodytes		U-p
American robin	Turdus migratorius	x	C-s,R-w
Varied thrush	Ixoreus naevius	x	C-s
Hermit thrush	Hylocichla guttata	x	U-s
Swainson's thrush	Hylocichla ustulata	x	C-s
Grey-cheeked thrush	Hylocichla minima		U-s
Townsend's solitaire	Myadestes townsendi		R-s
Golden-crowned kinglet	Regulus satrapa		U-p
Ruby-crowned kinglet	Regulus calendula	x	A-s
Water pipit	Anthus spinoletta	x	C-s
Behemian waxwing	Bombycilla garrulus	x	U-p,A-f
Northern shrike	Lanius excubitor	x	U-p
Starling	Sturnus vulgaris		R-v
Red-eyed vireo	Vireo olivaceus		Ca
Orange-crowned warbler	Vermivora celata	x	A-s
Yellow warble	Dendroica petechia	x	U-s
Townsend's warbler	Dendroica townsendi		U-s
Blackpoll warbler	Dendroica striata	x	U-s
Northern water thrush	Seiurus noveboracensis	x	U-s
Wilson's warbler	Wilsonia pusilla		C-s
Red-winged blackbird	Agelaius phoeniceus		R-s
Rusty blackbird	Euphagus carolinus	x	C-s,R-w
Pine grosbeak	Pincicola enucleator		U-p
Hoary redpoll	Acanthis hornemanni		
Common redpoll	Acanthis flammea	x	R-w
Pine siskin	Spinus pinus		U-s
Red crossbill	Loxia curvirostra		R-v
White-winged crossbill	Loxia leucoptera		U-p
Savanah sparrow	Passerculus sandwichensis	x	A-s
Dark-eyed junco	Junco hyemalis	x	A-s,U-w
Tree sparrow	Spizella arborea	x	U-s,R-w
White-crowned sparrow	Zonotrichia leucophrys	x	A-s,R-w
Golden-crowned sparrow	Zonotrichia atricapilla		C-s
Fox sparrow	Passerella iliaca	x	C-s,R-w
Lincoln's sparrow	Melospiza lincolnii		C-s
Song sparrow	Melospiza melodia		U-s
Lapland longspur	Calcarius lapponicus	x	C-m
Snow bunting	Phectrophenax nivalis		U-m,U-w
Rock dove	Columbia livia	x	C-p
Mourning dove	Zenaidura macroura		Ca
Great horned owl	Bubo virginianus	x	C-p
Snowy owl	Nyctea scandiaca		R-v
Hawk owl	Surnia ulula	x	U-p
Great gray owl	Strix nebulosa		R-p
Short-eared owl	Asio flammeus	x	U-s
Boreal owl	Aegolius funereus		U-p
Rugous hummingbird	Selasphorus rufus		R-s
Belted kingfisher	Megaceryla alcyon	x	U-s,R-w
Common flicker	Colaptes auratus	x	U-s
Hairy woodpecker	Dendrocopus villosus	x	U-p
Downy woodpecker	Dendrocopos pubescens		U-p
Black-backed three-toed woodpecker	Piocoides arcticus		R-p
Northern three-toed woodpecker	Piocoides tridactylus		U-p
Say's phoebe	Sayornis saya		R-m
Alder flycatcher	Empidonas traillii		C-s
Western wood pewee	Contopus sordidulus		U-s
Olive-sided flycatcher	Nuttallornis borealis		C-s
Horned lark	Eremophila alpestris		U-s
Violet-green swallow	Tachycineta thalassinc		A-s
Tree swallow	Iridoprocne bicolor	x	A-s
Bank swallow	Riparia riparia		C-s
Cliff swallow	Petrochelidon pyrrhonota		U-s
Gray jay	Perisoreus canadensis	x	U-p
Black-billed magpie	Pica pica	x	C-p
Common raven	Corvus corax	x	C-p
Spruce grouse	Canachitas canadensis	x	U-p
Willow ptarmigan	Lagopus lagopus	x	U-w
Rock ptarmigan	Lagopus mutus		U-w
White tailed ptarmigan	Lagopus leucurus		

[1] R = resident, U = uncommon, s = summer, f = fall, w = winter, m = migrant, C = common, p = permanent resident, Ca = casual.

Source: Knik Arm Wetlands Study, 1981.

APPENDIX D

COASTAL DISTRICT BOUNDARY
LEGAL DESCRIPTION

In accordance with the Citizen/Agency Joint Forum's selection of a coastal boundary based on survey lines and related man-made features, the legal description delineates the Mat-Su Borough coastal management area to include all lands and waters within the following townships or portions of townships described on a protracted basis whether surveyed or unsurveyed.

T12N, R7, 8, 9W: All that portion within the Matanuska-Susitna Borough boundary.

T13N, R4, 5, 6W: All that portion within the Matanuska-Susitna Borough boundary.

T13N, R7, 8, 9W: All.

T14N, R3, 4W: All that portion within the Matanuska-Susitna Borough boundary.

T14N, R5 thru 11W: All.

T15N, R2, 3W: All that portion within the Matanuska-Susitna Borough boundary.

T15N, R4 thru 11W: All.

T16N, R1E: All that portion within the Matanuska-Susitna Borough boundary.

T16N, R2, 3E: All.

T16N, R4E: Sections 4 thru 10, 13 thru 36.

T16N, R5E: Sections 19 thru 21, 28 thru 33.

T16N, R1, 2, 3W: All that portion within the Matanuska-Susitna Borough boundary.

T16N, R4 thru 13W: All.

T17N, R1, 2E: All.

T17N, R3E: Section 6 thru 8, 16 thru 22, 25 thru 36.

T17N, R4E,: Section 31.
T17N, R1 thru 12W: All.

T18N, R2E: All.

T18N, R3W: Section 15 thru 36.

T18N, R4 thru 12W: All.

T19N, R4W: All that portion lying west of the east boundary of the Parks Highway right-of-way.

T19N, R5 thru 12W: All.

T20N, R4W: All that portion lying west of the east boundary of the Parks Highway right-of-way.

T20N, R5 thru 12W: All.

T21N, R4W: All that portion lying west of the east boundary of the Parks Highway right-of-way.

T21N, R5 thru 12W: All.

T22N, R4W: All that portion lying west of the east boundary of

the Parks Highway right-of-way.

T22N, R5 thru 12W: All.

T23N, R4W: All that portion lying west of the east boundary of the Parks Highway right-of-way.

T23N, R5 thru 12W: All.

In addition, where the above described boundary intersects the below-listed rivers and creeks, the management boundary extends upstream to the 1000-foot contour level. The width of this extended boundary is the width of the water course and 200 feet on each side as measured from the ordinary high water mark:

1. Skwentna River
2. Yentna River
3. Kahiltna River
4. Chulitna River
5. Susitna River
6. Talkeetna River
7. Montana Creek
8. Sheep Creek
9. Kashwitna River
10. Little Willow Creek
11. Willow Creek
12. Little Susitna River
13. Matanuska-River

APPENDIX E

Matanuska-Susitna Borough Coastal Management Program

Review Checklist

The Planning Director will review proposed actions for consistency by considering the following factors:

1. Kind of action proposed:
   a. Federal
      - o Direct Federal activity, including development projects
      - o Permit or license
      - o Exploration, development and production plans
      - o Federal assistance

   b. State
      - o Direct activities
      - o Permits, approvals and leases

   c. Local
      - o Capital improvement projects
      - o Permits (Title 17)
      - o Subdivision and platting approvals (Title 16)

2. Type of action proposed (i.e. industrial, commercial, residential or public utility).

3. Location of actions within the coastal management District, in whole or in part.

4. How will the action affect the coastal area? Describe any:
   a. Significant changes in the manner in which land, water, or coastal area natural resources are used.
   b. Significant limitations on the range of uses of coastal area natural resources.
   c. Significant changes in the quality of coastal area natural resources.

5. What administrative areas will be significantly affected?
   a. Land use district. (Comprehensive Plan)
   b. Resource management unit or subunit. (Department of Natural Resources)
   c. Service area. (Matanuska-Susitna Borough)
   d. Within Area(s) Meriting Special Attention
   e. Other. (e.g. Special Port District)

6. What uses, activities, resources and habitats will be significantly affected.
   a. Offshore areas.
   b. Estuaries.
   c. Wetlands and tideflats.
   d. Rivers, streams and lakes.
   e. Important upland habitats.
   f. Air, land and water quality.
   g. Surface and ground water.
   h. Historic, prehistoric and archaeological resources.
   i. Coastal or river floodplains.
   j. Hazardous areas.
   k. Subsistence resources.

7. Consistency with policies spelled out in the District plan.

8. Will action necessitate a decision which requires a Written Analysis? (See page 7-6).

9. Is the action consistent with local land and water use controls administered by the Planning Department? (Title 16 and Title 17)?

10. Is the action consistent with land use districts (Title 17) or management units or subunits of related Borough plans (i.e. Willow Sub-Basin Plan)? If not, name the specific districts or management areas with which the action is not consistent and describe briefly why the action is not consistent.

11. Is the action consistent with potential or proposed management plans for any Areas Meriting Special Attention in which the action is located? If not, briefly state why.

12. If the action is not consistent with the District goal or policy for a land use district, management unit or subunit, use, habitat, activity or resource; a management plan for an Area Meriting Special Attention; other land or water use control; state what actions or measures, if any, could be taken to make the action consistent.

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