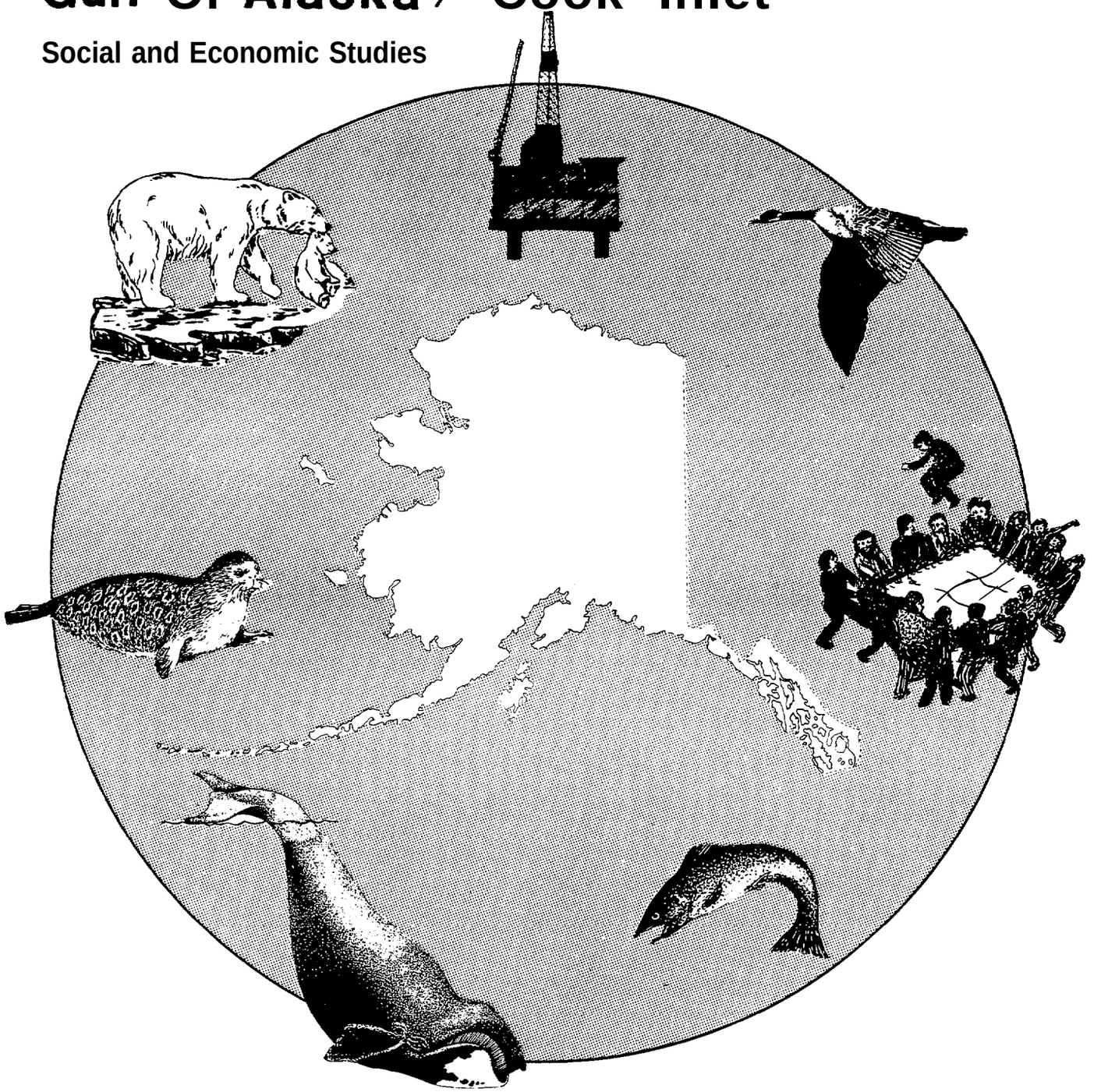
Economic And Demographic Systems Analysis Gulf Of Alaska / Cook Inlet

Social and Economic Studies



U.S. Department of the Interior
Minerals Management Service
Alaska Outer Continental Shelf Region

OCS Study
MMS 89-0076

Technical Report No. 134

Contract No. 14-12-0001-30139

Final Technical Report

ECONOMIC AND DEMOGRAPHIC SYSTEMS ANALYSIS GULF OF ALASKA/COOK INLET SALE 114

Submitted to
U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region
Anchorage, Alaska

Institute of Social and Economic Research
University of Alaska Anchorage

August 1989

NOTICE

This document is disseminated under the sponsorship of the Us. Department of the Interior, Minerals Management Service, Alaska Outer Continental Shelf Region, in the interest of information exchange. The United States government assumes no liability for its content or use thereof.

This report has abeen reviewed by the Minerals Management Service and approved for publication. Approval does not signify that the contents necessarily reflects the views and policies of the Service nor does mention of trade names or commercial products constitute endorsement or recommendations for use.

Alaska OCS Environmental Studies Program
Economic and Demographic Systems Analysis,
Gulf of Alaska/Cook Inlet Sale 114

Kathryn C. Eberhart
Gunnar Knapp

Institute of Social and Economic Research
University of Alaska Anchorage
3211 Providence Drive
Anchorage, Alaska 99508
(907) 786-7727

PREFACE

This report was prepared by Kathryn **Eberhart** *and Gunnar Knapp of the University of Alaska Anchorage Institute of Social and Economic Research* **(ISER).** *John Maynard assisted in collecting much* **of** *the data used in the study for the communities of* **Kenai** *and Kodiak. Most of the work for the study was done between September 1988 and March 1989. We are indebted to Kevin Banks and Luke Sherman of the Minerals Management Service Social and Economic Studies Program for assistance and guidance in preparing this report.*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. INTRODUCTION

This report documents six economic and demographic projection models for the Alaska communities of Cordova, Homer, Kenai, Kodiak, Seward and Yakutat. These models were developed by the University of Alaska Institute of Social and Economic Research (ISER) for use by the Minerals Management Service in projecting potential employment and population impacts of OCS development in the Gulf of Alaska. The models are "worksheet" files in the spreadsheet program LOTUS 1-2-3. The models are available on floppy disks and may be used on IBM compatible micro computers.

Chapter II describes the purpose of the models and their structure, which is similar for all of the models. Chapter III describes how to use the models. Chapters IV through IX provide descriptions of each of the communities, as well as documentations of the assumptions used in developing each model. References for each community are provided at the end of each of these chapters.

All of the study communities except Cordova have been described in detail in several Technical Reports prepared for the Minerals Management Service's Social and Economic Studies Program,

in particular Technical Report 98 (ISER, Gulf of Alaska Economic and Demographic Systems Analysis). The purpose of this report is not to repeat or duplicate earlier descriptions of the community, but rather to provide a brief description of each community together with comprehensive documentation of the assumptions for each model. This study refers extensively to Technical Report 98. In our analysis in Chapters IV through IX, we concentrate on employment and population in the study communities in the period 1980-1987, the economic structure of the communities, and factors which may lead to future economic and demographic changes in the communities.

We completed all of the data collection," modeling and choice of model assumptions for this study prior to the March 24, 1989 oil spill in Prince William Sound. In the short run, the oil spill has had a massive impact upon the economies of several of the study communities. This impact has been due partly to the disruption of fish harvesting and processing activities, and partly to the massive oil spill cleanup operations, which has employed thousands of people, including hundreds of study community residents. It was not feasible, at this late stage of the project, to substantially redo the report in order to reflect these events. In the long run, prior to exploration or

development resulting from oil lease sales, we do not expect the economies of the study communities to change significantly as a result of the oil spill. Thus we believe that the models remain valid tools for their primary purpose of projecting potential economic impacts of oil development.

CHAPTER II. STRUCTURE OF THE MODELS

The six models which are documented in this report are all similar in structure. Each "model" is actually a Lotus 1-2-3 worksheet. Rows in the worksheet represent different categories of employment or population as well as ratios and multipliers between different categories of employment and population. Columns in the worksheet represent years. The worksheet includes both historical data (usually 1980-1987) as well as projections (1988-2010). Completing the "models" are macro commands which create a variety of tables and graphs. Chapters III through VIII describe assumptions used in each of the six projection models. Chapter IX describe the structure of the model in detail and explains how to use them.

Purpose and History of the Models

The models were developed by the University of Alaska Institute of Social and Economic Research (ISER) for use by the Minerals Management Service (MMS) in projecting potential employment and population impacts of OCS development in the Gulf of Alaska. The models are similar in structure to earlier models developed for MMS by ISER to project the impacts of earlier lease sales, in particular the Rural Alaska Model (RAM model) used in Technical Report 98. However, the models presented in this report differ in that they are

programmed in LOTUS 1-2-3 and may be used. in-house by MMS staff or other interested analysts.

The disadvantage of computer projection models is typically that the users may not understand how the projections are derived or what the key assumptions are. Alternatively, the user may' understand the model structure but disagree with key model assumptions. The models presented in this report were developed with the purpose of making all of the model structure and all of the assumptions visible by looking at the worksheet, and permitting model users to easily change any model assumptions or aspects of the model structure.

Determinants of Model Structure

The structure of the models may be somewhat confusing at first to persons not familiar with the needs of the Minerals Management Service in preparing Environmental Impact Statements, or with the economies of small Alaska communities and Alaska data sources. All of these factors have contributed to the structure of the models.

Any economic and demographic projection model, whether it resides on the "back of an envelope" or a mainframe computer, is simply a structured set of assumptions or best guesses about the

future. Typically certain "driving" assumptions (e.g. expected levels of employment in basic industries) are combined with assumed economic and demographic relationships (e.g. economic multipliers) to derive projections for other variables.

Persons experienced with impact modeling have found that there is almost inevitably a trade-off between simplicity and complexity in model structure. The simpler a model, the easier it is to understand the model projections and to obtain the necessary data inputs, but the less realistic the projections may be. The more complex a model, the better it may depict the economic and demographic relationships within the community, but the more data are needed to "calibrate" the model, and the more assumptions which must be made to "drive" the model projections.

A variety of factors severely limit the complexity which is attainable or desirable for projection models for small Alaska communities. Particularly important factors include lack of data and small community size.

For many small Alaska communities, reliable up-to-date economic and demographic data are simply not available. The most recent U.S. census took place almost a decade ago, and many communities have experienced dramatic change since that time, including a massive

state spending boom followed by an equally dramatic decline, and significant fluctuations in markets for oil and fisheries. In general, the only source of consistent annual information which is even remotely reliable for small Alaska communities is the employment data collected by the Alaska Department of Labor. However, even these data do not include two of the most important sources of employment (fishing and military) , and employment in several sectors is not available, or only intermittently available, due to confidentiality requirements. Other employment and population data are plagued by problems of definition (resident vs. non-resident, point-in-time vs. annual average, differences in geographic area of coverage). Existing data sources exhibit wide inconsistencies, due to differences in methodology and purposes for which they were collected. Given these data problems, it is often difficult to describe the current economic and demographic structure of a community, short of undertaking a census.

Because of these data limitations, in developing the models we have focused on describing and projecting just a few employment and population variables. There is simply not enough information to attempt to project other variables, no matter how useful they might me. For example, there are no data since the 1980 census which might be used in developing age-sex-race breakdowns for population in the study communities.

Because most of the six communities are small and undiversified, they are subject to dramatic change in a short period of time. For example, in a community as small as Yakutat (population 650), if even one family moves into or out of the community this may result in a one percent change in population. In **small** *communities, the birth rate may fluctuate widely from year to year. In communities heavily dependent on a single resource, changes which are small in absolute magnitude may be very large in relative magnitude. A construction project such as a new sewer or water system or harbor improvements may considerably improve the local employment opportunities. Conversely, the closing of a local fish processing plant may result in a significant decline in employment. This sensitivity of local economies to unpredictable changes within specific* **industries** *limits the confidence which can be placed in any particular forecast of future employment or population. Given this limitation, the model projections should not be viewed as predictions of the future, but rather as illustrations of possible versions of the future.*

The structure of the models presented in this report represents what we believe to be the best tradeoff between simplicity and complexity in meeting the needs of MMS, based on extensive experience in preparing similar projection models in the past.

Essentially, we believe the structure is as complex as can be justified, given a number of serious limitations in making reliable employment and population projections for small Alaska communities.

Employment Categories

Overall, the models distinguish between as many as thirty-two "categories" of employment. These categories differ with respect to one or more of four factors: industry, residency, sector and origin. These factors are listed in Table II.1.

Industry refers to the common definition of industry by type of activity (mining, construction, local government, etc.) , as used in the Standard Industrial Code classifications. Most employment data are published by industry, including the Alaska Department of Labor employment data which are the primary source of data for our models.

Residency refers to the extent to which employees make their home within the community. "Resident" employees have their primary residence in the community. "Enclave" employees work in the community, but live in camps which are relatively self-sufficient, at which they receive most of their food and other services. Thus their economic interaction with the rest of the community is limited. Much of the fish processing employment in local Alaska

communities may be characterized as "enclave." "Non-resident" employees are those who live elsewhere but pass through a community or who occasionally interact with the community, such as offshore oil workers or non-local fishermen making deliveries to processing plants within the community.

Sector is a term commonly used by economists to distinguish between primary activities involved in direct production of goods (the "basic" sector), secondary activities involved in supporting production or consumption (the "support" sector), and government (government is sometimes described as part of the support sector as well). Typically, activities such as logging or fishing would be considered "basic" while activities such as retail trade or transportation would be considered "support."

Origin is a term which we use to distinguish between activities in terms of the kind of spending which directly supports them. We have found it useful to describe eight different origins of employment for small Alaska communities. "Exogenous" employment is supported by non-local private spending. "Endogenous" employment is supported by local private spending (we distinguish between resident endogenous and enclave endogenous employment, based on the origin of this local spending). We distinguish between five "government" origins of employment: federal government spending, state

government operating spending, state government capital spending, state government revenue sharing with local governments (which supports employment in the **"local government"** *industry)* **,** *and* local *government spending (that supported by* **local taxes**).

be several employment categories, which differ by residency (for example, resident and enclave fish processing) . Less commonly, there may be several employment categories which differ by origin. In particular, we distinguish between four different origins for construction employment. An example of exogenous construction employment is construction of a fish processing plant by a non-local firm, which is supported by non-local private spending. In contrast, construction employment building homes for local residents may be considered endogenous. The most important origin for construction employment during the early 1980's in rural Alaska was state government spending.

It is common for economists to use "sector" in the manner in which we use "origin" in categorizing employment. Typically, most "basic" economic activities are usually "exogenous," and most "support" activities are usually "endogenous." However, in small Alaska communities, we have found that it is useful to distinguish between sector and origin. This is because there are some activities which are typically thought of as support which are in fact exogenous. For example, employment in retail trade and service establishments which sell primarily to tourists are more properly thought of as exogenous than endogenous, since this employment is not generated or supported by income within the community. Similarly, employment of construction workers on state capital projects in Alaska is not endogenous, but is more properly thought of as supported by government spending.

Although it would be theoretically possible to derive hundreds of different categories of employment using these four factors, we distinguish between thirty-two potential separate categories of employment in our model. These categories are listed in Tables 11.2 through 11.5, sorted according to employment, residency, sector and origin, respectively.

Table II.2 illustrates that within a given industry, there may

Table 11.3 illustrates that most employment categories in our models are resident. There are only four industries in which enclave employment occurs (OCS mining, federal military, fish processing, and logging) and two industries in which non-resident employment occurs (fish harvesting and OCS mining) . Resident employment also occurs in **all** *of these industries.*

Table 11.3: Categories of Employment, Sortad by Residency

INDUSTRY	SECTOR	RESIDENCY	ORIGIN
Construct ion	Support	Resident	Endogenous, enclave
Construct ion	Support	Reaidant	State government, capita l
Construct ion	support	Resident	Exogenous
Construct ion	Support	Resident	Endogenous, resident
Logging	Basic	Rasidant	Exogenous
Finance, Ins., & Real. Estate	Support	Resident	Endogenous, resident
Loca l Government	Government	Resident	Local government
Loca l Government	Government	Resident	State government, sharing
State Government	Government	Resident	State govertmant, operating
Federal Government: Civi 1 i an	Government	Res i dent	Fadera l government
Retail Trade	Support	Reaidant	Endogenous, resident
Manufacturing: Fish processing	Basic	Reaident	Exogenous
Wholesale Trade	Support	Res i dent	Endogenous, enc l ave
Wholesale Trade	Support	Resident	Endogenous, resident
Fadera l Government: Military	Government	Resident	Federal government
Services	Support	Resident	Endogenous, enc l ave
Retai l Trade	Support	Resident	Endogenous, enc lave
Manufacturing: Other	Basic	Resident	Exogenous
Mining: OCS	Basic	Resident	Exogenous
Fish harvesting	Basic	Res idant	Exogenous
Mining: Other	Basic	Resident	Exogenous
Trans., Commun., and Util.	Support	Resident	Endogenous, resident
Mining: Onshore oi l and gaa	Basic	Reaident	Exogenous
Services	Support	Resident	Endogenous, resident
Finance, Ins., & Real. Estate	Support	Resident	Endogenous, enc l ave
Trans., Commun., and Util.	Support	Resident	Endogenous, enclave
Mining: OCS	Basic	Enc l ave	Exogenous
Federal Government: Military	Government	Enclave	Fedora l government
Manufacturing: Fish processing	Basic	Enclave	Exogenous
Logging	Basic	Enclave	Exogenous
Fish harvesting	Basic	Non- Res i dent	Exogenous
Mining: OCS	Basic	Non- resident	Exogenous

Table 11.4 lists employment categories by sector. All "basic" employment is exogenous, and all "governments employment has a **"government"** *origin. Most* **"support"** *employment is* **endogenous** *(resident or enclave). However, support employment also includes construction, which may have an* **"exogenous" or "state** *government capital spending" origin.*

Table 11.4: **Categories** of Employment, Sorted by Sector

INDUSTRY	SECTOR	RESIDENCY	ORIGIN
Mining: **OCS**	Basic	Enclave	Exogenous
Mining: OCS	Basic	Non- resident	Exogenous
Fish harvesting	Basic	Non-Resident	Exogenous
Mining: Other	Basic	Reai dent	Exogenous
Logging	Basic	Enclave	Exogenous
Fish harvesting	Basic	Resident	Exogenous
Mining: OCS	Basic	Resident	**Exogenous**
Manuf acturi ng: Other	Basic	Resident	**Exogenous**
Logging	Basic	Residant	Exogenous
Manufacturing: Fish processing	Basic	Residant	**Exogenous**
Mining: Onshore oi 1 and gas	Basic	Residant	Exogenous
Manufacturing: Fish processing	Basic	Enclave	**Exogenous**
Loca l Government	**nme**	Residant	State goverrunent, sharing
Federal Government: Civi l i an	**nmen**	Resident	**Federal government**
Federal Govarnmant: Military	**Government**	Enclave	Federal **government**
Local Government	**Government**	Resident	**Local** government
State **Government**	**Government**	Resident	State **government,** operating
Federal Government: **Mi l** tary	**Government**	Res i dent	**Federal** government
Trans., **Commun.,** and Uti **.**	support	Resident	**Endogenous,** raaident
Servi **ces**	Support	Resident	**Endogenous,** enclave
Wholesale Trade	Support	Resident	Erogenous, resident
Retai 1 Trade	Support	Resident	**Endogenous,** resident
Trans., **Commun.,** and Uti 1.	Support	Resident	**Endogenous,** enclave
Finance, Ins., & Real. Estate	Support	Resident	**Endogenous,** resident
Construct ion	Support	Resident	State **government,** capital
Services	Support	Resident	**Endogenous,** resident
Construction	Support	Resident	**Endogenous,** enclave
Retai l Trade	Support	Rea i dent	**Endogenous, enclave**
Wholesale Trada	Support	**Resident**	**Endogenous, enclave**
Finance, Ins., & Real. Estate	Support	Resident	**Endogenous,** enclave
Construct ion	Support	**Resident**	**Endogenous,** resident
Construct ion	Support	Resident	**Exogenous**

Table 11.5 shows employment categories sorted **by** *origin. Most exogenous employment is* **"basic"** *(the only exception is exogenous construction employment) .* **All** *endogenous employment is* **"support."**

Most employment with a **"government"** *origin is* **"government"** *sector, with the exception of employment of* **"state** *government capital spending" origin, which is "support" sector. This division of employment categories corresponds to the structure of the models in projecting future employment, which is based on origin.*

Table 11.5: Categories of Employment, Sortad by Origin

INDUSTRY	SECTOR	RESIDENCY	ORIGIN
Mining: Onshore oil and gas	Basic	Resident	enou
Construct ion	Support	Resident	Exogenous
Logging	Basi c	Resident	Exogenous
Manuf acturi ng: Fish processing	Basic	Enclave	Exogenous
Mining: Other	Basic	Resident	Exogenous
Fish harvesting	Basic	Resident	Exogenous
Fish harvest i rig	Basic	Non-Resident	Exogenous
Mining: OCS	Basic	Resident	Exogenous
Mining: OCS	Basic	Non-resident	Exogenous
Mining: OCS	Basic	Enc lave	Exogenous
Logging	Basic	Enclave	Exogenous
Manufacturing: Other	Basic	Resident	Exogenous
Manufacturing: Fish processing	Basic	Resident	Exogenous
Retail Trade	Support	Resident	Endogenous, enclave
Wholesale Trade	Support	Resident	Endogenous, enclave
Services	Support	Resident	Endogenous, enclave
Construct ion	Support	Resident	Endogenous, enclave
Finance, Ins., & Real. Estate	Support	Resident	Endogenous, enclave
Trans., Commun., and Util.	Support	Resident	Endogenous, enclave
Trans., Commun., and Util.	Support	Resident	Endogenous, resident
Construction	Support	Resident	Endogenous, resident
Wholesale Trade	Support	Resident	Endogenous, resident
Finance, Ins., & Real. Estate	Support	Residant	Endogenous, resident
Services	Support	Resident	Endogenous, resident
Retail Trade	Support	Resident	Endogenous, resident
Faderal Government: Civilian	Government	Rasident	Federal government
Federal Government: Military	Government	Enclave	Federal government
Federal Government: Military	Government	Reai dent	Federal government
Local Government	Government	Res idant	Local government
Construct ion	Support	Resident	State government, capital
Stata Government	Government	Resident	State government, operating
Local Government	Government	Resident	State government, sharing

Although the number of' categories of employment used in the model may seem excessive, we believe it represents the most useful tradeoff between simplicity and complexity in. developing a model which is both useful and usable. In particular, we believe that it is important and useful to distinguish between "origin" and "sector" in describing and projecting employment **for small Alaska** *communities.*

The terminology for employment categories used in Tables 11.2 through 11.5 is cumbersome, and several of these categories do not appear directly in the models. For example, we never actually distinguish between **"endogenous** *resident" and* **"endogenous non-** *resident'' 'employment within any industry, although the model is theoretically based upon such a distinction. Table 11.6 shows the names which we use for different employment categories as they actually appear and are used in the model, and how they relate to the categories described in the previous tables.*

Table 11.6: Summary of Employment Categories, as Used in the Models

Employment Category	Residency	Origin
Fish harvesting	Resident	Exogenous
Mining		
Non-OCS resident	Resident	Exogenous
OCS resident	Reaidant	Exogenous
OCS enclave	Enclave	Exogenous
Construction		
Generated by state spending	Resident	State government, capital
Exogenous	Resident	Exogenous
Endogenous	Resident	Endogenoua (resident and enclave)
Manufacturing		
Resident fish processing	Resident	Exogenous
Enclave fish processing	Enclave	Exogenous
Other manufacturing	Resident	Exogenous
Trans., cm., and utilities		
Resident exogenous	Resident	Exogenous
Resident, endogenous support	Resident	Endogenous (resident and enclave)
Wholesale trade	Resident	Endogenous (resident and enclave)
Retail trade		
Resident exogenous	Resident	Exogenous
Resident, endogenous support	Resident	Endogenous (resident and enclave)
Services		
Resident exogenous	Resident	Exogenous
Resident, endogenous support	Resident	Endogenous (resident and enclave)
Miscellaneous (logging and agri.)	Resident	Exogenous
Federal government	Resident	Exogenous
State government	Resident	State government, operating
Local government		
Supported by local revenues	Resident	Local government
Supported by state spending	Resident	State government, sharing
Supported by OCS revenues	Resident	Exogenous*

* The level of local government employment supported by OCS revenues is assumed directly.

Model Structure

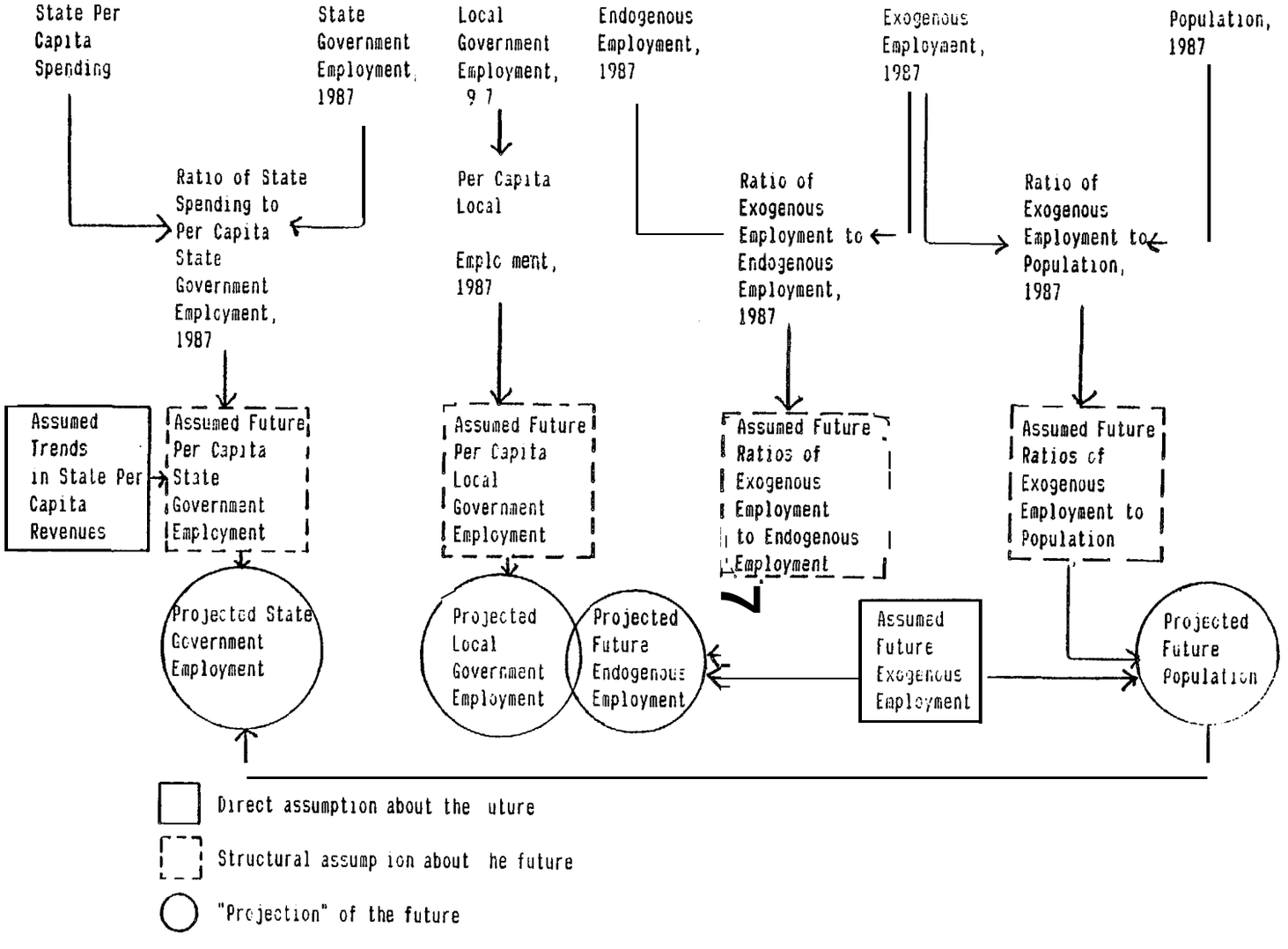
Overview of Model Structure

Figure 11.1 provides a simplified overview of the structure of the models. The primary measure of economic activity is employment, measured as annual average employment. Users of the model should be aware that employment in small coastal **Alaska** *communities is highly seasonal. Thus, depending on the time of year, the actual number of people working may be considerably higher or lower than annual average employment. "Average annual employment" provides an average measure of employment for the whole year, and may bear little resemblance to the actual employment at any point in time.*

Exogenous employment, *by definition, is driven by forces external to the community. Thus it cannot be* **"projected"** *as part of our models. Instead, we make assumptions about future levels of exogenous employment, based on expected trends in factors such as state government spending, fisheries resources, and growth in tourism. Typically, we base these assumptions on other studies or the observations of local government officials familiar with plans and prospects for particular projects and industries.*

Endogenous employment, *in contrast, is driven by spending*

Figure II-1: Model Structure



internal to the community, and may be considered to be based upon or result from the income generated from exogenous employment. (In fact, other sources of income may also contribute to endogenous employment, in particular unearned income such as social security. However, for purposes of simplification, the models assume that **all endogenous** *employment in a community* **is** *"generated" by exogenous employment) .*

We usually assume that the ratios of each category of **endogenous** *employment to exogenous employment,* or *the "multipliers," are fixed.* **We** *calculate these ratios* **or** *multipliers from our estimates of historical endogenous and exogenous employment within each community. Thus a key part of the model development is estimating historical endogenous and exogenous employment. We project future* **endogenous** *employment based on these assumed ratios of* **endogenous** *to exogenous employment.*

We project local government **employm***ent based on an assumed per capita level of local government employment. We also project state government* **employm***ent based on assumed per capita levels of state government employment. However, assumed per capita state employment is assumed to decline over time, in proportion to assumed declining future statewide per capita expenditures as state oil revenues decline.*

Because the communities are small and our data are limited, in projecting population we simply assume that future population will be proportional to future annual average exogenous employment. We Figure II.1
recognize that in the real world, a great variety of economic, demographic, cultural and social factors determine the population of a community. Although population is usually ultimately linked to the economic base of a community, many other factors come into play, such as birth and death rates, and the strength of cultural and family ties to the community. However, given the lack of data, it is almost impossible even to document historical birth, death and migration' rates for small Alaska communities, much less to reliably project them into the future.

In general, we believe it is likely that total employment will remain roughly in a constant proportion to exogenous employment, and population will remain roughly in a constant proportion to total employment. However, during short-term periods of boom or bust, this assumption may well overstate or understate the actual population which will occur, as endogenous and government employment does not in fact adjust immediately to changes in exogenous employment, and population does not in fact adjust immediately in proportion to employment. Thus we recognize that our method of

projecting population is in fact an important simplifying assumption of the model. However, we do not believe that any more elaborate approach can be justified by available data.

Below, we provide a more detailed description of the models' structure and how we developed and calibrated the models. However, to thoroughly understand the operation of **the models** *we recommend that users examine the actual worksheet* **models** *and trace the relationships between different cells. To simplify the process of tracing these relationships, cells which contain numbers which are directly assumed (for example, exogenous employment and most historical data) appear in bold upon the screen. Cells which contain formulas do not appear in bold.*

Historical Data

Each model provides employment and population figures for the years 1980 through **2010.** *In general, the figures for the years 1980 through 1986 or 1987 are based upon historical data, while the figures for the years 1986 or 1987 through 2010 are "projections." However, for some variables for which data were not available, the figures for years prior to 1987 were* **"projected"** *or inferred based on other historical data. We used two major sources of historical data to* **"calibrate"** *the model. These were Alaska Department of*

Labor (DOL) data on employment by industry by year, and miscellaneous data on population for different years.

As our first step in developing the model, we developed historical employment data for each employment "category" (i.e. by industry, residency, and origin). In general, we began by developing employment. data by industry, using DOL data wherever available.

Department of Labor Employment Data. The DOL employment data on employment by industry by year were based on special computer runs provided to the Minerals Management Service. As noted above, these data do not include fish harvesting employment, military employment, or employment in industries for which there were fewer than four employers (these data were suppressed to guarantee confidentiality) . The data were provided by the Department of Labor for each quarter. To calculate annual average employment, we averaged employment over the four quarters. Where data were suppressed for one or more quarters, we made our best judgement as to annual average employment. In general, we used DOL data for historical employment by industry wherever these data were available.

Other employment data. For industries for which DOL data were not available (in particular fish harvesting employment and military employment) we made our best judgement of historical employment

using whatever sources were available for each community. These sources included the 1980 census, planning studies, previous MMS-sponsored studies, and conversations with city officials.

After developing assumptions on historical employment by industry, we made further assumptions to divide employment within each industry into different categories, as listed in Table II.2. This involved making our best judgments as to residency and origin within each industry. In Chapters III-VIII, we describe our specific assumptions for each industry. Below, we describe the general approach which we used for each industry.

Fish Harvesting. We usually only measured "resident fish harvesting." Thus for most communities we did not attempt to include "non-resident fish harvesting" as an employment category within the model.

Logging. Logging employment was assumed only for Yakutat. We divided logging employment into resident and enclave logging employment, based on our best judgement as to the share of logging done by residents.

OCS Mining. No communities were assumed to have OCS employment during the period 1980-1987. Thus these employment categories are

only used for projections.

Construction. Construction was the most difficult industry to "allocate" among different categories of employment. In the absence of data, we usually divided historical construction employment primarily between exogenous construction employment, endogenous construction employment (resident and non-resident), and state-capital spending construction employment based on a rough judgement as to the importance of state capital projects and basic industry capital projects during the period 1980-1987.

Transportation, Communications and Utilities; Retail Trade; and Services. For several communities, we assumed that some of the employment in these three support industries was exogenous rather than endogenous in origin. In other words, we assumed that a certain share of employment in these industries resulted not from spending generated within the community but rather from spending from outside the community. We assigned an exogenous share to retail trade and services because they cater to tourists as well as local residents. We assigned an exogenous share to transportation, communications, and utilities because this industry includes transportation services for touristis and export/import transportation via shipping and the Alaska Railroad (for example, shipments of coal to Korea).

Local Government. State government plays an important role in financing local government in Alaska. A study by the House Research Agency ("State of Alaska Budget Appropriations, FY 84-FY 87") showed on average that 53 percent of muncipal revenues were from the state, 44 percent were local revenues, and 3 percent were federal in FY 86. Specifically, state revenues provided 52 percent of of municipal government funding for Kenai, 40.2 percent for Soldotna (included in the Kenai market area), 30.8 percent for Kodiak, and 16.9 percent for Homer. The Finance Director of Cordova indicated that state revenues provide 28 percent of municipal funding. State funding provided an even greater share of funding for school districts in the study communities. In FY 82, the state share of school district revenues was 92.6 percent for the Yakutat School District, 82.8 percent for the Cordova School District, 88.6 percent for the Kodiak School District, and 74.8 percent for the Kenai School District 74.8 (includes Homer, Kenai, and Seward). Based on these figures, we assumed that a significant share of historical local government employment in each community was funded by state government spending.

Summary of Historical Employment Assumptions. Table 11.7 summarizes the assumptions which we used to divide historical employment in different industries by origin. In many respects this

division was arbitrary, based upon our best judgment rather than solid evidence as to what actually supported the jobs. However, we believe that it is preferable to attempt to divide employment by origin in this manner rather than to assume origins which are clearly unrealistic (for example, to assume that all local "services" employment is supported by local spending) .

The assumptions are based on very limited information and we recognize that in fact these shares may well have shifted between the period 1980 through 1987, rather than remaining constant. For example, it is quite likely that the actual share of construction employment supported by state spending rose during the first part of this period and then fell. However, we have no way of determining what the actual shares might have been.

We assumed resident shares for employment in fish processing of 40 percent for those communities for which data were not available (Cordova, Kenai and Seward).

We could not determine the actual shares of employment in other industries which were supported by non-local rather than local spending. We assumed that the tourism industry is relatively more important in Homer, Kenai and Seward than in Cordova, Yakutat and Kodiak. Thus we assumed that larger shares of employment in "retail

trade, " "services" and "transportation, communication and utilities" were exogenous in these communities.

For all of the communities, we assumed that 50 percent of local government employment was supported by **local** *revenues and the remainder* **by** *state revenue sharing.*

Table 11.7: Summary of Assumptions Used in Developing Historical Employment Assumptions, by Community

Employment Category	Assunad Shares of Historical Employment					
	Cordova	Homer	Kanai	Kodiak	Seward	Yakutat
Construction						
Generatad by state spending	.25	.25	.25	.25	.25	.25
Exogenous	.25	.25	.25	.25	.25	.25
Endogenous	.50	.50	.50	.50	.50	.50
Manufacturing						
Resident fish processing	.40	.79	.40	.47	.40	.25
Enclave fish processing	.60	.21	.60	.53	.60	.75
Trans., cm., and utilities						
Resident exogenous	.05	.10	.10	.05	.10	.05
Resident, endogenous support	.95	.90	.90	.95	.90	.95
Retai 1 trsde						
Resident exogenous	.10	.25	.25	.10	.25	.10
Resident, endogenous support	.90	.75	.75	.90	.75	.90
Services						
Resident exogenous	.05	.10	.10	.05	.10	.05
Resident, endogenous support	.95	.90	.90	.95	.90	.95
Local government						
Supported by 1 ocal revenues	.50	.50	.50	.50	.50	.50
Supported by state spending	.50	.50	.50	.50	.50	.50

Historical Population

Sources of information on population during the period 1980-1987 were limited. The major sources were the 1980 U.S. census, the Alaska Department of Labor, "Alaska Population Overview" and the Kenai *Peninsula Borough, "Situation and Prospects."* *The* "Alaska *Population*

Overview" and "Situation and Prospects" are both published annually, so several issues of each were used. In addition, the several city planning departments provided local population estimates, including population outside the city limits but **in** *the vicinity* **of** *the city.*

Projections

We term the employment and population figures in the models for the years 1987-2010 "projections.[i]*" Below, we describe how we arrive at these projections.*

Exogenous Employm*ent. As noted above, we assume future levels of exogenous employment, based on expected trends in factors such as state government spending, fisheries resources, and growth in tourism. Typically, we base* **these** *assumptions on other studies or the observations of local government officials familiar with plans and prospects for particular projects and industries. In Chapters III-VIII, we describe how we arrived at the assumptions for each exogenous employment category. The exogenous employment assumptions are critical to the model for two reasons. First, exogenous employment represents approximately half of total employment. Thus we are directly assuming half of our "projections." Secondly, our exogenous employment assumptions "drive" our projections for endogenous and government employment and population.*

Endogenous employment. Endogenous employment includes all or part of employment in five industries: transportation, communications and utilities; wholesale trade; retail trade; finance, insurance and real estate; and services. We project future endogenous employment in these industries by projecting future total endogenous employment and then dividing this total into (usually fixed) shares, based on past trends (usually our historical figures for 1986 or 1987). Table 11.8 compares our assumptions of the share of total future endogenous employment assumed for each industry in each community.

Table 11.8: Summary of Assumptions for Projections of Future Endogenous and Government Employees

	Cordova	Homer	Kenai	Kodiak	Seward	Yakutat
Share of Total Endogenous Employment						
construction	.04	.03	.07	.06	.10	.02
Trans., Cm., and Util.	.21	.21	.10	.12	.11	.26
Wholesale Trade	.05	.04	.09	.03	.09	.02
Retail Trade	.37	.33	.32	.40	.26	.31
Finance, Ins., and Real Estate	.07	.08	.06	.06	.04	.12
Services	.26	.30	.36	.33	.39	.26
Endogenous Employment Multipliers [EMEDREEX87/EMREEX87]	.82	.97	1.61	.51	1.18	.99
Local Government Employment Multiplier [EMEGLR87/ENEXT 1981	.20	.23	.22	.06	.15	.20
Base State Government Employment Multiplier [EMSG87/EMEXTO87]	.15	.03	.21	.06	.36	.08
Base State-Supported Construction Employment Multiplier [EMCOSS87/EMEXTO87]	.01	.03	.04	.01	.17	.00
Base State-Supported Local Government Employment Multiplier	.08	.23	.22	.06	.15	.20

[Note that state supported construction for Yakutat was shown as 0.1

We project total **endogenous** *employment as follows. First, we divide total* **endogenous** *employment by origin, into* **resident-** *generated and enclave-generated categories. We assume a fixed employment multiplier of .05 for enclave-generated endogenous employment. In other words, we assume that every 100 enclave workers generate 5 endogenous employment jobs. This is a*

deliberately low multiplier reflecting a very low local economic impact of enclave workers. It is an important model assumption however, because of the significant number of enclave workers which might accompany future OCS development. The choice of enclave multiplier directly affects the size of the projected impacts of OCS development.

Based on this multiplier, we calculate assumed enclave-generated endogenous employment for the period 1980-1987, and subtract this figure from total endogenous employment to arrive at resident exogenous employment-driven endogenous employment for the period 1980-1987. We project future resident exogenous employment-driven endogenous employment by assuming that it changes from the 1987 level in proportion to changes in resident exogenous employment.

Our methodology for projecting future endogenous employment may be summarized as follows:

$$\text{EMEDTO} = \text{EMEDREEX} + \textit{EMEDEN}$$

$$\textit{EMEDEN} = .05 \times \textit{EMEN}$$

$$\text{EMEDREEX}_t = \text{EMREEX}_t \times [\text{EMEDREEX}_{87}/\text{EMREEX}_{87}]$$

where

EMEDEN = **Endogenous** *employment driven by enclave employment (Employment* **EnDogenous ENclave)**

EMEDREEX = **Endogenous** *employment driven by resident exogenous employment (Employment* **EnDogenous REsident EXogenous)**

EMEDTO = *Total* **endogenous** *employment (Employment* **EnDogenous . TOtal** *)*

EMEN = *Enclave employment (Employment* **ENclave)**

EMREEX = *Resident exogenous employment (Employment* **REsident EXogenous)**

The expression $[EMEDREEX_{87}/EMREEX_{87}]$ *may be viewed as a "multiplier" for resident exogenous employment-driven* **endogenous** *employment. Table 11.8 summarizes the values which we assumed for this multiplier in each model.*

Government **Employment.** *We project local government employment supported by local tax revenues by assuming that it changes from the*

1987 level in proportion to changes in total exogenous employment. This is similar to our approach for projecting **endogenous** *employment except that it is based on* **total** *exogenous employment rather than resident exogenous employment.* **In** *effect, we are assuming that* **local** *tax revenues are proportional to* **total** *(resident and* **enclave**) *exogenous employment.*

Our methodology for projecting **local** *government employment supported by* **local** *tax revenues may be summarized as follows:*

$$EMLGLR_t = EMEXTO_t \times [EMLGLR_{87}/EMEXTO_{87}]$$

where

EMLGLR = Local government employments supported by local tax revenues (Employment **Local** *Government supported by Local Revenues)*

EMEXTO = Total exogenous employment (Employment **EXogenous TOtal** *)*

The expression $[EMLGLR_{87}/EMEXTO_{87}]$ *may be viewed as a "multiplier" for local government employment supported by local tax revenues. Table 11.8 summarizes the values which we assumed for this multiplier in each* **model.**

The other categories of government employment in our model are supported by state spending (including construction employment supported by state capital spending). For all of these categories, we assume that employment changes not **only** *in proportion to the size* **of** *the community economic base (as measured by total exogenous employment) , but also in proportion to per capita state spending, resulting from changes in per capita state revenues. Our assumptions for future state per capita spending are shown in Table II-9 . These assumptions are based on projections from* **ISER's** *statewide MAP econometric model.*

Our methodology for projecting other categories of government employment may be summarized **as** *follows:*

$$EMSG_t = EMEXTO_t \times [EMSG_{87}/EMEXTO_{87}] \times [STPCOPEX_t/STPCOPEX_{87}]$$

$$EMLGSS_t = EMEXTO_t \times [EMLGSS_{87}/EMEXTO_{87}] \times [STPCOPEX_t/STPCOPEX_{87}]$$

$$EMCOSS_t = EMEXTO_t \times [EMCOSS_{87}/EMEXTO_{87}] \times [STPCCAEX_t/STPCCAEX_{87}]$$

where

EMSG = State government employment (Employment State Government)

Table II-9: Derivation of State Per Capita Operating and Capital Expenditure Assumptions

Year	State population (thousands)	State operating expenditures ($ millions)	State capital expenditures ($ millions)	Per capita operating expenditures ($ thousands)	Per capita capital expenditures ($ thousands)
1980	420	1253	328	2.99	0.78
1981	435	1564	467	3.60	1.07
1982	461	1983	558	4.30	1.21
1983	495	2239	549	4.52	1.11
1984	523	2255	651	4.31	1.24
1985	540	2295	824	4.25	1.53
86	536	2308	652	4.31	1.22
1987	536	2308	652	4.31	1.22
1988	529	1965	412	3.71	0.78
1989	524	1743	246	3.33	0.47
1990	528	1836	324	3.48	0.61
1991	528	1790	316	3.39	0.60
1992	532	1894	334	3.56	0.6.3
1993	535	1888	333	3.53	0.62
1994	538	1778	313	3.31	0.58
1995	547	1976	348	3.61	0.64
1996	552	1953	344	3.54	0.62
1997	555	1795	316	3.23	0.57
1998	564	2054	362	3.65	0.64
1999	573	2125	375	3.71	0.65
2000	581	2015	355	3.47	0.61
2001	588	1932	341	3.29	0.58
2002	594	1833	323	3.09	0.54
2003	604	1948	343	3.23	0.57
2004	612	188s	333	3.09	0.54
2005	620	1860	328	3.00	0.53
	636	1837	324	2.89	0.51
2007	652	1833	323	2.81	0.50
2008	662	1802	318	2.72	0.48
2009	677	1968	347	2.91	0.51
2010	691	1941	342	2.81	0.49
2011	706	1888	333	2.67	0.47

EMLGSS = *Local government employment supported by state spending (Employment Local Government State Spending)*

EMCOSS = *Construction employment supported by state spending (Employment Construction State Spending)*

STPCOPEX = *State per capita operating expenditures (***STate** *Per Capita OPerating Expenditures)*

STPCCAEX = *State per capita capital expenditures (STate Per Capita* **CApital** *EXpenditures)*

EMEXTO = *Total exogenous employment (Employment* **EXogenous TOtal** *)*

The expressions $[EMSG_{87}/EMEXTO_{87}]$, $[EMLGSS_{87}/EMEXTO_{87}]$, *and* $[EMCOSS_{87}/EMEXTO_{87}]$ *may be viewed as a* **"multipliers"** *for these categories of state-government supported employment. Table II-8 summarizes the values which we assumed for these multipliers for 1987 for each model. However, in subsequent years, we adjust the effective multipliers downwards as state per capita spending declines.*

Population. *We project future resident population by assuming that it changes in proportion to resident exogenous employment. Our methodology for projecting future population may be summarized as follows:*

$$PORE_t = EMREEXt \times [PORE_{87}/EMREEX_{87}]$$

where

PORE = *Resident Population (Population* **REsident**)

EMREEX = *Resident, exogenous employment (Employment* **REsident EXogenous**)

The expression $[PORE_{87}/EMREEX_{87}]$ *may be viewed as a* **"multiplier"** *for population.* **Table II.8** *summarizes the values which we assumed for this multiplier in each* **model**. *In order to calculate population by age group, we assume that the resident population age distribution remains the same as in the most recent year for which age distribution data are available (generally* **1980**, *from the 1980 U.S. Census).*

We **do** *not distinguish between Native population and non-Native population except for the* **Yakutat** *model. In the* **Yakutat model**, *we*

assume that Native population grows at a constant growth rate but cannot exceed 70 percent of total population. Non-Native population is projected as described above.

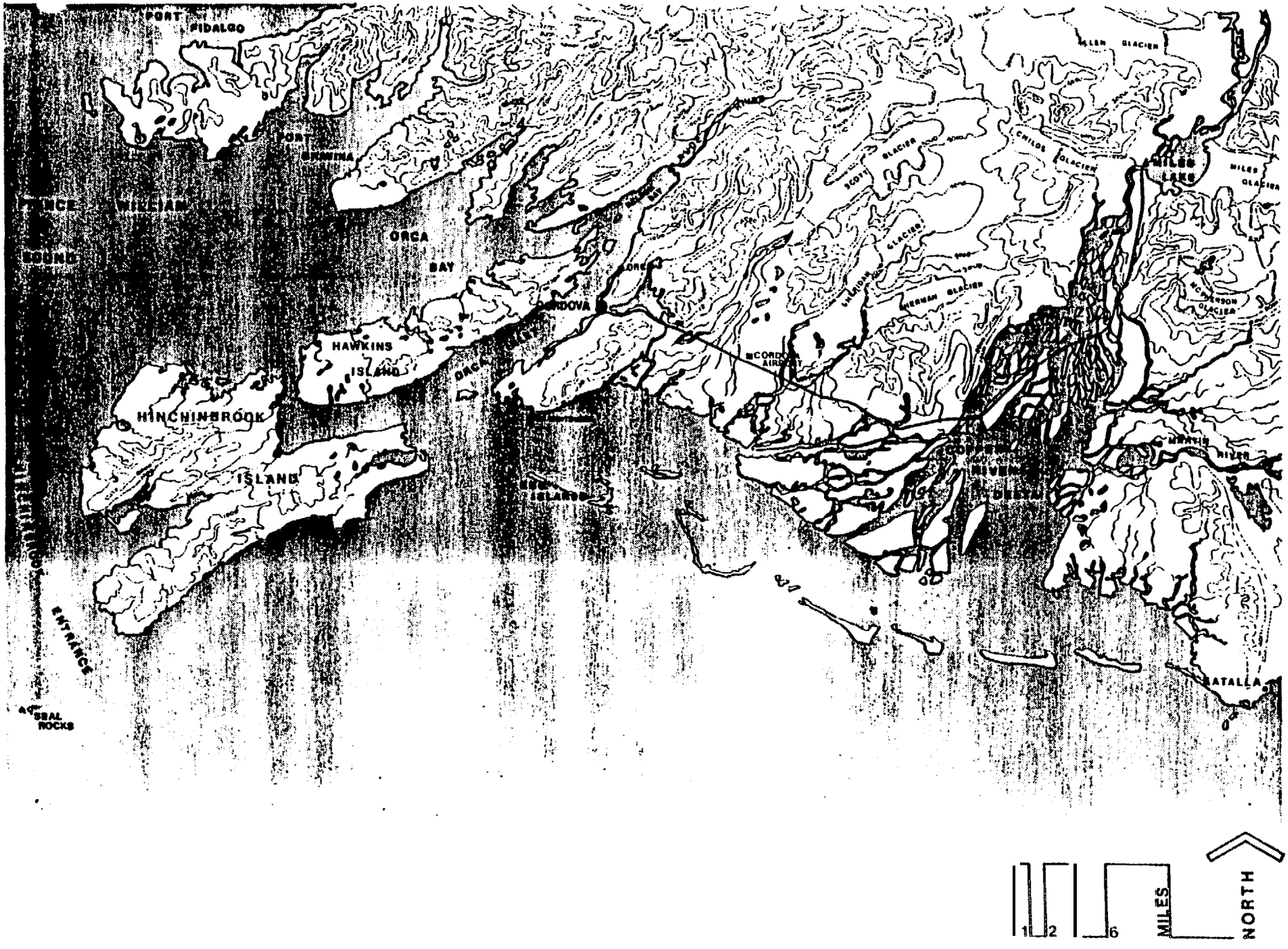
CHAPTER III. DESCRIPTION AND MODEL ASSUMPTIONS: CORDOVA

Overview

Cordova is located near the eastern entrance to Prince William Sound, about 160 miles southeast of Anchorage and about 410 miles northwest of Juneau. Valdez is 65 miles to the northwest across Prince William Sound. The community fronts on Prince William Sound and is adjacent to Chugach National Forest. Cordova is accessible by air and water. Plans have been made to connect it with the state (over land) highway system by completing the Copper River Highway. Before the 1964 earthquake, construction of the highway was completed to Mile 59. After the earthquake destroyed bridges, the project was reconsidered, and today only a temporary route exists as far as mile 52.

Cordova, with a population of about 2,510, is dominated by commercial fishing and seafood processing. During summer months the community's population may almost double due to the influx of transient workers. Fishing and fish processing is estimated to account for 50 percent of local employment (Cordova Draft Comprehensive Plan).

FIGURE III.1: CORDOVA STUDY AREA



III-1(a)

Government is the second most important sector in the economy, providing stable year-round employment. Tourists visiting the community generally come to hunt or fish. Tourism is regarded as having expansion potential.

Employment in Cordova peaked in 1982, although higher employment occurred in transportation, communications, and utilities and local government during 1982-1984 due to several public construction projects (a small boat harbor expansion, construction of the north and south containment area and a new hospital) .

Major Data Sources

The primary data source for our analysis of Cordova was Department of Labor data on employment for Cordova. In addition we used an unpublished 1983 study by the Institute of Social and Economic Research (ISER) "Cordova: Present and Projected Levels of Population, Employment, and Income." We also talked to Carla Moore, a city planner for Cordova and Dale Daigger, the City Finance Director. We have listed all of the sources used in our analysis at the end of this chapter.

Study Area

Figure 111.1 shows the area which we are defining as "Cordova." Our employment and population assumptions and projections for this study refer to employment and population within this area. This includes the road-connected area around Cordova and corresponds to the "sub-sub area" used by Department of Labor for employment statistics.

Employment Assumptions

Table III.1 shows Alaska Department of Labor average annual employment data for Cordova for the years 1980-1987. An asterisk "*" indicates that the figure is not available because the figures were suppressed for one or more quarters. These data formed the primary basis for the development of our employment assumptions, and are the basis for all employment' data not otherwise cited.

We made additional assumptions to account for industries not included in the Department of Labor data (eg. fish harvesting) or which were fully or partially suppressed (eg. manufacturing and wholesale trade) , and to allocate employment within a given industry between resident and enclave shares, exogenous and endogenous shares, etc. Our resulting employment assumptions for

the years **1980-1987** *are shown in Table 111.2. Below we discuss these assumptions by industry.*

Table 111.1: **Summary** of Department of Labor Employment Data for Cordova

Category	Cede	1980	1981	1982	1983	1924	1985	1986	198?
Mining	**1**	0	0	0	0	0	0	0	0
Construct ion	2	**17**	22	30	26	34	37	25	*
Manufacturing	3	*	*	*	*	*	263	*	*
Trans., **Comm.,** Utilities	**4**	117	185	261	242	189	78	**70**	79
Wholesale Trade	5	*	*	•	•	*	*	*	*
Retai l Trade	6	132	151	177	163	141	**154**	140	**143**
Fin., Ins., & Real Estate	7	25	26	24	23	23	25	25	26
Services	8	111	105	122	124	113	102	103	96
Forestry, Ag., Fisheries	9	*	*	*	•	•	*	*	*
Federal Government	10	35	42	37	34	32	30	30	31
State Government	11	81	87	87	88	92	96	96	89
Loca 1 Government	**12**	167	179	192	197	181	174	166	162
TOTAL		**888**	**1071**	**1175**	1180	*	*	*	*

* Data **suppressed.**

Table 111.2: Summary of Employment Assumptions for Cordova, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Fish harvesting	186	186	186	186	186	186	186	186
Mining	0	0	0	0	0	0	0	0
Non-OCS resident	0	0	0	0	0	0	0	0
OCS resident	0	0	0	0	0	0	0	0
OCS enclave	0	0	0	0	0	0	0	0
Construct ion	17	22	30	26	34	37	25	25
Generated by state spending	4	6	8	7	9	9	6	6
Exogenous	4	6	8	7	9	9	6	6
Endogenous	9	11	15	13	17	19	13	13
Manufacturi ng	277	27?	277	277	277	263	263	263
Resident fish processing	111	111	111	111	111	105	105	105
Enclave fish processing	166	166	166	166	166	158	158	158
Other manufacturing	0	0	0	0	0	0	0	0
Transportation, comm. and utilities	117	185	261	242	189	78	70	79
Exogenous	6	9	13	12	9	4	4	4
Endogenous	111	176	248	230	180	74	67	75
Wholesale trade	16	19	22	20	17	19	17	18
Retai l trade	132	151	177	163	141	154	140	143
Exogenous	13	15	18	16	14	15	14	14
Endogenous	119	136	159	147	127	139	126	129
Finance, Insurance and Rest Estate	25	26	24	23	23	25	25	26
Services	111	105	122	124	113	102	103	96
Exogenous	6	5	6	6	6	5	5	5
Endogenous	105	100	116	118	107	97	98	91
M i sce ll aneous	10	10	10	10	10	10	10	10
Logging	10	10	10	10	10	10	10	10
Federal government	92	99	94	91	89	87	87	88
State government	81	87	87	88	92	96	96	89
Local government	167	179	192	197	181	174	166	162
Supported by local revenues	67	72	77	79	72	70	66	117
Supported by state spending	100	107	115	118	109	104	100	45
Supported by OCS revenues	0	0	0	0	0	0	0	0
Tota l	1231	1346	1482	1447	1352	1231	1188	1185

Fish Harvesting

Cordova is the center of fishing and fish processing for an

area encompassing 38,000 square miles of Prince William Sound and the Copper River and Bering River fisheries. Fishing employment is cyclical. It begins to increase in March with the herring fishery and peaks in August with salmon. In the ADFG Area E Fishery (Prince Wiiliam Sound), Cordova residents hold 222 of 545 drift net permits and 125 of 271 seine permits.

There are no Department of Labor employment estimates for fish harvesting employment. The 1980 federal census showed 174 employed pesons claiming forestry, fishing or farming as an occupation. Most would have been employed in fishing. However, the federal census data were collected for the last week of March 1980, but this may have reflected the situation later in the spring. Therefore, we estimate a "seasonality factor" by comparing Alaska Department of Labor employment data for manufacturing in the second quarter of 1980 to average annual employment for the entire year. The resulting seasonality factor is 277/260 = 1.07. It is assumed that the seasonality of fishing employment is similar to that of manufacturing. Multiplying the census figure of 174 by the seasonality factor of 1.07 results in employment (FTE) of 186 in 1980. We have assumed this figure for the period 1980-1987. We have also assumed that fish harvesting employment will remain constant at this level for the period 1988-2020.

Mining

Non-OCS Resident. Katalla *Field, a small field discovered in* 1902, *operated for* 30 *years but produced only 154,000 barrels of oil. The Alaska Crude Corporation has been investigating the* potential *of the* Katalla *fields, but work is* at *a standstill, probably* largely *due to the decline of world* oil *prices. Construction of a road, unlikely in the current state economy, linking* oil fields to *the Copper River Highway would improve the feasibility of this project. However, direct employment benefits* would *be limited because it is a small oil field. The possibility of* selling *oil and gas to the* local *electric cooperative for use* in *generating electricity has been proposed.*

The Bering River coal fields were discovered in 1896. *However, withdrawal of Alaska's* coal *lands in* 1906 *prevented exploitation. The* Chugach *Natives,* Inc. *and* KADCO, Inc. (a *Korean fi,e) have identified 62 million tons* of *anthracite* coal *in the eastern part of the Bering River coal fields. However, 32 miles of road would need to be constructed in order to develop this coal resource. If access were available, the magnitude of potential economic benefits to Cordova still would depend to a great extent on the location of an export facility. Another possible benefit of developing this coal resource may be cheaper fuel for the local electric*

cooperative. Wheelabrator Coal Services Company has completed a prefeasibilty study of this project (Assessment of the Feasibility and Implementation of Port and Transportation System Alternatives for the Bering River Coal Field). Although it is projected that 245 people would be directly employed if this resource were to be developed, the report states that it is not a feasible project at this time due to low market price and high development costs, i.e., it is feasible only under a most optimistic, unrealistic scenario.

There is currently no mining or mineral extraction occurring in the Cordova area. We thus assume that mining employment was zero for the period 1980-1987.

We also assume that onshore mining employment remains at zero for the period 1988-2020. Essentially, this is an assumption that development of the Bering River Coal Field does not occur.

OCS Mining. Exploration following a 1976 federal OCS lease sale in the northern Gulf of Alaska resulted in little direct economic impact in Cordova. We have assumed zero OCS mining employment in Cordova during the period 1980-1987. Our "base case" model assumptions similarly assume zero OCS mining employment during the period 1988-2020.

Miscellaneous

Logging. *Eyak Corporation is harvesting 10-20 truck loads a day of timber which is shipped out of the community. We have assumed employment of 10 in logging for the period 1980-1987. We assume employment of 10 in logging for the period 1988-2020.*

Construction

Cordova would receive a large influx of public money and construction jobs if either the Copper River Highway were completed or the Katalla Road were built. Copper River Highway completion would take an estimated 10 years. Given the state's current fiscal situation, we assume that this road will not be built.

The Alaska Department of Labor data show Cordova construction employment increasing from 17 in 1980 to 37 in 1985 and then dropping to 25 in 1986. We assumed the same figure of 25 for 1987, which was suppressed in the Department of Labor data.

We assumed that 25 percent of construction employment during the period 1980-1987 was supported by state government capital spending, 25 percent was exogenous, and 50 percent was endogenous, based on our

best judgment in the absence of any data.

We assumed exogenous employment of 6 during the period 1988-2020 based on on our best judgment in the absence of any data.

Manufacturing

Total Manufacturing Employment. Fish processing is the only manufacturing in Cordova. The Department of Labor data show average annual manufacturing employment of 263 for 1985 (the data were suppressed for at least one quarter in the other years) . Below, we have listed manufacturing employment data for other years:

Year	Average Manufacturing Employment	Quarters
1980	210	1,2,3
1981	269	1,2,3
1982	220	1,2,3
1983	251	1,2,3
1984	65	1,2,4
1985	263	1,2,3,4
1986	221	1,2,3
1987	49	1

For comparison, the 1980 census showed manufacturing employment (non-durables) of 148. Multiplying this figure by the seasonality factor described above under "fish harvesting," we obtain estimated average annual resident employment of 158. Given this limited data,

we assumed total fish processing employment of 277 in 1980 through 1984 and 263 for 1985-1987.

Resident and non-resident fish processing. The Cordova city planner that we contacted suggested that 75 percent of fish processing employment is non-resident. She indicated that a visible number of cannery workers are Filipinos from Hawaii. We assumed a 40 percent resident share for fish processing employment during the years 1980-1987, which resulted in an assumption of resident fish processing employment of 111 for 1980-1984 and 105 for 1985-1986. Non-resident fish processing employment is thus assumed to be 166 during 1980-1984 and 158 for the period 1985-1987.

We assumed that both resident and non-resident fish processing employment will remain constant at their 1987 levels during the period 1988-2020.

Transportation, Communications, and Utilities

The Department of Labor average annual employment figures for transportation, communications and utilities range from 117 in 1980 to about 261 in 1982. Employment declined to 189 in 1984 and 78 in 1985. We assumed that 5 percent of employment in this industry was exogenous and 95 percent was endogenous. We assumed that exogenous

transportation, communications and utilities employment will grow at 3 percent per year after 1987, based on an assumption that tourism in the Cordova area will grow at a rate of 3 percent per year.

Wholesale *Trade*

Wholesale trade figures were suppressed by the Department of Labor. However, according to the ISER study, in **1980** *wholesale trade employment was 11 percent of total trade (based on employment data from the 1980 census). We assumed that wholesale trade during 1980-1987 was* **11** *percent of total trade, or 12 percent of retail trade employment. This results in estimates of wholesale trade employment ranging from 16 in 1980 to a high of 22 in 1982. We assumed that all wholesale trade employment was* **endogenous.**

Retail Trade

Department of Labor average annual employment figures were used for the retail trade category. These ranged from 132 in 1980 to 177 in 1982, 141 in 1984, and 143 in 1987 (Table 111.1). We assumed that 10 percent of retail trade employment was exogenous and 90 percent was endogenous. We assume that exogenous retail trade employment will grow at a rate of 3 percent per year after 1987.

Finance, Insurance, and Real Estate

Department of Labor annual *average employment figures were used for this category (Table* III.1). "FIRE" *employment remained relatively constant during the* study *period, varying between 25* in 1980, *23* in *19$3 and 1984,* and *26* in 1987. *This category was assumed to* be *entirely* endogenous.

Services

We used Department of Labor annual *average employment figures for our employment assumptions* in all *of these industries. We assumed that 5 percent* of *employment in this industry was exogenous and* 95 *percent was* endogenous. We *assume that exogenous services employment will grow at a rate of 3 percent per year after 1987.*

Federal Government

Civilian federal government employment in Cordova increased from 35 in 1980 to 42 in 1981 and then declined to 30 in 1985 *and 1986* (Table *111.1). The Coast Guard maintains one unit at Cordova with 57 personnel. Other federal agencies with offices in* Cordova *include the U.S. Forest Service, the Post Office, and the Federal Aviation Administration. Total federal government employment is projected at*

88 during 1988-2020.

State Government

State employment increased from **81** *in 1980 to* **96** *in 1985 and 1986 then declined to 89 in 1987. State offices in Cordova are the Department of Public Safety, Department of Fish and Game, the Court System, and the University of Alaska, Alaska Marine Advisory Program.*

Local Government

Total **local** *government employment grew from 167 in 1980 to 197 in 1983, then declined to 162 in 1987. The city provides education, recreation, public safety services, roads, water, sewer, snow removal, and alcohol and mental health counseling. Facilities maintained by the city include city hall, the city shop, the hospital, the port and harbor, a sanitary landfill, a sewage disposal plant, streets and roads, and water storage tanks and reservoirs. The finance director, City of Cordova, estimated that currently local government is supported 28 percent by state funding. According to the Alaska State Legislature, House Research Agency (Report 87-A), in* **FY** *1982, 82.8 percent of revenues for the Cordova School District came from the state. Comparing these two figures, and based on our best judgment, we assume that state revenues support 50 percent of*

total *local government.*

Table I I 1.3 Estimated **Employment** in **Cordova**

	1980	1981	1982	1983	1984	1985	1986	1987
Resident **Basi** c	307	307	**307**	307	307	301	301	301
Fishing	**186**	**186**	**186**	**186**	**186**	186	186	186
Fish Processing	**111**	**111**	**111**	**111**	**111**	1 05	105	**105**
Miscel laneous-Logging	**10**	**10**	10	**10**	10	10	10	10
Other {mining, manufacturing)	0	0	0	0	0	0	0	0
Resident Support	418	508	636	598	517	415	380	387
Exogenous	**29**	'35	44	41	38	34	29	29
Endogenous	385	467	584	550	471	372	345	351
Government Sponsored	4	6	8	7	9	9	6	6
Enclave Sponsored								
Resident Government	340	365	**373**	**376**	362	357	349	339
Exogenous	**92**	99	94	**91**	89	**87**	**87**	**88**
Endogenous	**248**	266	**279**	285	273	270	**262**	251
Total Resident	1065	1180	**1316**	1281	**1186**	1073	1030	1027
Total Exogenous	428	**441**	445	439	434	422	417	**419**
Total **Endogenous**	637	**739**	871	842	752	651	613	609
Non-Resident (Enclave) Employment	166	166	166	166	166	158	158	158
Total Resident plus Non-Resident	1231	1346	14a2	**1447**	1352	1231	1188	1185

Employment *Multipliers*

Table 111.4 summarizes employment **"multipliers"** *for the period 1980-1987. In general, these multipliers remain relatively constant, except for the* **Endogegous** *Employment Multiplier, which was higher during the period 1981-1984 when more construction*

projects occurred.

Table 111.4: Summary of Employment Multipliers, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Endogenous Employment Multipliers [EMEDREEX/EMREEX]	0.88	1.04	1.29	1.24	1.07	0.86	0.81	0.82
Local Government Employment Multiplier [EMLGLR/EMEXTO]	0.11	0.12	0.13	0.13	0.12	0.12	0.12	0.20
State Government Employment Multiplier [EMSG/EMEXTO]	0.14	0.14	0.14	0.15	0.15	0.17	0.17	0.15
State-Supported Construction Multiplier [EMCOSS/EMEXTO]	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
State-Supported Local Government Employment Multiplier [EMLGSS/EMEXTO]	0.17	0.18	0.19	0.20	0.18	0.18	0.17	0.08

Population Assumptions

Table 111.4 summarizes available population data for Cordova for the period 1980-1987, as well as our population assumptions for this period. Our 1980 assumption for total population was based on the 1980 census. The source of the population figures for 1981 through 1983 was the "Alaska Population Overview." The source for years 1984-1987 was the City of Cordova.

Population outside of the city limits but within the area served by roads from Cordova is shown at 441 by the city for 1983 through

1987. A planner with the city said that development of these outlying areas began in the late 1970's. She indicated that the population had remained relatively constant during this decade. Thus, we hold *the figure constant at 441.*

Our age distribution assumptions are *based on the* 1980 *census. We assume that this age distribution remains constant throughout* the *projection period.*

The ratio of assumed resident population to assumed resident exogenous employment increased from five in 1980 to seven in 1987. *The fact that this ratio increased suggests that-the availability of work has decreased.*

Table III.4: Population Data for Cordova, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Population Data									
1980 Cansus	1879								
by age group									
0-4	158								
5-14	452								
15-64	1173								
65+	96								
by race									
Native	286								
Non-Native	1593								
Cordova ("Alaska Population Overview")		2223	2244	2166					
Cordova (City of Cordova)					2520	2510	2500	2510	
Road-connected area outside the city	441	441	441	441	441	441	441	441	
Total Cordova area population	2320	2664	2685	2607	2961	2951	2941	2951	
Permanent Fund Dividend Distributions			2540	2424	2227	2282			
Adult			1892	1796	1644	1674			
Children			648	628	583	608			
School Enrollment	467	461	429	443	392	386	439	420	429
Population Assumptions									
Resident Population: Total	2320	2498	2519	2441	2795	2793	2783	2793	
Age Distribution (percent)									
Pre-School (0-4)	0.09								
School-age (5-19)	0.17								
Adult (20-64)	0.69								
Senior (65+)	0.05								
Resident Exogenous Employment	428	441	445	439	434	422	417	419	
Ratio of Resident Population to Resident Exogenous Employment	5	6	6	6	6	7	7	7	

Base Case Projections

Figure 111.2 and Table 111.6 summarize our base case projections for Cordova. Total population rises slightly over the projection period. This is due primarily to increasing tourism.

Figure III-2: Cordova Base Case Projections

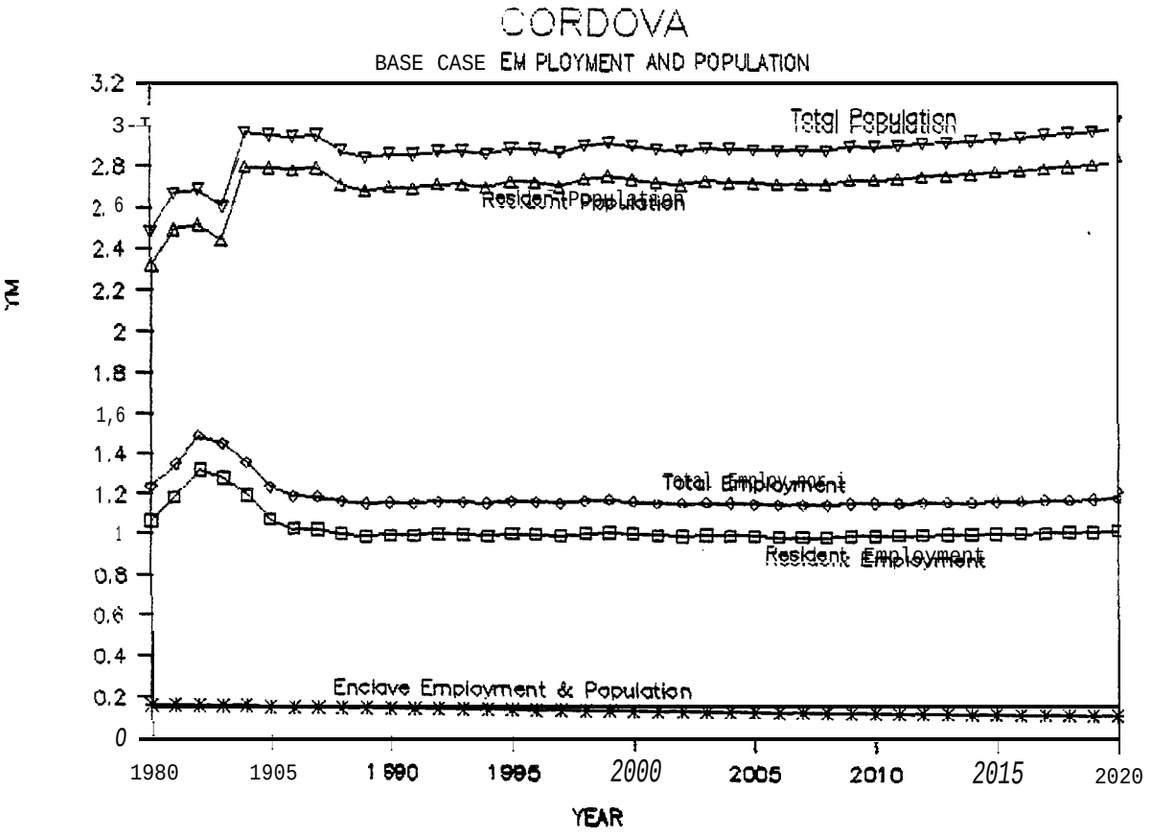


Table 111.6: **Summary** of Employment and **Population** Projections for Base Case

	EMPLOYMENT							POPULATION		
Year	Resident Non-OCS	Resident Ocs	Resident Total	Enclave Fish-Process.	Enclave OCS	Enclave Total	Total, Resident and Enclave	Resident	Enclave	Total
1980	1065	0	1065	166	0	166	1231	2320	166	2486
1981	1180	0	1180	166	0	166	1346	2498	166	2664
1982	1316	0	1316	166	0	166	1482	2519	166	2685
1983	1281	0	1281	166	0	166	1447	2441	166	2607
1984	1186	0	1186	166	0	166	1352	2795	166	2961
1985	1073	0	1073	158	0	158	1231	2793	158	2951
1986	1030	0	1030	158	0	158	1188	2783	158	2941
1987	1027	0	1027	158	0	158	1185	2793	158	2951
1 98a	1007	0	1007	158	0	158	1164	2739	158	2896
1989	995	0	995	158	0	158	1152	2706	158	2863
1990	1002	0	1002	158	0	158	1159	2725	158	2883
1991	1001	0	1001	158	0	158	1158	2722	158	2879
1992	1008	0	1008	158	0	158	1165	2742	158	2899
1993	1009	0	1009	158	0	158	1166	2744	158	2901
1994	1003	0	1003	158	0	158	1161	2729	158	2887
1995	1015	0	1015	158	0	158	1173	2761	158	2918
1996	1015	0	1015	158	0	158	1172	2760	158	2917
1997	1007	0	1007	158	0	158	1164	2738	158	2896
1998	1022	0	1022	158	0	158	1180	2780	158	2938
1999	1026	0	1026	158	0	158	1184	2792	158	2950
2000	1021	0	1021	158	0	158	1178	2777	158	2934
2001	1017	0	1017	158	0	158	1175	2766	158	2924
2002	1013	0	1013	158	0	158	1170	2755	158	2912
2003	1020	0	1020	158	0	158	1177	2774	158	2931
2004	1018	0	1018	158	0	158	1175	2768	158	2925
2005	1017	0	1017	158	0	158	1175	2767	158	2924
2006	1016	0	1016	158	0	158	1174	2764	158	2922
2007	1016	0	1016	158	0	158	1174	2764	158	2922
2008	1016	0	1016	158	0	158	1174	2764	158	2921
2009	1025	0	1025	158	0	158	1183	2788	158	2946
2010	1025	0	1025	158	0	158	1182	2787	158	2944
2011	1028	0	1028	158	0	158	1185	2795	158	2952
2012	1031	0	1031	158	0	158	1188	2803	158	2961
2013	1034	0	1034	158	0	158	1191	2812	158	2969
2014	1037	0	1037	158	0	158	1195	2821	158	2978
2015	1040	0	1040	158	0	158	1198	2830	158	2987
2016	1044	0	1044	158	0	158	1201	2839	158	2997
2017	1047	0	1047	158	0	158	1205	2849	158	3006
2018	1051	0	1051	158	0	158	1209	2859	158	3016
2019	1055	0	1055	158	0	158	1212	2869	158	3027
2020	1059	0	1059	158	0	158	1216	2880	158	3037

References

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles.

Cordova, City of, Draft Comprehensive Plan, Funded by Alaska Coastal Management Program, January 1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Knapp, Gunnar; Nebesky, Will; and Hull, Teresa. Cordova: Present and Projected Levels of Population, Employment, and Income, University of Alaska, Institute of Social and Economic Research, March 1983 (unpublished draft report prepared for Minerals Management Service, Alaska OCS Office).

Livey, Jay, and Keiser, Gretchen. Public School Financing in Alaska. Alaska State Legislature, House Research Agency Report 87-A, February 1987.

Moore, Carla. City of Cordova. Telephone Interview, October 28, 1988 and December 1, 1988.

U.S. Census, 1980.

CHAPTER IV. DESCRIPTION AND MODEL ASSUMPTIONS HOMER

Overview

Homer is located near the entrance of Kachemak Bay in lower Cook Inlet. It is unique with its 5 mile sandspit peninsula that juts halfway across Kachemak Bay. Homer is accessible by highway, air, and water. Homer is about 225 miles by highway south of Anchorage. It is a 40 minute flight from Anchorage with flights available from three air lines. Homer is also accessible by the Alaska Marine Highway System ferries or on one of several cruise ships.

Homer, with a population of about 4,000, is dominated by commercial fishing and seafood processing. Over 400 fishing vessels use Homer as a base of operations fishing for herring, crab, halibut, and salmon, as well as vessels fishing for bottom fish.

Government is the second most important employer, providing stable year-round employment. Tourism and recreation are also an important part of the economy. According to City of Homer Compre-

hensive Plan (1983), Homer had a growing population of retired and "commuting" households--households with primary residences in Homer but jobs elsewhere (i.e., north slope workers, pilots, etc.). Homer has historically gained population in advance of economic growth and creation of job opportunities which then tend to "catch up" with the population over time. Tour boats have begun stopping in Homer.

The Homer area has gained employment since the start of construction on the Bradley Lake Hydropower Project in 1987. Bradley Lake hydropower construction project has utilized marine, staging and transportation services out of Homer. However, since the project was just gearing up in 1987, historic data do not reflect a large increase due to Bradley Lake employment.

Total employment in Homer declined between 1984 and 1987. Construction employment increased in 1984-1985 due primarily to a new (DECRA) home loan program. Other construction projects during the 1980's included a fish dock in 1980-1981, and a $5 million high school in 1985-1986.

Major Data Sources

The primary data source for our analysis of Homer was

Department of Labor data on employment for Homer. In addition we used Gulf of Alaska Economic and Demographic Systems Analysis, Minerals and Management Service, Technical Report 98 (TR 98) (March 1984) and Commercial Fishing Industry Study Homer, Alaska, University of Alaska Marine Advisory Program, Douglas D. Coughenower (November 1987). We also talked to Pam Black and Eileen Bechtol, planners with the City of Homer. We have listed all of the sources used in our analysis at the end of this chapter. "

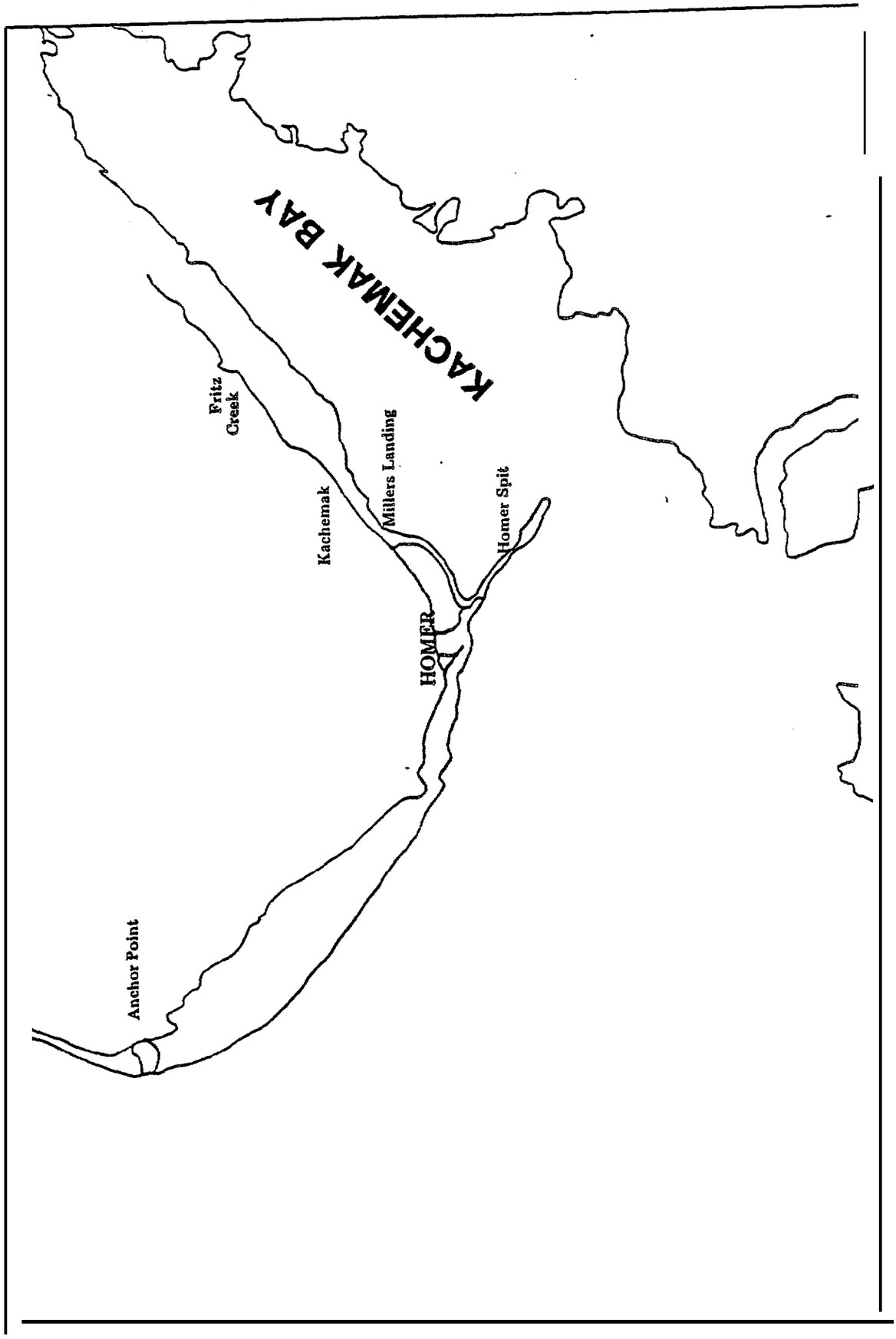
Study Area

Figure IV.1 shows the area which we are defining as "Homer." Our employment and population assumptions and projections for this study refer to employment and population within this area. This corresponds to the "sub-sub area" used by Department of Labor for employment statistics.

Employment Assumptions

Table IV.1 shows Alaska Department of Labor employment data for Homer for the years 1980-1987. These data formed the primary basis for the development of our employment assumptions, and are the basis for all employment data not otherwise cited.

Figure IV-1: Homer **Study** *Area*



We made additional assumptions to account for industries not included in the Department of Labor data (e.g. fish harvesting) or which were fully or partially suppressed (e.g. manufacturing and wholesale trade), and to allocate employment within a given industry between resident and enclave shares, exogenous and endogenous shares, etc. Our resulting employment assumptions for the years 1980-1987 are shown in Table IV.2. Below we discuss these assumptions by industry.

Table IV.1: Summary of Department of Labor Employment Data for Homer

Category	Code	1980	1981	1982	1983	1984	1985	1986	1987
Mining	1	*	*	*	*	*	*	*	*
Construction	2	69	63	93	143	231	252	125	88
Manufacturing	3	140	*	*	*	*	*	*	*
Trans., Comm., Utilities	4	186	208	322	374	350	188	177	159
Wholesale Trade	5	*	*	12	15	30	28	28	*
Retail Trade	6	194	213	212	255	246	261	306	303
Fin., Ins., & Real Estate	7	40	46	52	60	74	74	68	57
Services	8	178	252	2.45	176	214	226	232	226
Forestry, Ag., Fisheries	9	*	*	11	*	*	*	*	*
Federal Government	10	31	32	36	36	" 36	39	39	40
State Government	11	4	5	12	20	18	21	18	25
Local Government	12	188	151	169	259	282	338	351	347
TOTAL.		1066	1499	1615	1747	1820	1727	1573	1466

* Data suppressed.

Table IV.2: Summary of Employment Assumptions for Homer, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Fish harvesting	270	270	270	270	270	270	270	270
Mining	14	13	19	29	46	50	25	18
Non-OCS resident	14	13	19	29	46	50	25	18
OCS resident	0	0	0	0	0	0	0	0
OCS enclave	0	0	0	0	0	0	0	0
Construction	69	63	93	143	231	252	125	88
Generated by atate spending	17	16	23	36	58	63	31	22
Exogenous	35	32	47	72	116	126	63	44
Endogenous	17	16	23	36	58	63	31	22
Manufacturing	190	190	190	190	190	190	190	190
Resident fish processing	146	146	146	146	146	146	146	146
Enclave fish processing	39	39	39	39	39	39	39	39
Other manufacturing	5	5	5	5	5	5	5	5
Transp., comm. and utilities	186	208	322	374	350	188	177	159
Exogenous	19	21	32	37	35	19	18	16
Endogenous	167	187	290	337	315	169	159	143
Wholesale trade	12	12	12	15	30	28	28	28
Retail trade	194	213	212	255	246	261	306	303
Exogenous	49	53	53	64	62	65	77	76
Endogenous	146	160	159	191	185	196	230	227
Finance, Insurance and Real Estate	40	46	52	60	74	74	68	57
Services	178	252	245	176	214	226	232	226
Exogenous	18	25	25	18	21	23	23	23
Endogenous	160	227	221	158	193	203	209	203
Miscellaneous	10	10	10	10	10	10	10	10
Federal government	87	88	92	92	92	95	95	96
State government	4	5	12	20	18	21	18	25
Local government	188	151	169	259	282	338	351	347
Supported by local revenues	94	76	85	130	141	169	176	174
supported by state spending	94	76	85	130	141	169	176	174
Supported by OCS revenuea	0	0	0	0	0	0	0	0
Total	1442	1521	1698	1893	2053	2003	1895	1817

Fish Harvesting

Homer is the center of fishing and fish processing for Lower

Cook Inlet. Crab, bottomfish, and octopus fisheries operate throughout the year. The seasonal fisheries begin with herring and sablefish in April and March, then the various salmons (King, Red, Pink, and Chum) from late May through August, and Tanner Crab from October through December. Homer is second only to Kodiak in halibut landings in west coast U.S. ports. In 1985, 353 people in Homer held commercial fishing permits (Coughenower, 1987).

Alaska Department of Labor data was suppressed for "forestry, agriculture, and fisheries" except during 1982 when the annual average was 11 employees (Table IV.1). In 1980, TR 98 showed resident fish harvesting at 429 FTE employment. However, for comparison? Coughenower (1987) estimated 1,320 seasonal fishing jobs in the Homer area and related these to 270 FTE jobs. He also suggested an 83 percent resident share (i.e., 224 local FTE jobs). We have assumed resident fish harvesting employment of 270 for 1980-1987. We have also assumed that fish harvesting employment will remain constant at 270 for the period 1988-2020.

Mining

Non-OCS Resident. In 1980 TR 98 showed zero mining employees. In 1985, Department of Labor showed three employers with an average of 57 employees in the first quarter and three

employers with an average of 98 employees in the third quarter. We are uncertain what this mining employment represents. It is probably construction-related sand and gravel mining. Based on the 1985 data, we assumed average annual mining employment of 50 in 1985. We assumed that mining employment between 1980 and 1987 varied in proportion to this assumed 1985 level. Subsequently, for the period 1988-2020, we assumed that mining employment remains constant at the 1987 level of 18.

OCS Mining. We have assumed zero OCS mining employment in the Homer area during the period 1980-1987. Similarly, our "base case" model assumptions assumed zero OCS mining employment during the period 1988-2020.

Logging

Kluk Waan is beginning timber harvests in the Ninilchik area and plans to export the timber across the Homer dock. We assumed that an average of 10 people were employed in logging between 1980-1987. We assumed that logging employment will remain constant at 10 for 1988-2020.

Construction

According to Marnie Isaacs with the Alaska Power Authority, there was only limited employment during the period June 1986 through June 1987 on the Bradley Lake hydroelectric project. During June 1987 through June 1988 there was no construction because of need to clarify regulatory problems. Construction is now continuing with a scheduled on-line date of September 1991.

The Alaska Department of Labor shows construction employment increasing from 69 in 1980 to 252 in 1985, then dropping to 88 in 1987 (Table IV.1). (TR 98 showed construction FTE employment in 1980 at 132, nearly double the Department of Labor figure.)

We assumed that 25 percent of construction employment during the period 1980-1987 was supported by state government capital spending, 25 percent was exogenous, and 50 percent was endogenous, based on our best judgment in the absence of any data.

According to the Alaska Power Authority, during the period November 1988 through January 1989, an estimated 43 percent of Bradley Lake employees were Homer area residents. Based on data provided by the Power Authority, we assume that during 1988-1991 the average construction employment of Homer area residents on the

Bradley Lake project will be 70. This brings estimated exogenous construction employment to 114 during this period. We assumed the 1987 level of exogenous construction employment of 44 for the subsequent period 1992-2020, based on our best judgment in the absence of any data.

Manufacturing

Total Manufacturing Employment. Fish processing is the primary type of manufacturing in Homer. According to Coughenower (1987), there were two major processors in the Homer area. One had permanent facilities in Homer, the other in Seldovia. There are also processors who buy in the Homer area but are located elsewhere as well as smaller specialty processors. Seward Fisheries, part of Icicle Seafoods, is the largest processor located in Homer.

Department of Labor showed manufacturing employment of 140 in 1980 (Table IV.1). For comparison, TR 98 showed fish processing employment (FTE) in 1980 of 185 with 146 FTE's residents and 38 FTE's non-residents (.79 resident share). Coughenower (1987) states that in 1985 Seward Fisheries had FTE employment of 105.

We assumed that fish processing is constant at 185 (the 1980 level) with resident fish processing employment 147 and non-resident employment 38. We assumed a 79 percent resident share for fish processing employment during the years 1980-1987, which resulted in an assumption of resident fish processing employment of 146 and non-resident fish processing employment of 39 in 1987.

We assumed that both resident and non-resident fish processing employment will remain constant at these assumed 1987 levels during the period 1988-2020.

Wood'Products . Two small lumber mills produce for local building, one at Anchor Point the other on East End Road. We assumed lumber mill employment of five for the period 1980-1987 and also for 1988-2020.

Transportation, Communications, and Utilities

Department of Labor average annual employment figures are used. These range from 186 in 1980 to about 374 in 1983 then decline to 159 in 1987 (Table IV.1). We assumed that 10 percent of employment in this industry was exogenous and 90 percent was endogenous. We assumed that exogenous transportation, communications and utilities employment will grow at 5 percent per year

after 1987, based on an assumption that tourism in the Homer area will grow at a rate of 5 percent per year.

Wholesale Trade

Department of Labor shows wholesale trade employment at 12 *in 1982, increasing to 30* in 1984, then *remaining steady at 28 in 1985 and 1986 (Table* IV.1). *We assumed that wholesale trade employment was the same in 1980 and 1981 as in 1982 and also that the 1987 figure was the same as in 1986 (Table* IV.2). *We assumed that all wholesale trade employment was endogenous.*

Retail Trade

Department of Labor annual average employment figures were used for the retail trade category. These ranged from 194 in 1980 to 306 in 1986 and 303 in 1987 (Table IV.1). *We assumed that 25 percent of retail trade employment was exogenous and 75 percent was endogenous. We assumed that exogenous retail trade employment will grow at a rate of 5 percent per year after 1987.*

Finance, Insurance, and Real Estate

Department of Labor annual average employment figures were

used for this category. "FIRE" employment increased from 40 employees in 1980 to 74 in 1984 and 1985 then decreased to 57 in 1987 (Table 3X7.1). We assumed that all employment in these industries was endogenous.

Services

We used Department of Labor annual average employment figures for this category (Table IV.1). Services employment increased from 178 in 1980 to 252 in 1981 and then declined to 176 in 1983 but then increased to 232 in 1986 (Table IV.1). In 1987 services employment had dropped' off slightly to 226. We assumed that 10 percent of employment in this industry was exogenous and 90 percent was endogenous. Based on information provided by the Power Authority, we assumed that Bradley Lake construction will add 20 employees to the Homer area services sector during 1988-1991. After 1991 we assume that services employment will drop back to the 1987 level. We assumed that exogenous services employment (with the exception of Bradley-Lake-generated employment) will grow at a rate of 5 percent per year after 1987.

Federal Government

Civilian federal government employment in Homer increased

from 31 in 1980 to 40 in 1987 (Table IV.1). The Coast Guard maintains one unit in Homer with 56 personnel. We project federal government employment at 96 for 1988-2020.

State Government

State employment increased from 4 in 1980 to 25 in 1987 (Table IV.1). We assume that state government employment is endogenous.

Local Government

Department of Labor annual averages show 188 local government employees in 1980, increasing to 351 employees in 1986 and 347 in 1987 (Table IV.1). We assumed that 50 percent of this employment is funded by local revenues and the rest by state revenue sharing.

Table IV.3: Estimated Employment in Homer

	1980	1981	1982	1983	1984	1985	1986	1987
Resident Basic	445	444	450	460	477	482	456	449
Fishing	270	270	270	270	270	270	270	270
Fish Processing	146	146	146	146	146	146	146	146
Miscellaneous	10	10	10	10	10	10	10	10
other (mining, manufacturing)	19	18	24	34	51	55	30	23
Resident Support	679	794	936	1023	1145	1029	936	861
Exogenous	119	131	156	190	233	233	180	158
Endogenous	542	648	757	797	854	733	725	681
Government Sponsored	17	16	23	36	58	63	31	22
Enclave Sponsorad								
Resident Government	279	244	273	371	392	454	464	468
Exogenous	87	88	92	92	92	95	95	96
Endogenous	192	156	181	279	300	359	369	372
Total Resident	1403	1482	1659	1854	2014	1965	1856	1778
Total Exogenous	651	663	698	742	803	809	731	703
Total Endogenous	752	819	961	1112	1212	1155	1125	1075
Non-Resident <Enclave) Employment	39	39	39	39	39	39	39	39
Total Resident and Non-Resident	1442	1521	1698	1893	2053	2003	1895	1817

Employment Multipliers

Table IV.3 summarizes employment "multipliers" for the period 1980-1987. In general, these multipliers remain relatively constant throughout the period. This suggests that the economic structure of Homer was relatively stable during this period.

Table IV.4: Summary of Employment Multipliers, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Endogenous Employment Multipliers [EMEDREEX/EMREEX]	0.83	0.97	1.08	1.07	1.06	0.90	0.99	0.97
Local Government Employment Multiplier [EMLGLR/EMEXTO]	0.14	0.11	0.11	0.17	0.17	0.20	0.23	0.23
State Government Employment Multi plier [EMSG/EMEXTO]	0.01	0.01	0.02	0.03	0.02	0.02	0.02	0.03
State-Supported Construction Multi plier [EMCOSS/EMEXTO]	0.02	0.02	0.03	0.05	0.07	0.07	0.04	0.03
State-Supported Local Government Employment Multipl ier [EMLGSS/EMEXTO]	0.14	0.11	0.11	0.17	0.17	0.20	0.23	0.23

Population Assumptions

Table IV.4 summarizes available population data for Homer for the period 1980-1987, as well as our population assumptions for this period. The population figure used for 1980 was from the census. The 1981 population figure is from the State of Alaska, "Alaska Population Overview," the 1982-1986 numbers are from the Kenai Peninsula Borough, "Situation and Prospects," and the 1987 figure was provided by the City of Homer.

Our age distribution assumptions are based on the 1980 census. We assumed that this age distribution remains constant throughout the projection period.

The ratio of assumed resident population to assumed resident exogenous employment increased from 3.33 *in* 1980 *to 5.66 in* 1987. *The fact that this ratio increased steadily suggests* that either our *employment figures or our population data (or* both) *may* be *unreliable. However,* in the *absence* of better *data we nevertheless assumed that in the future this ratio remains constant* at the 1987 *level.*

Table IV.4: Population Data for Homer, 1980-1987

	1980	1981	1982	1983	1984	1985	19%	1987
Peculation Data								
1980 Census	2209							
by age group								
o-4	199							
5-19	544							
20-64	1362							
65+	104							
Homer (Alaska Population Overview)[1]		2588	2900	3114	3373			
Homer (Situation and Prospects)[2]			2897	3237	3429	3817	4020	
Homer (City of Homer)								4020
Permanent Fund Dividend Distributions			5906	6067	6341	6936		
Adult			4044	4169	4339	4745		
Children			1862	1898	2002	2191		
School Enrollment			1029	993	1063	1149	1120	1120
Population Assumptions								
Resident Population: Total	2209	2461	2858	3198	3390	3778	3981	3981
Age Distribution (percent)								
Pre-School (O-4)	0.09							
School-age (5-19)	0.25							
Adult (20-64)	0.62							
Senior (65+)	0.05							
Resident Exogenous Employment	651	663	698	742	803	809	731	703
Ratio of Resident Population to Resident Exogenous Employment	3.33	3.85	4.10	4.31	4.22	4.67	5.45	5.66

[1] "Alaska Population Overview," September 1985.
[2] "Situation and Prospects," Kenai Peninsula Borough, 1985, 1986, 1987

Base Case Projections

Figure **IV.2** *and Table IV.6 summarize our base case projections for* **Homer.** *Total population rises gradually over* **the** *projection period. This is due primarily to increasing tourism.*

Figure IV-2: Homer Base Case Projections

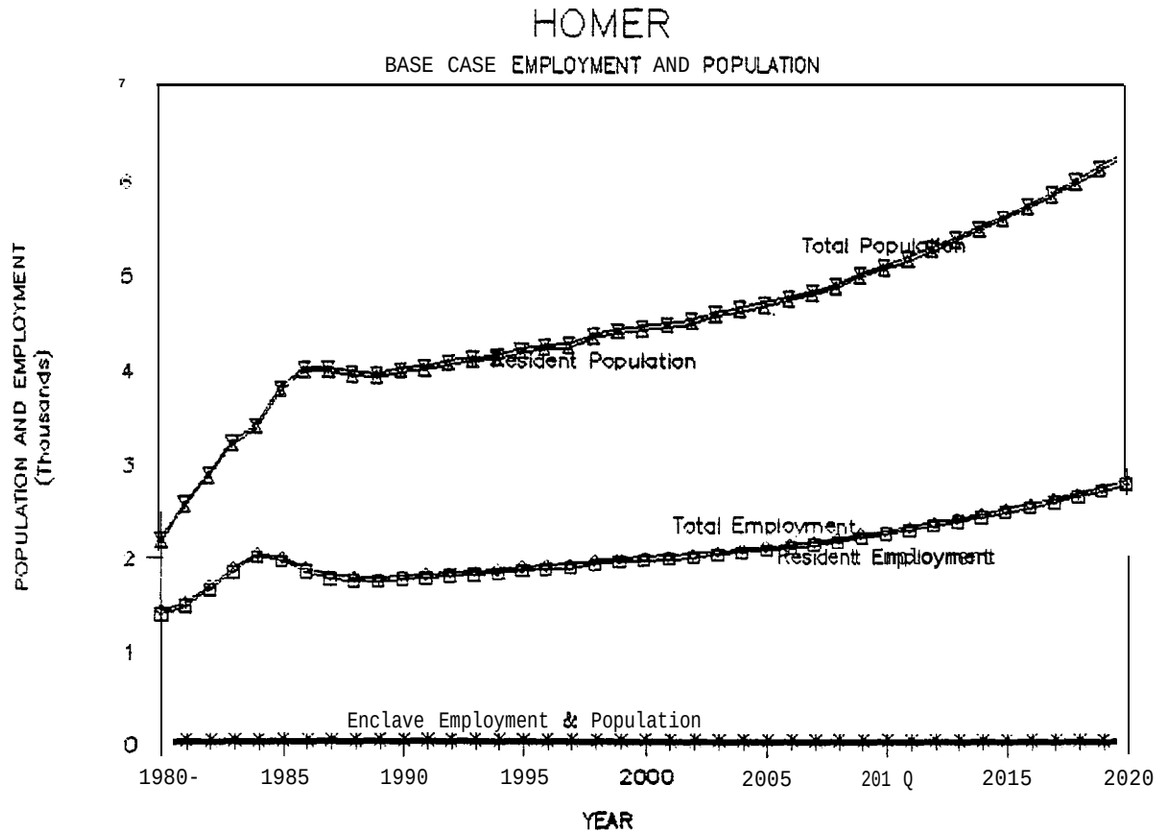


Table IV.6: Summary of Employment and Population Projections for Baae Case

	EMPLOYMENT						POPULAT ION			
YEAR	Resident Non-OCS	Resident OCS	Resident Total	Enclave Fish-Process.	Enclave OCS	Enclave Tota 1	Total, Resident and Enclave	Resident	Enclave	Total
1980	1403	0	1403	39	0	39	1442	2170	39	2209
1981	1482	0	1482	39	0	39	1521	2549	39	2588
1982	1659	0	1659	39	0	39	1698	2858	39	2897
1983	1854	0	1854	39	0	39	1893	3198	39	3237
1984	2014	0	2014	39	0	39	2053	3390	39	3429
1985	1965	0	1965	39	0	39	2003	3778	39	3817
1986	1856	0	1856	39	0	39	1895	3981	39	4020
1987	1778	0	1778	39	0	39	1817	3981	39	4020
1988	1757	0	1757	39	0	39	1796	3936	39	3975
1989	1748	0	1748	39	0	39	1787	3915	39	3954
1990	1773	0	1773	39	0	39	1812	3972	39	4010
1991	1785	0	1785	39	0	39	1823	3998	39	4036
1992	1810	0	1810	39	0	39	1849	4055	39	4094
1993	1826	0	1826	39	0	39	1865	4091	39	4130
1994	1833	0	1833	39	0	39	1872	4107	39	4145
1995	1869	0	1869	39	0	39	1908	4186	39	4225
1996	1886	0	1886	39	0	39	1924	4224	39	4263
1997	1891	0	1891	39	0	39	1930	4235	39	4274
1998	1936	0	1936	39	0	39	1974	4336	39	4375
1999	1963	0	1963	39	0	39	2002	4397	39	4436
2000	1975	0	1975	39	0	39	2014	4423	39	4462
2001	1990	0	1990	39	0	39	2029	4459	39	4497
2002	2006	0	2006	39	0	39	2045	4494	39	4533
2003	2043	0	2043	39	0	39	2082	4576	39	4615
2004	2065	0	2065	39	0	39	2104	4625	39	4664
2005	2091	0	2091	39	0	39	2130	4684	39	4723
2006	2117	0	2117	39	0	39	2156	4743	39	4782
2007	2147	0	2147	39	0	39	2186	4809	39	4848
2008	2178	0	2178	39	0	39	2217	4878	39	4917
2009	2227	0	2227	39	0	39	2266	4990	39	5028
2010	2261	0	2261	39	0	39	2300	5065	39	5103
2011	2303	0	2303	39	0	39	2342	5158	39	5197
2012	2347	0	2347	39	0	39	2386	5257	39	5296
2013	2393	0	2393	39	0	39	2432	5360	39	5399
2014	2441	0	2441	39	0	39	2480	5469	39	5508
2015	2492	0	2492	39	0	39	2531	5583	39	5622
2016	2546	0	2546	39	0	39	2585	5702	39	5741
2017	2602	0	2602	39	0	39	2641	5828	39	5867
2018	2661	0	2661	39	0	39	2700	5960	39	5999
2019	2723	0	2723	39	0	39	2761	6099	39	6137
2020	2788	0	2788	39	0	39	2826	6244	39	6283

References

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles.

Alaska Power Authority, F.E.R.C. Application for License for Major Unconstructed Project, Bradley Lake Hydroelectric Project, Bradley River, Kenai Peninsula, Alaska, Volume 3, Exhibit E, Chapter 5, Report on Socioeconomic Impacts (received by Federal Resources Library, Anchorage, Alaska August 1, 1988).

Bechtol, Eileen R. City of Homer, Telephone Interview. October 28, 1988.

Coughenower, D. Douglas, Commercial Fishing Industry Study Homer, Alaska, University of Alaska, Marine Advisory Program, Marine Advisory Bulletin #33, November 1987.

Dames and Moore, Homer Spit Coastal Development Program, Identification of Homer Spit Coastal Development Needs, prepared for Kenai Peninsula Borough, City of Homer, and Alaska Coastal Management Program, 1981.

Fried, Neal, "Employment in Alaska's Seafood Industry," Alaska Economic Trends, Juneau, Alaska: Alaska Department of Labor, July 1987.

Homer, City of, "Preparing for Tomorrow Today, " Informational Brochure.

Kenai Peninsula Borough, Situation and Prospects, 1985, 1986, 1987, 1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-

FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Knapp, Gunnar; Nebesky, W.; Hull, T.; White, K.; Reeder, B.; and Zimicki, J. Gulf of Alaska Economic and Demographic Systems Analysis. University of Alaska, Institute of Social and Economic Research, '(Prepared for Minerals and Management Service, Alaska OCS Office) Social and Economic Studies Program, Technical Report Number 98, March 1984.

Livey, Jay, and Keiser, Gretchen. Public School Financing in Alaska. Alaska State Legislature, House Research Agency Report 87-A, February 1987.

Pacific Rim Planners and Engineers a Division of Olympic Associates Company, City of Homer, Comprehensive Plan, 1983.

U.S. Census, 1980.

CHAPTER V. DESCRIPTION AND MODEL ASSUMPTIONS: KENAI MARKET AREA

Overview

Kenai is located south of Anchorage, across Turnagain Arm, and on the northwestern part of the Kenai Peninsula. The Kenai study area (market area) encompasses the northwestern part of the central Kenai Peninsula and includes the communities of Kenai and Soldotna as well as the areas of Nikishka, Salamatof, Kalifonski, Sterling, and Kasilof. This area is approximately 160 miles south of Anchorage via the Seward and Sterling Highways. It has airports at Soldotna and Kenai and there are deep water loading facilities for the petroleum products at Nikiski.

Kenai, with a population of about 6,550, is dominated by the oil/natural gas industry. Tourists and sports fishermen contribute to the economy during the summer months, attracted by salmon fishing on the Kenai River, clam tides on Cook Inlet, and other the opportunity to partake in other outdoor activities. Commercial fishing and fish processing also contribute to the economy. The Kenai National Moose Range is also an attraction as are other state recreation facilities. Government provides stable year-round employment opportunities since this area is the regional

center for the Borough government.

Total employment in the Kenai Market Area increased between 1980 and 1987. The strongest growth sectors were retail trade, services and government. However, employment in other sectors decreased during this period: mining; construction; and transportation, communications and utilities.

Major Data Sources

The primary data source for our analysis of Kenai was Department of Labor data on employment for Kenai and the "Kenai market area." In addition we used the Kenai Peninsula Borough publication "Situation and. Prospects" for 1985, 1986, 1987, and 1988; the Alaska Department of Labor 'Population Overview' publications; and "Gulf of Alaska Economic and Demographic Systems Analysis," Social and Economic Studies Program, Technical Report Number 98, March 1984 (subsequently referred to as TR 98). We also discussed the outlook for Cook Inlet oil and gas production with Department of Revenue Petroleum Economist, Dr. Charles Logsdon.

We have listed all of the sources used in our analysis at the end of this chapter.

Study Area

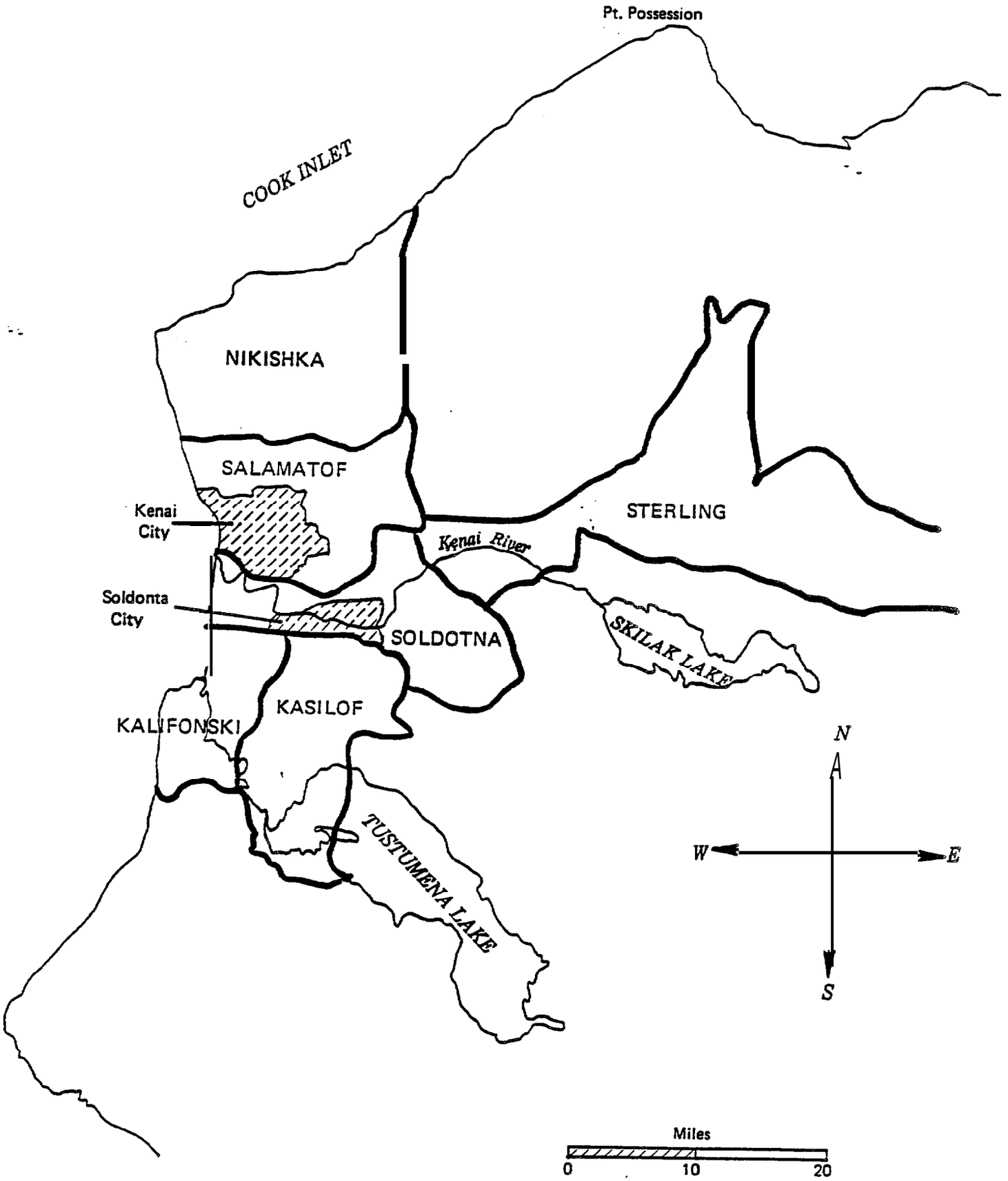
Figure V.1 shows the area which we are defining as the "Kenai market area." Our employment and population assumptions and projections for this study refer to employment and population within this area. We combined Department of Labor sub-sub areas 712 (Kenai City) and 713 (Soldotna) to reflect the Kenai Market Area. The sub-sub area 713 includes the following localities: Bernice Lake, Clam Gulch, Cohoe, Drift River, Kalifonsky, Kasilof, Nikishka, Point Possession, Salamatof, Skilak Lake, Soldotna, Sterling, Swanson, Tustumena, and Wildwood.

Employment Assumptions

Table V.1 shows Alaska Department of Labor employment data for the Kenai Market Area for the years 1980-1987. These data formed the primary basis for the development of our employment assumptions, and are the basis for all employment data not otherwise cited.

We made additional assumptions to account for industries not included in the Department of Labor data (e.g. fish harvesting) or

Figure V-1: **Kenai** *Study Area*



which were fully or partially suppressed (e.g. manufacturing and wholesale trade) , and to allocate employment within a given industry between resident and enclave shares, exogenous and endogenous shares, etc. Our resulting employment assumptions for the years 1980-1987 are shown in Table **V.2.** **Below** *we discuss these assumptions by industry.*

Table V. 1: Summary of Department of Labor Employment Data for the Kenai Market Area[1]

Category	Code	1980	1981	1982	1983	1984	1985	1986	1987
Mining	1	733	718	1038	558	620	725	850	688
Construct ion	2	514	608	673	790	977	1029	619	421
Manufacturing	3	1024	856	924	922	891	1068	1012	1042
Trans., Comm., Utilities	4	521	582	632	634	589	602	400	354
Wholesale Trade	5	236	310	278	289	341	324	307	291
Retai l Trade	6	675	706	800	973	1275	1498	1356	1331
Fin., Ins., & Real Estate	7	*	177	206	*	*	*	*	*
Servi ces	8	642	708	773	961	1086	1185	1257	1260
Forestry, Ag., Fisheries	9	*	*	*	*	*	*	*	*
Federal Government	10	76	74	77	92	100	108	105	107
State Government	11	323	365	404	456	524	561	571	545
Local Government	12	754	804	891	961	1053	1134	1042	1130
TOTAL		5635	6006	6524	7020	7789	8580	7990	7483

* Data Suppressad.

1 Data are suns of totals for sub-sub areas 712 and 713.

Table V.2: Summary of Employment Assumptions for Kenai Market Area, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Fish harvesting	159	159	159	159	159	159	159	159
Mining	733	718	634	558	620	725	850	688
Non-OCS resident	367	359	317	279	310	363	425	344
Non-OCS enclave	367	359	317	279	310	363	425	344
OCS resident	0	0	0	0	0	0	0	0
OCS enclave	0	0	0	0	0	0	0	0
Construct ion	514	608	673	790	977	1029	619	421
Generatad by state spending	129	152	168	198	244	257	155	105
Exogenous	129	152	168	198	244	257	155	105
Endogenous	257	304	337	395	489	515	310	211
Manufacturing	1024	856	924	922	891	1068	1012	1042
Resident fish processing	222	155	182	182	169	224	202	214
Enclave fish processing	334	233	274	272	254	336	302	320
Other manufacture ng	468	468	468	468	468	508	508	508
Transp., comm., and utilities	521	582	632	634	589	602	400	354
Exogenous	52	58	63	63	59	60	40	35
Endogenous	469	524	569	571	530	542	360	319
Wholesale trade	236	310	278	289	341	324	307	291
Retai l trade	675	706	800	973	1275	1498	1356	1331
Exogenous	169	177	200	243	319	375	339	333
Endogenous	506	530	600	730	956	1124	1017	998
Finance, Insurance and Real Estate	163	177	206	225	252	279	265	203
Services	642	708	773	961	1086	1185	1257	1260
Exogenous	64	71	77	96	109	119	126	126
Endogenous	578	637	696	865	977	1067	1131	1134
Mi scel laneous	0	0	0	0	0	0	0	0
Logging	0	0	0	0	0	0	0	0
Federal government	81	79	82	97	105	113	110	112
State government	323	365	404	456	524	561	571	545
Loca l government	754	804	891	961	1053	1134	1042	1130
Supported by local revenues	377	402	446	481	527	567	521	565
Supported by state spanding	377	402	446	481	527	567	521	565
Supported by OCS revenues	0	0	0	0	0	0	0	0
Total	5825	6072	6456	7025	7872	8677	7948	7536

Fish Harvesting

Full-time equivalent. employment in fish harvesting was 159 in 1980 (TR 98). Although this may understate full-time fish harvesting employment in more recent years, we have assumed this figure for the period 1980-1987. We have also assumed that fish harvesting employment will remain constant at this level for the period 1988-2020.

Mining

Non-OCS Resident. The largest employer on the Central Kenai Peninsula is the oil and gas industry with the greatest concentration of development in the North Kenai area. The following description of the oil and gas industry is given in TR 98:

> *Since the late 1950's, the oil and gas industry has been the major economic activity in the Kenai area. Producing oil and gas fields at Swanson River and in Upper Cook Inlet marked a major phase in Alaska's petroleum development. In the 1960's, four oil fields and fourteen gas fields in Upper Cook Inlet were developed. Oil production peaked in 1970. Proven natural gas reserves are predicted to last beyond the year*

2000 under existing usage patterns. Extensive processing plants and pipeline facilities were built in the 1960's and 1970's. They are located at Nikiski, north of the city of Kenai, and consist of two refineries, an ammonia-urea plant, a liquified natural gas plant, and crude oil storage and loading facilities.

The mining category includes mostly Cook Inlet gas and oil field workers. According to Department of Labor, average annual employment increased from 733 in 1980 to a high of 850 in 1986 then declined to 688 in 1987 (Table V.2). Charles Logsdon, Department of Revenue, said that it is typically assumed that 50 percent of the platform employees will be residents and 50 percent will be enclave (i.e., commute to homes elsewhere) . This relationship is maintained in the model.

Although the Kenai gas fields are nearly depleted, there are new fields coming on-line that should offset production decline from the old fields. We discussed the future of Cook Inlet oil and gas production with Dr. Logsdon. He expects thati Cook Inlet oil fields will continue producing 15,000 to 20,000 barrels per day for quite a few more years. According to Logsdon, new production developments will in all likelihood continue to offset natural field decline and thus result in relatively stable produc-

tion and processing levels over time, barring no significant new developments. Therefore, we assume that mining (production) and oil and gas processing employment will remain constant at the 1987 levels through 2020 and that there will be no new developments such as a gas pipeline from the North Slope; another Liquified Natural Gas (LNG) facility producing for export; a major Beluga Coal extraction project; or incremental gas processing facilities.

We assume that non-OCS resident and enclave employment is split half and half during 1980-1987. From 1988 to 2020 we assume that total non-OCS mining and oil and gas employment is 688 in each year with 344 enclave and 344 resident employees.

OCS Mining. We have assumed zero OCS mining employment in the Kenai Market Area during the period 1980-1987. Similarly, our "base case" model assumptions assume zero OCS mining employment during the period 1988-2020.

Construction

The Alaska Department of Labor shows annual average construction employment of 514 in 1980, increasing to 1,029 in 1985, then declining to 619 in 1986 and 421 in 1987 (Table V.1).

We assumed that 25 percent of construction employment during the period 1980-1987 was supported by state government capital spending, 25 percent was exogenous, and 50 percent was endogenous, based on our best judgment in the absence of any data.

We assumed exogenous employment of 105 during the period 1988-2020, based on on our best judgment in the absence of any data.

Manufacturing

Petroleum Processing Employment. TR 98 showed petroleum processing employment in 1980 at 468. The Kenai Peninsula Borough publication, 'Situation and Prospects' showed 1985 petroleum processing employment at 508. We held petroleum processing employment constant at 468 for 1980-1984 and 508 for 1985-1987.

We assume that petroleum processing employment will remain constant at 508 during 1988 through 2020 for the same reasons discussed under Non-OCS Resident Mining.

Fish Processing Employment. Fish processing employment is calculated as Department of Labor's manufacturing employment figure less petroleum processing employment. Based on data in TR

98, it is assumed that resident fish processing employment is .4o and non-resident is .6. We assumed a 40 percent resident share for fish processing employment during the years 1980-1987. Resident fish processing employment is thus 214 and non-resident fish processing employment 320 in 1987.

We assumed that both resident and non-resident fish processing employment will remain constant at their 1987 levels during the period 1988-2020.

Transportation, Communications, and Utilities

Department of Labor average annual employment figures are used. These ranged from 521 in 1980 to 634 in 1983 then declined to 354 in 1987 (Table V.I). We assumed that 10 percent of employment in this industry was exogenous and 90 percent was endogenous. We assumed that exogenous transportation, communications and utilities employment will grow at 3 percent per year after 1987, based on an assumption that economic activity related to tourism in the Kenai Market Area will continue to expand.

Wholesale Trade

Department of Labor averages show employment of 236 in 1980,

increasing to 341 in 1984 then decreasing to 291 in 1987 (Table V*1) . We assumed that all wholesale trade employment was endogenous.

Retail Trade

Average annual employment in retail trade increased from 675 in 1980 to 1,498 in 1985 then decreased to 1,331 in 1987 (Table V.1) . This large increase probably reflects some rapid growth in the seasonal tourist/sports-fishing industry as well as the economic expansion experienced in Alaska during this period. We assumed that 25 percent of retail trade employment was exogenous and 75 percent was endogenous. We assumed that exogenous retail trade employment will grow at a rate of 3 percent per year after 1987.

Finance, Insurance, and Real Estate

Extrapolating from Department of Labor data available for 1981 and 1982 and based on service sector employment trends in the Kenai Market Area, we assume that annual average employment in finance, insurance and real estate increased from 163 in 1980 to an estimated 279 in 1985 then declined to 203 in 1987 (Table V.1). We assumed that all employment in these industries was endogenous.

Services

Average annual employment in services increased from 642 in 1980 to 1,260 in 1987 (Table V.1). We assumed that 10 percent of employment in this industry was exogenous and 90 percent was endogenous. We assumed that exogenous services employment will grow at a rate of 3 percent per year after 1987.

Federal Government

Civilian federal government employment increased from 76 in 1980 to 107 in 1987. The U.S. Coast Guard stations 5 personnel at Kenai. Table V.2 reflects total federal employment (civilian and military). We assume that federal employment is totally exogenous and project it at the 1987 level of 112 for 1988-2020.

State Government

State government employment increased from 323 in 1980 to a high of 571 in 1986 then declined to 545 in 1987 (Table V.1). We assume that state government employment is endogenous.

Local Government

Local government employment increased from 754 in 1980 to 1,134 in 1985 then declined to 1,130 in 1987 (Table **V.1).** *Local government employment includes components* **"supported** *by state spending" and "supported by local revenues" which we assume to be endogenous. It also includes "local government supported by OCS revenues." This category is exogenous and we assume that it is zero for 1988-2020.*

Table V.3: Estimated Employment in the Kenai Market Area

	1980	1981	1982	1983	1984	1985	1986	1987
Resident Basic	748	673	658	620	638	746	786	717
Fishing	159	159	159	159	159	159	159	159
Fish Processing	222	155	182	182	169	224	202	214
Miscellaneous	0	0	0	0	0	0	0	0
Mining & Oil & Gas	367	359	317	279	310	363	425	344
Petroleum Proc. & Other Mfg.	468	468	468	468	468	508	508	508
Resident Support	2751	3091	362	38?2	4520	4917	4204	3860
Exogenous	414	458	509	600	731	810	659	599
Endogenous	2209	2482	2685	3074	3545	3849	3390	3155
Government Sponsored	129	152	168	198	244	257	155	105
Enclave Sponsored								
Resident Government	1158	1248	1377	1514	1682	1808	1723	1787
Exogenous	81	79	82	97	105	113	110	112
Endogenous	1077	1169	1295	1417	1577	1695	1613	1675
Total Resident	5125	5480	86	6474	7308	7979	7221	6872
Total Exogenous	1710	1678	1717	1785	1942	2177	2063	1936
Total Endogenous	3414	3803	4148	4689	5367	5802	5158	4936
Non-Resident (Enclave) Employment	700	592	591	551	564	699	727	664
Total Resident plus Non-Resident	5825	6072	6456	7025	7872	8677	7948	7536

Employment *Multipliers*

Table V.4 summarizes employment "multipliers" for the period 1980-1987. In general, the government multipliers (local government employment, state government employment, and state-*supported local government employment) increased during this period. The state-supported construction and endogenous* employ-

ment multipliers increased during 1980-1984 then declined through 1987. We believe that these relations adequately reflect the economic changes that occurred during this period.

Table V.4: Summary of Employment Multipliers, Kenai Market Area, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Endogenous Employment Multipliers [EMEDREEX/EMREEX]	1.26	1.46	1.55	1.71	1.81	1.75	1.63	1.61
Loca l Government Employment Multi plier [EMLGLR/EMEXTOl	0.16	0.18	0.19	0.21	0.21	0.20	0.19	0.22
Stete Government Employment Multi plier [EMSG/EMEXTO]	0.13	0.16	0.18	0.20	0.21	0.20	0.20	0.21
Stste-Supported Construction Multi pl i er [EMCOSS/EMEXTO]	0.05	0.07	0.07	0.08	0.10	0.09	0.06	0.04
State-Supported Local Government Employment Multiplier [EMLGSS/EMEXTO]	0.16	0.18	0.19	0.21	0.21	0.20	0.19	0.22

Population Assumptions

Table V.5 summarizes available population data for Kenai for the period 1980-1987, as well as our population assumptions for this period. Our 1980 assumption for total population was based on the 1980 census. Our assumptions for 1981, 1982 and 1985-1987 are based on Kenai Peninsula Borough figures; 1983 and 1984 are based on State of Alaska figures. We extrapolated population for the Kenai Market Area in 1981 and 1985 because population figures were not available

for the smaller areas within the Kenai Market Area.

Our age distribution assumptions are based on the 1980 census. We assume that this age distribution remains constant throughout the projection period.

The ratio of assumed resident population to assumed resident exogenous employment increased dramatically from 5.03 in 1980 to 12.93 in 1987. The fact that this ratio more than doubled suggests that either our employment figures or our population data (or both) may be unreliable, or our assumption is not justified that these two figures are closely correlated. However, in the absence of better data we nevertheless assume that in the future this ratio remains constant at the 1987 level.

Table V.5: Population Data for Kenai Market Area, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Population Data								
1980 Census	9299							
by age group								
0-4	892							
5-19	2626							
20-64	5593							
65+	188							
Kenai Market Area Population								
Kena i	4324	4558	5231	5721	6173	6434	6546	6546
So l dotna	2320	2445	3008	3353	3597	3597	3668	3668
Nikishka	1109		2977	919	1009		4169	4169
Salamatof	334		1143	651	694		1394	1394
Sterling	919		1837	1328	1530		2800	2800
Kasi lof	201		2071	491	567		3114	3119
Kal i f onski	92		2564	258	2 9 5		4002	4006
Total	9299	16300	18831	12721	13865	24820	25693	25702
Permanent Fund Dividend Distributions			20182	20905	22787	25181		
Adult								
Children								
School Enrollment	2925	4079	4463	4655	5281	5485	5499	5325
Population Assumpt iona								
Resident Population: Total	8599	15708	18240	12170	13301	24122	24966	25038
Age Distribution (percent)								
Pre-School (0-4)	0.10							
School-age (5-19)	0.28							
Adult (20-64)	0.60							
Senior (65+)	0.02							
Resident Exogenous Employment	1710	1678	1717	1785	1942	2177	2063	1936
Ratio of Resident Population to Resident Exogenous Employment	5.03	9.36	10.62	6.82	6.85	11.08	12.10	12.93

Base Case Projections

Figure V.2 *and Table* V.6 *summarize our base case projections for Kenai. Total population rises gradually over the projection period. This is due primarily to increasing tourism.*

Figure *V-2:* **Kenai** *Base Case Projections*

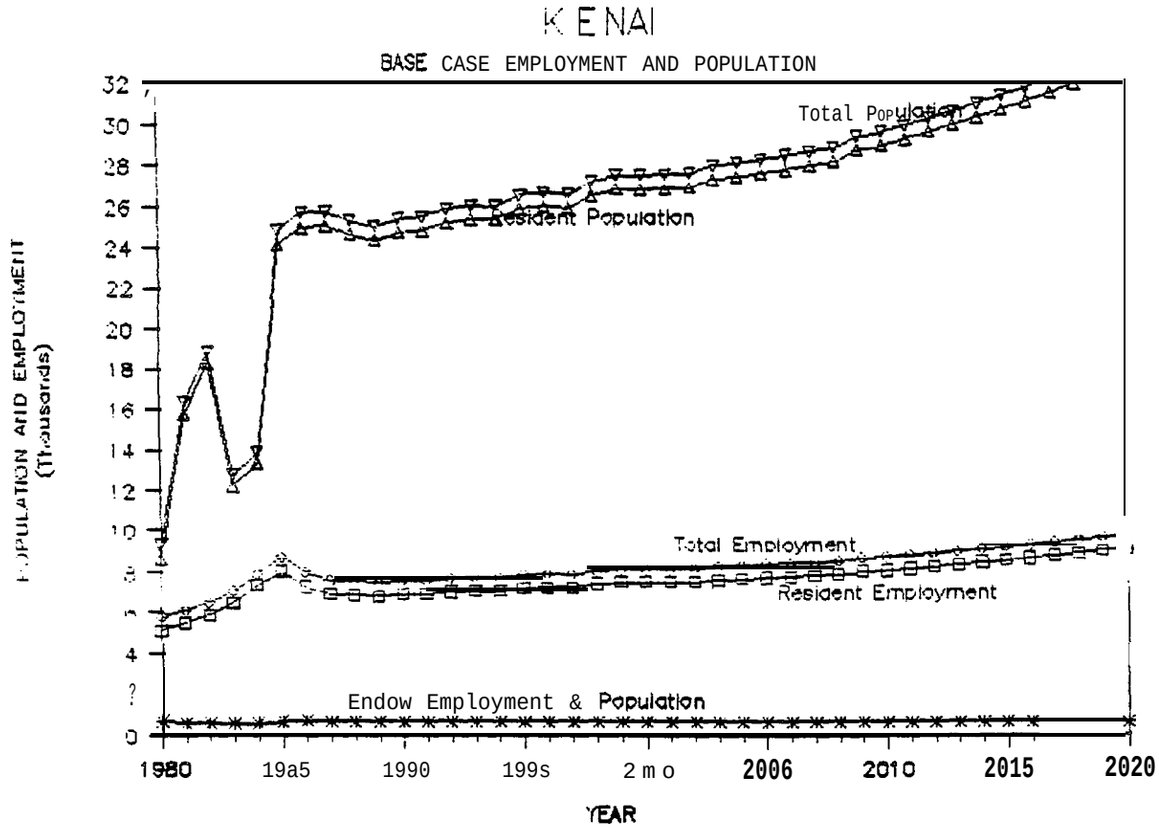


Table v.6: **Summary** of **Employment** end Population Projections for Base Case

	EMPLOYMENT							POPULATION		
YEAR	Resident Non-OCS	Resident Ocs	Resident Total	Enc l ave Non-Ocs	Enclave OCS	Enclave Tota l	Total, Resident and Enclave	Resident	Enclave	Tota l
1980	5125	0	5125	700	0	700	5825	8599	700	9299
1981	5480	0	5480	592	0	592	6072	15708	592	16300
1982	5865	0	5865	591	0	591	6456	18240	591	18831
1983	6474	0	6474	551	0	551	7025	12170	551	12721
1984	7308	0	7308	564	0	564	7872	13301	564	13865
1985	7979	0	7979	699	0	699	8677	24122	699	24820
1986	7221	0	7221	727	0	727	7948	24966	727	25693
1987	6872	0	6872	664	0	664	7536	038	664	25702
1988	6840	0	6840	665	0	665	7505	24622	665	25287
1989	6759	0	6759	665	0	665	7424	24332	665	24997
1990	686	0	6862	665	0	665	7527	24702	665	25367
1991	6889	0	6889	665	0	665	7354	24800	665	25465
1992	6991	0	6991	665	0	665	7656	25166	665	25831
1993	7037	0	7037	665	0	665		25334	665	25999
1994	7029	0	7029	665	0	665	7694	25304	665	25969
1995	7175	0	7175	665	0	665	7840	25830	665	26495
1996	7214	0	7214	665	0	665	7879	25972	665	26637
1997	7187	0	7187	665	0	665	7852	25872	665	26537
1998	7372	0	7372	665	0	665	8037	26538	665	27203
1999	7457	0	7457	665	0	665	8122	26846	665	27511
2000	7453	0	74'53	665	0	663	8118	26831	665	27496
2001	7467	0	7467	665	0	665	8132	26880	665	27545
2002	7477	0	7477	665	0	665	8142	26917	665	27582
2003	7592	0	7592	665	0	665	8257	27332	665	27997
2004	7625	0	7625	665	0	665	8290	27448	665	28113
2005	7675	0	7675	665	0	665	8340	27629	665	28294
2006	7719	0	7719	665	0	665	8384	27789	665	28454
2007	7776	0	7776	665	0	665	8441	27992	665	28657
2008	7831	0	7831	665	0	665	8496	28192	665	28857
2009	7977	0	7977	665	0	665	8642	28718	665	29383
2010	8034	0	8034	665	0	665	8699	28921	665	29586
2011	8125	0	8125	665	0	665	8790	29250	665	29915
2012	8219	0	8219	665	0	665	8884	29589	665	30254
2013	8316	0	8316	665	0	665	8981	29938	665	30603
2014	8416	0	8416	665	0	665	9081	30298	665	30963
2015	8519	0	8519	665	0	665	9184	30668	665	31333
2016	86	0	8625	665	0	665	9290	31050	665	31715
2017	8734	0	8734	665	0	665	9399	37443	665	32108
2018	8847	0	8847	665	0	665	9512	31847	665	32512
2019	8962	0	8962	665	0	665	9627	32264	665	32929
2020	9082	0	9082	665	0	665	9747	32694	665	33359

References

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles.

Kenai Peninsula Borough, Situation and Prospects, 1985, 1986, 1987, 1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Knapp, Gunnar; Nebesky, W.; Hull, T.; White, K.; Reeder, B.; and Zimicki, J. Gulf of Alaska Economic and Demographic Systems Analysis. University of Alaska, Institute of Social and Economic Research, (Prepared for Minerals and Management Service, Alaska OCS Office) Social and Economic Studies Program, Technical Report Number 98, March 1984.

Livey, Jay, and Keiser, Gretchen. Public School Financing in Alaska. Alaska State Legislature, House Research Agency Report 87-A, February 1987.

Logsdon, Charles L. Alaska Department of Revenue, Oil and Gas Audit Division. Personal Communication. December 28, 1988.

U.S. Census, 1980.

CHAPTER VI. DESCRIPTION AND MODEL ASSUMPTIONS: KODIAK

Overview

The Kodiak study area encompasses the Kodiak Island Borough. The highest concentration of people is in the road connected area, however, data is most generally available for the entire borough. Kodiak Island is a mountainous, rugged area with a fjord-type coastline. The northern part of the island is timbered with coniferous forests of northern spruces, this vegetation transitions to deciduous cottonwoods, alders, and birch type forests to the south, with the far southernmost part of the island very open and windswept with virtually no vegetation other than hardy grasses. Communities are generally located at sites of bays and harbors protected from the harsh seas of the Gulf of Alaska. Kodiak is the largest community in the borough with over half of the borough population. The other communities, such as Old Harbor, Larson Bay, Ouzinkie, **Akhiok,** *tend to have fishing and subsistence based economies.*

Kodiak Island, located south of the Kenai Peninsula, is approximately 45 minutes from Anchorage by air. Kodiak has air

service by commuter planes as well as jets. It can also be reached from the Kenai Peninsula on the Alaska Marine Highway System.

Kodiak is the center for fishing activities for the Gulf of Alaska, south of the Kenai Peninsula and east of the Aleutian Chain. Tourism and sports hunting/fishing is supported. An estimated 25 percent of Kodiak employment was generated by outdoor recreation activities and non-resident tourism. There is also a Coast Guard base and a small amount of ranching/agriculture. Borough government offices are located in Kodiak.

During the 1980's major construction projects on Kodiak Island included the Terror Lake Hydroelectric Project, the Near Island Bridge, the Dog Bay Boat Harbor, and sewer and water expansion.

Total Kodiak employment decreased during the 1980's. Manufacturing; transportation, communications, and utilities; and federal government employment declined. The other sectors were either relatively stable or increased slightly.

Major Data Sources

The primary data source for our analysis of Kodiak was Department of Labor data on employment for Kodiak. In addition we used Alaska Department of Labor "Population Overview" publications, "The Center of Alaska's Bottomfish Grounds: Kodiak and the Aleutian Islands" and "Employment in Alaska's Seafood Industry" by Neil Fried, published in Alaska Economic Trends (July 1988 and July 1987, respectively) , and I[i]Technical Report Number 122: A Description of the Economic and Social Systems of the Kodiak-Shumagin Region," U.S. Department of the Interior (1986).

We have listed all of the sources used in our analysis at the end of this chapter.

Study Area

Our employment and population assumptions and projections for the study refer to employment and population within the road-connected area around the City of Kodiak, including the Coast Guard base (Figure VI.1). Although the sub-sub area (741) that we used for employment statistics was the "Kodiak City SSA," we added in 'estimates of Coast Guard personnel. Based on historical relationships, we adjusted the borough population downward by 10 percent

to reflect an estimated population within the road-connected area.

Employment Assumptions

Table VI.1 shows Alaska Department of Labor employment data for the years 1980-1987. These data formed the primary basis for the development of our employment assumptions, and are the basis for all employment data not otherwise cited.

We made additional assumptions to account for industries not included in the Department of Labor data (e.g. fish harvesting) or which were fully or partially suppressed (e.g. manufacturing and wholesale trade), and to allocate employment within a given industry between resident and enclave shares, exogenous and endogenous shares, etc. Our resulting employment assumptions for the years 1980-1987 are shown in Table VI.2. Below we discuss these assumptions by industry.

Figure **VI-1: Kodiak Study Area**

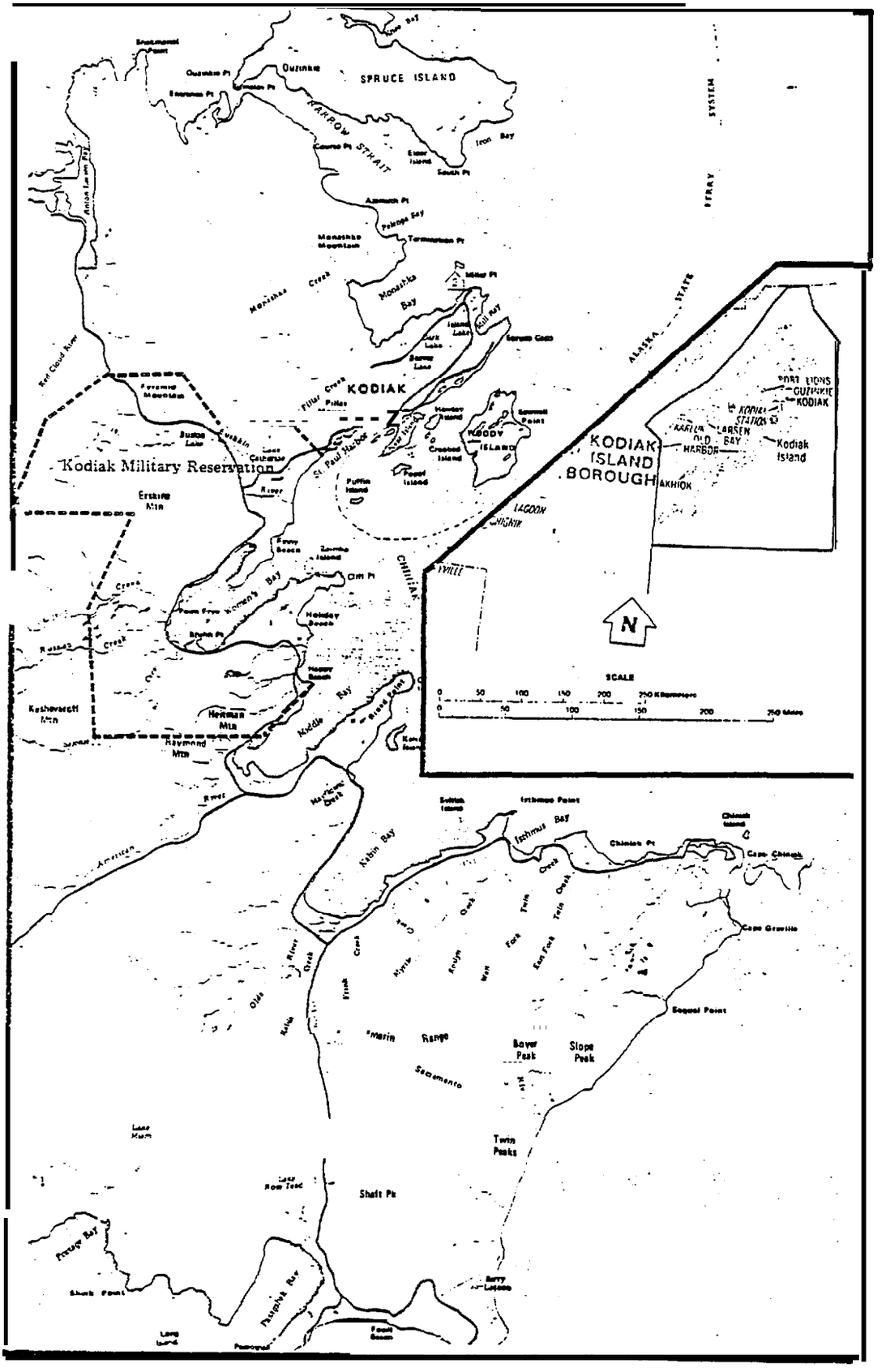


Table VI.1: Summary of Department of Labor Employment Data for Kodiak City SSA

Category	Code	1980	1981	1982	1983	1984	1985	1986	1987
Mining	1	0	0	0	0	0	0	0	0
Construction	2	99	131	287	573	330	277	275	194
Manufacturing	3	1880	1547	1 m	1378	1473	1380	1733	1569
Trans., Comm., Utilities	4	352	320	297	308	288	227	179	214
Wholesale Trade	5	35	18	28	37	30	49	52	50
Retail Trade	6	553	558	658	657	667	715	659	740
Fin., Ins., & Real Estate	7	92	90	97'	100	98	101	104	*
Services	8	522	509	531	568	555	594	604	*
Forestry, Ag., Fisheries	9	37	56	83	43	104	0	50	*
Federal Government	10	284	256	251	252	237	239	237	231
State Government	11	203	247	254	267	276	276	261	232
Local Government	12	502	499	483	512	527	541	599	511
TOTAL[1]		4559	4229	4243	4692	4615	4458	4747	4503

[1] Totals adjustad to reflect manufacturing numbers shown in Alaska Ec. Trends, 7/88.

* The source of these numbers is also the Alaska Department of Labor.

Data Suppressed.

Table VI.2: Summary of Employment Assumpt ions for the Kodi ak Study Aree, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Fish harvesting	518	518	518	518	518	518	518	518
Mining	0	0	0	0	0	0	0	0
Non-OCS resident	0	0	0	0	0	0	0	0
OCS resident	0	0	0	0	0	0	0	0
OCS enclave	0	0	0	0	0	0	0	0
Construction	99	131	287	573	330	277	275	194
Generated by atate spending	25	33	72	143	83	69	69	49
Exogenous	25	33	72	143	83	69	69	49
Endogenous	50	66	144	287	165	139,	138	97
Manufacturing	1880	1547	1275	1378	1473	1380	1733	1569
Resident fish processing	726	669	548	604	669	623	803	721
Enclave fish processing	818	755	619	681	754	703	905	813
Other manufacturing	336	123	108	93	50	54	25	35
Transportation, comm., and utilities	352	320	297	308	288	227	179	214
Exogenous	18	16	15	15	14	11	9	11
Endogenous	334	304	282	293	274	216	170	203
Wholesale trade	35	18	28	37	30	49	52	50
Retail trade	553	558	658	657	667	715	659	740
Exogenous	55	56	66	66	67	72	66	74
Endogenous	498	502	592	591	600	644	593	666
Finance, Insurance and Real Estate	92	90	97	100	98	101	104	101
Services	522	509	531	568	555	594	604	584
Exogenous	26	25	27	28	28	30	30	29
Endogenous	496	484	504	540	527	564	574	555
Miscellaneous	0	0	0	0	0	0	0	0
Agriculture	0	0	0	0	0	0	0	0
Federal government	1840	1812	1807	1808	1793	1795	1793	1787
State government	203	247	254	267	276	276	261	232
Local government	502	499	483	512	527	541	599	511
Supported by local revenues	251	250	242	256	264	271	300	256
Supported by stata spending	251	250	242	256	264	271	300	256
Supported by OCS revenues	0	0	0	0	0	0	0	0
Total	6596	6249	6235	6726	6555	6473	6777	6500

Fish Harvesting

There were an estimated 720 fishermen in the City of Kodiak in 1980, 802 in 1981, 774 in 1982, and 622 in 1983 (TR 122). However, the "number of people fishing" does not necessarily correspond to full-time fishing employment. Department of Labor did not show fish harvesting figures. However, TR 98 showed employment (FTE) in fish harvesting of 518 in 1980. Although this may understate full-time fish harvesting employment in more recent years, we have assumed this figure for the period 1980-1987. We have also assumed that fish harvesting employment will remain constant at this level for the period 1988-2020,

Agriculture

Kodiak Island has several cattle ranches and grazing leases and although considered to be a "way of life," like fish harvesting, employment associated with ranching is difficult to estimate. Therefore, we assume that, on an FTE basis, ranching employment is not significant within the study area.

Mining

Non-OCS Resident. *There is no mining employment in the Kodiak Island Borough. Therefore, we show zero mining employment between 1980 and 1987 and we assume that non-OCS mining employment will remain at zero during the period 1988-2020.*

OCS Mining. *We have assumed zero OCS mining employment in "Kodiak during the period 1980-1987. Similarly, our "base case" model assumptions assume zero OCS mining employment during the period 1988-2020.*

Construction

The Alaska Department of Labor shows annual average construction employment of 99 in 1980, increasing to 573 in 1983, then declining to 194 in 1987 (Table VI.1). The peak employment in 1983 was due largely to construction of the Terror Lake Hydroelectric Project and the Near Island Bridge.

We assumed that 25 percent of construction employment during the period 1980-1987 was supported by state government capital spending, 25 percent was exogenous, and 50 percent was endogenous, based on our best judgment in the absence of any data.

Manufacturing

Fish Processing Employment. Kodiak, as a regional fishing and fish processing center, had 13 fish processors in 1987 (TR 122). Floating processor ships are also operated in the vicinity of Kodiak Island, primarily processing bottomfish. According to TR 122, in 1986, Kodiak had the largest and most diversified processing sector of any Alaska port. In recent years, processors are increasing their bottomfish capacity and, thus, their year-round harvesting and processing operations. The longer operating season of the bottomfish industry may increase the proportion of processing jobs held by local residents.

Two Department of Labor sources for manufacturing employment are available. The July 1988 issue of "Alaska Economic Trends" showed manufacturing for "food and kindred products" and "all other manufacturing" for 1980 through 1987. The majority of manufacturing was for food products. The level of this employment is closely related to the success of the fishing harvests. Thus, in four of the preceding eight years employment was between 1,423 and 1,544. In three of the eight years it was lower and in one year it was higher.

According to Neal Fried, Department of Labor, in 1985, 69 percent of the processing workers in Kodiak were non-residents thus the resident share was only 31 percent. By 1988 Fried estimated that the resident share of fish processing employment in Kodiak had increased to 47 percent.

We assumed that both resident and non-resident fish processing employment will remain constant at their 1987 **levels** *during the period 1988-2020.*

Other Manufacturing was shown at 336 in 1980, decreasing to 35 in 1987. We assume that employment in **"other"** *non-fish processing manufacturing will continue at 35 for the period 1988-2020.*

Transportation, Communications, and Utilities

Department of Labor average annual employment figures are used. These decreased from 352 in 1980 to 179 in 1986 then increased to 214 in 1987 (Table **VI.1).** *We assumed that 5 percent of employment in this industry was exogenous and 95 percent was endogenous. We assumed that exogenous tranportation, communications and utilities employment will grow at 3 percent per year after 1987, based on the assumption that economic activity related to tourism and sports hunting and fishing in Kodiak will continue*

to expand.

Wholesale Trade

According to Department of Labor, wholesale trade employment fell from 35 in 1980 to 18 in 1981 then increased to 52 in 1986 and 50 in 1987 (Table VI.1). We assumed that all wholesale trade employment was endogenous.

Retail Trade

Retail trade average annual employment shown by Department of Labor increased from 553 in 1980 to 740 in 1987 (Table VI.1). We assumed that 10 percent of retail trade employment was exogenous and 90 percent was endogenous. We assumed that exogenous retail trade employment will grow at the rate of 3 percent annually during 1988-2020.

Finance, Insurance, and Real Estate

Department of Labor shows a relatively stable annual average employment ranging between 90 and 104 during 1980-1986 (Table VI.1). In the absence of Department of Labor data for 1987, we assumed employment of 100, equal to the average of the previous

three years. We assumed that all employment in these industries was **endogenous.**

Services

Average annual employment in services **fell** *from 522 in* **1980** *to 509 in* **1981** *then increased to a high of 604 in* **1986 (Table VI.1).** *In the absence of Department of Labor data, we assumed that 1987 employment was 584, the average of employment in the preceding three years. We assumed that 5 percent of employment in this industry was exogenous and 95 percent was* **endogenous** *and* **that services employment will increase at the rate of 3 pecent per year after 1987.**

Federal Government

Civilian federal government employment decreased from **284 in** *1980 to 231 in 1987. The U.S. Coast Guard station has 1,556 personnel in Kodiak. Based on information provided by the Public Affairs Office of the U.S. Coast Guard district office in Juneau, we assume that Coast Guard personnel in Kodiak during 1980-1987 was constant at 1,556 (recognizing, of course, that fluctuations did occur). Thus, we show total federal government employment decreasing from 1,840 in 1980 to 1,787 in 1987. We assume federal*

government employment is totally exogenous, and project it at 1,787 for the period 1988-2020.

State Government

State government employment increased from 203 in 1980 to a high of 276 in 1984 and 1985 then declined to 232 in 1987 (Table VI.1). We assume that state government employment is endogenous.

Local Government

Local government employment decreased from 502 in 1980 to 499 in 1981 then increased to 599 in 1986 followed by a decline to 511 in 1987 (Table VI.1). We assume that local government employment is endogenous except for the component identified as "local government supported by OCS revenues," which we assume to be zero for 1988-2020. We assume that 50 percent of local government revenues are from state sources and 50 percent from local sources.

Table VI.3: Estimated Employment in Kodiak Study Area

	1980	1981	1982	1983	1984	1985	1986	1987
Resident Basic	1580	1310	1174	1215	1237	1195	1346	1274
Fishing	518	518	518	518	518	518	518	518
Fish Processing	726	669	548	604	669	623	803	721
Miscellaneous	0	0	0	0	0	0	0	0
Other (mining, manufacturing)	336	123	108	93	50	54	25	35
Resident Support	1653	1626	1898	2243	1968	1963	1873	1883
Exogenous	124	130	179	253	191	182	174	162
Endogenous	1505	1463	1647	1847	1694	1712	1630	1672
Government sponsored	25	33	72	143	83	69	69	49
Enclave Sponsored								
Resident Government	2545	2558	2544	2587	2596	2612	2653	2530
Exogenous	1840	1812	1807	1808	1793	1795	1793	1787
Endogenous	705	746	737	779	803	817	860	743
Total Resident	5778	5494	5616	604	80	5770	5872	5687
Total Exogenous	3543	3252	3160	3276	3221	3172	3313	3223
Total Endogenous	2234	2242	2456	2769	2580	2598	2559	2464
Non-Resident (Enclave) Employment	818	755	619	681	754	703	905	813
Total Residant plus Non-Resident	6596	6249	6235	6726	6555	6473	6777	6500

Employment *Multipliers*

Table VI.4 summarizes employment **"multipliers"** *for the period 1980-1987. In general, these multipliers remain relatively constant throughout the period. This suggests that the economic structure of Kodiak was relatively stable during this period.*

Table VI.4: Summary of Employment Multipl i era, Kodiak Study Area, 1980-1987'

	1980	1981	1982	1983	1984	1985	1986	1987
Endogenous Employment Multipl i era [EMEDREEX/EMREEXl	0.41	0.44	0.51	0.55	0.51	0.53	0.48	0.51
Local Government Employment Mult ipl ier [EMLGLR/EMEXTO]	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.06
Stata Government Employment Multiplier [EMSG/EMEXTO]	0.05	0.06	0.07	0.07	0.07	0.07	0.06	0.06
Stata-Supported Construction Multiplier [EMCOSS/EMEXTO]	0.01	0.01	0.02	0.04	0.02	0.02	0.02	0.01
State-Supported Local Government Employment Multiplier [EMLGSS/EMEXTO]	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.06

Population Assumptions

Table VI.5 summarizes available population data for the period 1980-1987, as well as our population assumptions for this period. As discussed previously under Study Area, we have attempted to study the area around Kodiak connected by roads. For estimating population, we used the Kodiak Island Borough population as a base then, based on historical relationships, we adjusted it downward by 10 percent to compensate for residents of the borough who live outside the study area. Our 1980 assumption for total population was based on the 1980 census. Our assumptions for 1981-1987 are based on the Alaska

Department of Labor's population estimates.

Our age distribution assumptions are based on the 1980 census. We assume that this age distribution remains constant throughout the projection period.

The ratio **of** *assumed resident population to assumed resident exogenous employment increased from 2.29 in 1980 to* **3.21** *in* **1987.** *The fact that this ratio increased gradually suggests additional endogenous employment and/or higher unemployment. In the absence of better data we assume that in the future this ratio remains constant at the 1987 level.*

Table VI.5: Population Data for Kodiak Study Area, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Population Data								
1980 Census	2716							
by age group								
0-4	265							
5-19	661							
20-64	1740							
65+	50							
City of Kodiak	4756	4678	5873	5964	6069	6173	6279	6386
Kodiak Island Borough	9939	10289	12575	12611	12850	12952	13561	13658
Kodiak Study Area (estimated)	8945	9260	11318	11350	11565	11657	12205	12292
Permanent Fund Dividend Distributions								
Kodiak Island Borough			9656	9205	9132	9735		
Road-connected Area (est'd.)			8420	8026	7963	8489		
Population Assumptions								
Resident Population: Total	8127	8505	9629	9602	9730	9859	10170	10331
Age Distribution (percent)								
Pre-School (0-4)	0.10							
School-age (5-19)	0.25							
Adult (20-64)	0.63							
Senior (65+)	0.03							
Resident Exogenous Employment	3543	3252	3160	3276	3221	3172	3313	3223
Ratio of Resident Population to Resident Exogenous Employment	2.29	2.62	3.05	2.93	3.02	3.11	3.07	3.21

Base Case Projections

Figure VI.2 and Table VI.6 summarize our base case projections for Kodiak. Total population rises gradually over the projection period. This is due primarily to increasing tourism.

Figure VI-2. Kodiak Base Case Projections

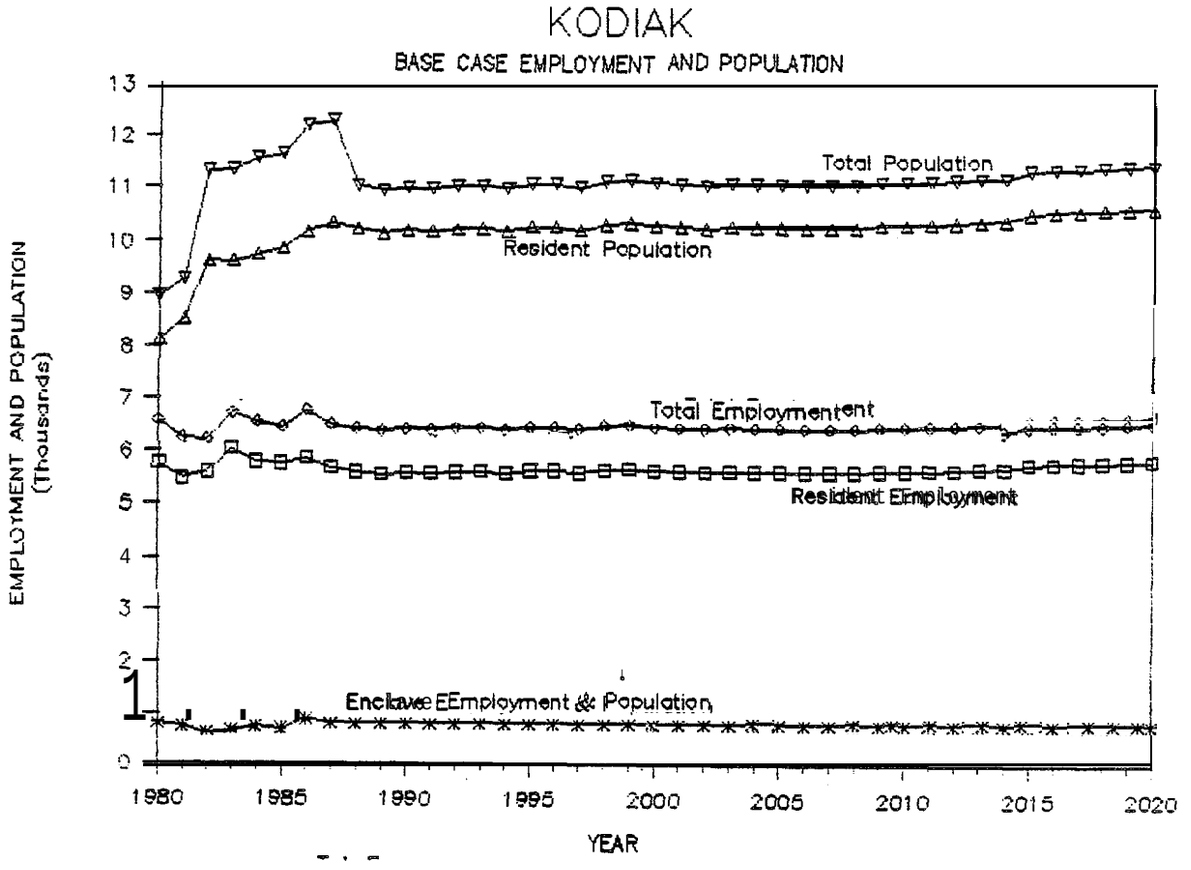


Table VI.6: Summary of Employment and Population Projections for Base Case

	EMPLOYMENT							POPULAT ION		
YEAR	Resident Non-OCS	Resident OCS	Resident Total	Enc l ave Fish-Process.	Enclave OCS	Enclave Total	Total, Resident and Enclave	Resident	Enclave	Total
1980	5778	0	5778	818	0	818	6596	8127	818	8945
1981	5494	0	5494	755	0	755	6249	8505	755	9260
1982	5616	0	5616	619	0	619	6235	9629	619	11318
1983	6045	0	6045	681	0	681	6726	9602	681	11350
1984	5801	0	5801	754	0	754	6555	9730	754	11565
1985	5770	0	5770	703	0	703	6473	9859	703	11657
1986	5872	0	5872	905	0	905	6777	10170	905	12205
1987	5687	0	5687	813	0	813	6500	10331	813	12292
198a	5618	0	5618	812	0	812	6444	10226	812	11038
1989	5568	0	5568	812	0	812	6394	10133	812	10945
1990	5597	0	5597	812	0	812	6423	10186	812	99
1991	5593	0	5593	812	0	812	6418	10178	812	10990
1992	5620	0	5620	812	0	812	6446	10228	812	11040
1993	5623	0	5623	812	0	812	6449	10233	812	11045
19%	5602	0	5602	812	0	812	6428	10196	812	11008
1995	5646	0	5646	812	0	812	6472	10276	812	11088
1996	51%5	0	5645	812	0	812	6471	10273	812	11085
1997	5615	0	5615	812	0	812	6441	10219	812	11031
1998	5673	0	5673	812	0	812	6499	10325	812	11136
1999	5689	0	5689	812	0	812	6515	10354	812	11166
2000	5668	0	5668	812	0	812	6494	10315	812	11127
2001	5653	0	5653	812	0	812	6479	10289	812	11101
2002	5638	0	5638	812	0	812	6464	10261	812	11072
2003	5663	0	5663	812	0	812	6489	10307	812	11119
2004	5655	0	5655	812	0	812	6481	10293	812	11105
2005	5654	0	5654	812	0	812	6480	10291	812	11103
2006	5650	0	5650	812	0	812	6476	10284	812	11095
2007	5650	0	5650	812	0	812	6476	10284	812	11096
2008	5650	0	5650	812	0	812	6476	10283	812	11095
2009	5683	0	5683	812	0	812	6509	10344	812	11156
2010	5682	0	5682	812	0	812	6508	10341	812	11153
2011	5693	0	5693	812	0	812	6519	10361	812	11173
2012	5704	0	5704	812	0	812	6530	10382	812	11194
2013	5716	0	5716	812	0	812	6542	10404	812	11215
2014	5728	0	5728	812	0	812	6554	10426	812	11238
2015	5806	0	5806	812	0	812	6632	10567	812	11379
2016	5818	0	5818	812	0	812	6644	10589	812	11401
2017	5830	0	5830	812	0	812	6656	10611	812	11423
2018	5842	0	5842	812	0	812	6668	10633	812	11445
2019	5855	0	5855	812	0	812	6681	10657	812	11469
2020	5868	0	5868	812	0	812	6694	10681	812	11492

References

Alaska Department of Commerce and Economic Development, Kodiak: An Alaska Community Profile, Juneau, Alaska, 1984.

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles.

Fried, Neal, "Employment in Alaska's Seafood Industry," Alaska Economic Trends, Juneau, Alaska: Alaska Department of Labor, July 1987.

Fried, Neal, The Center of Alaskars Bottomfish Grounds: Kodiak and the Aleutian Islands," Alaska Economic Trends, Juneau, Alaska: Alaska Department of Labor, July 1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Knapp, Gunnar; Nebesky, W.; Hull, T.; White, K.; Reeder, B. ; and Zimicki, J. Gulf of Alaska Economic and Demographic Systems Analysis. University of Alaska, Institute of Social and Economic Research, (Prepared for Minerals and Management Service, Alaska OCS Office) Social and Economic Studies Program, Technical Report Number 98, March 1984.

Livey, Jay, and Keiser, Gretchen. Public School Financing in Alaska. Alaska State Legislature, House Research Agency Report 87-A, February 1987.

United States, Department of the Interior. Technical Report Number 122: A Description of the Economic and Social Systems of the Kodiak-Shumaain Reaion. Anchorage: Cultural Dynamics Ltd., 1986.

U.S. Census, 1980.

CHAPTER VII: DESCRIPTION AND MODEL ASSUMPTIONS: SEWARD

Overview

Seward is located at the head of Resurrection Bay. It is Alaska's only deep water, ice-free port that has rail, highway, and air links to the major urban areas and the interior of the state. Seward is 127 miles south of Anchorage by highway and 35 minutes by air. The Alaska Marine Highway System provides ferry service to Seward.

Seward, with a population of 2,324 in the city, and an estimated 996 in the outlying area, has a diverse economy for a city its size. The economy is supported by fish processing, a coal export facility, and the state's long-term maximum correctional center. A wood products plant is to begin production this year. Ship services and repairs and a vocational training facility are available in Seward. The University of Alaska's Institute of Marine Science and the headquarters for the Kenai Fjords National Park are also located in Seward.

Government is an important employer, providing over 30

percent of employment in 1987. This increased significantly with operations of the Spring Creek Correctional Facility. Tourism and recreation are also an important part of the economy.

Total employment in Seward. increased slightly between 1980 and 1987 with more significant growth in retail trade and services. State government employment increased substantially after the Spring Creek Maximum Correctional Facility began operations.

Major Data Sources

The primary data source for our analysis of Seward was Department of Labor data on employment for Seward. In addition we referred to City of Seward Comprehensive Plan (November 1985) ; "City of Seward Community Profile" (undated) ; and "Gulf of Alaska Economic and Demographic Systems Analysis,' Social and Economic Studies Program, Technical Report Number 98, March 1984 (subsequently referred to as TR 98). We also discussed current development projects in Seward with Gary Martin, City of Seward. We have listed all of the sources used in our analysis at the end of this chapter.

Study Area

Figure VII.1 shows the area which we are defining as Seward. Our employment and population assumptions and projections for this study refer to employment and population within this area. This area corresponds approximately to the "sub-sub area" used by Department of Labor for employment statistics.

Employment Assumptions

Table VII.1 shows Alaska Department of Labor employment data for Seward for the years 1980-1987. These data formed the primary basis for the development of our employment assumptions, and are the basis for all employment data not otherwise cited.

We made additional assumptions to account for industries not included in the Department of Labor data (e.g. fish harvesting) or which were fully or partially suppressed (e.g. manufacturing and wholesale trade) , and to allocate employment within a given industry between resident and enclave shares, exogenous and endogenous shares, etc. Our resulting employment assumptions for the years 1980-1987 are shown in Table VII.2. Below we discuss these assumptions by industry.

Figure VII-1: Seward Study Area

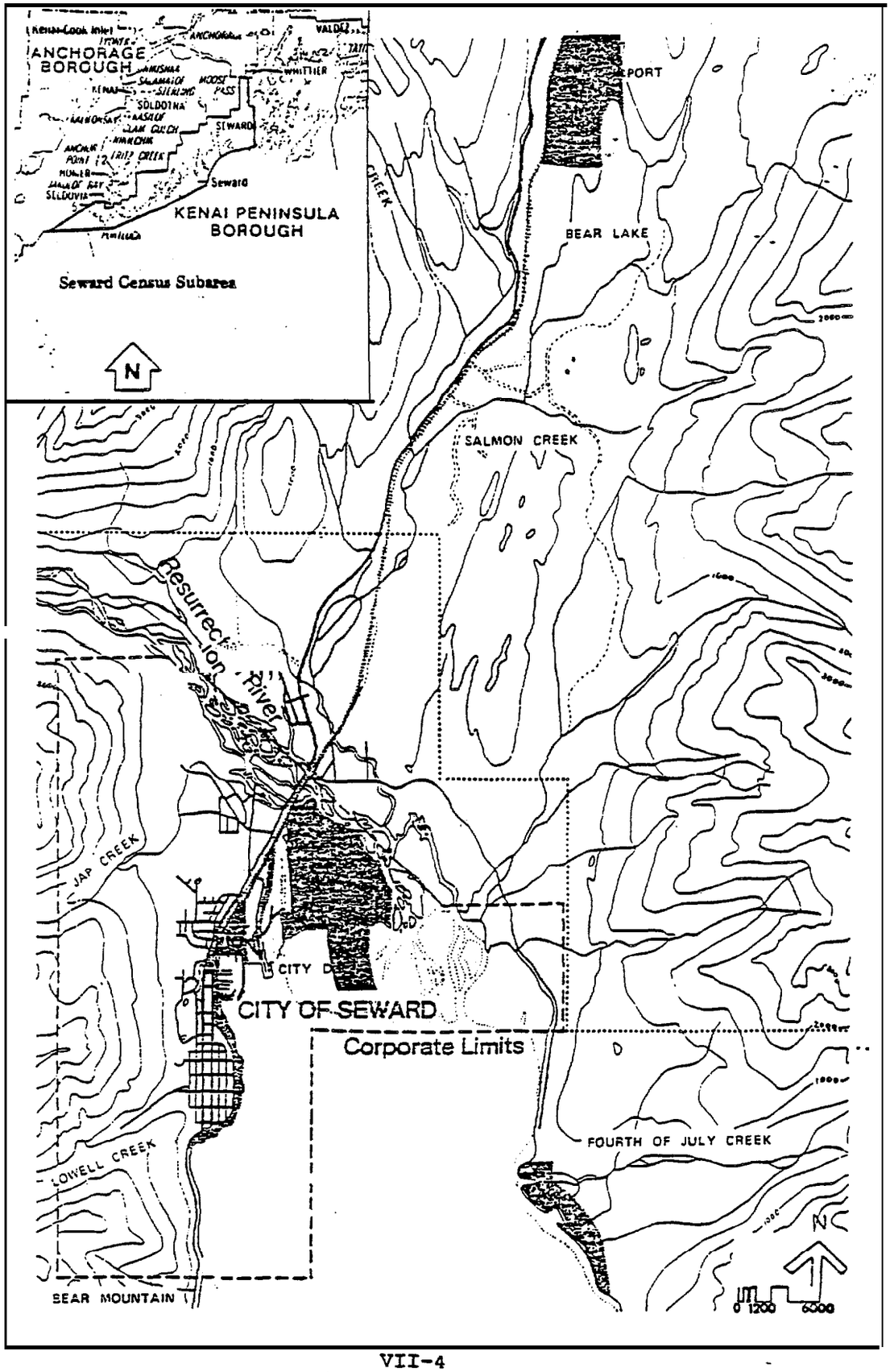


Table VII.1: Summary of Department of Labor Employment Data for Seward

Category	Code	1980	1981	1982	1983	1984	1985	1986	1987
Mining	1	*	*	•	*	*	0	0	0
Construct ion	2	32	*	19	43	62	32	73	101
Manufacturing	3	*	*	•	•	*	*	*	*
Trans., Comm., Utilities	4	45	48	73	39	96	138	98	60
Wholesale Trade	5	*	*	*	*	*	*	42	46
Retail Trade	6	137	126	142	134	137	146	160	•
Fin., Ins., & Rest Estate	7	17	20	20	19	22	23	22	21
Services	8	167	169	198	195	201	236	218	*
Forestry, Ag., Fisheries	9	*	*	•	*	*	*	*	*
Federal Government	10	34	31	33	35	42	36	37	37
State Government	11	194	203	222	216	229	241	221	208
Loca l Government	12	109	112	121	134	141	154	169	175
TOTAL		1205	1107	1176	1072	1171	1229	1218	1234

* Data suppressed.

Table 111.2: Summary of Employment Assumptions for Seward, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Fish harvesting	120	120	120	120	120	120	120	120
Mining	0	0	0	0	0	0	0	0
Non-OCS resident	0	0	0	0	0	0	0	0
OCS reaidant	0	0	0	0	0	0	0	0
OCS enclave	0	0	0	0	0	0	0	0
Construct ion	32	26	19	43	62	32	73	101
Generated by state spending	8	6	5	11	16	8	18	25
Exogenous	8	6	5	11	16	8	18	25
Endogenous	16	13	10	22	31	16	37	51
Manufacturing	316	316	316	316	316	316	316	316
Resident fish processing	114	114	114	114	114	114	114	114
Enclave fish processing	171	171	171	171	171	171	171	171
Other manufacturing	31	31	31	31	31	31	31	31
Transp., comm., and utilities	45	48	73	39	96	138	98	60
Exogenous	5	5	7	4	10	14	10	6
Endogenous	41	43	66	35	86	124	88	54
Wholesale trade	33	38	36	36	36	39	42	46
Retail trade	137	126	142	134	137	146	160	173
Exogenous	34	32	36	34	34	37	40	43
Endoganous	103	95	107	101	103	110	120	130
Finance, Insurance and Real Estate	17	20	20	'19	22	23	22	21
Services	167	169	198	195	201	236	218	218
Exogenous	17	17	20	20	20	24	22	22
Endogenous	150	152	178	176	181	212	196	196
Misc.-Prison employees	0	0	0	0	0	0	0	0
Res i dent	0	0	0	0	0	0	0	0
Non-residant (enclave)	0	0	0	0	0	0	0	0
Federal government	50	47	49	51	58	52	53	53
State government	194	203	222	216	229	241	221	208
Local government	109	112	121	134	141	154	169	175
Supportad by local revenues	55	56	61	67	71	77	85	88
Supportad by state spanding	55	56	61	67	71	77	85	88
Supported by OCS revenues		0	0	0	0	0	0	0
Total	1220	1225	1316	1303	1418	1497	1492	1491

Fish Harvesting

Seward is a center of fishing and fish processing for Prince William Sound and the Gulf of Alaska. Seward residents held 362 fish permits according to Seward's "On the Move" brochure.

Alaska Department of Labor data was suppressed for "forestry, agriculture, and fisheries." In 1980, resident fish harvesting employment (FTE) was 120 (TR 98). Although this may understate full-time fish harvesting employment in more recent years, we have assumed this figure for the period 1980-1987. We have also assumed that fish harvesting employment will remain constant at this level for the period 1988-2020.

Mining

Non-OCS Resident. Mining employment data was suppressed for 1980 through 1984. In 1985-1987 mining employment was shown at zero (Table VII.1). Thus, we have assumed that non-OCS mining employment was zero for the entire period 1980 through 1987 and will remain at zero.

OCS Mining. We have assumed zero OCS mining employment in

the Kenai Market Area during the period 1980-1987. Similarly, our "base case" model assumptions assume zero OCS mining employment during the period 1988-2020.

Construction

Construction projects during the 1980's have included the Spring Creek Correctional Facility, a coal export facility, fish processing plant and ship repair facilities. Nearing completion is the Chugach Development Corporation's $12 million wood products saw mill and scheduled to begin construction during 1988-1989 are a new fish processing plant and a ship repair facility.

Construction employment increased from 32 in 1980 to 101 in 1987 (Table VII.1). We assumed that 25 percent of construction employment during the period 1980-1987 was supported by state government capital spending, 25 percent was exogenous, and 50 percent was endogenous, based on our best judgment in the absence of any data.

We assumed exogenous employment of 25 during the period 1988-2020, based on on our best judgment in the absence of any data.

Manufacturing

Fish Processing **Employment.** *Fish processing is the primary type of manufacturing in Seward. Department of Labor manufacturing employment data were suppressed for 1980 through 1987 (Table* **VII.1).** *TR 98 showed resident fish processing employment* **(FTE)** *in 1980 of 114. Assuming that the resident share for fish "processing employment is .4, then non-resident fish processing employment is estimated at 171 (Table* **VII.1).**

We assumed that fish processing employment will increase by 90 to 375 during 1990-2020 due to operation of a new fish processing plant.

Wood Products. We assume that the new **Chugach** *Forest Products, Inc. sawmill, which is scheduled for completion in July 1989, will create additional manufacturing employment of 50 according to testimony by Paul Tweeten, Timber Division Manger,* **Chugach** *Forest Products at the House Resources Committee hearing* **(Wasilla** *March 11, 1989). We assume that wood products employment will remain at 50 for 1989-2020.*

Transportation, Communications, and Utilities

Average annual employment in transportation, communications and utilities ranged from 45 in 1980 to 138 in 1985, and then declined to 60 in 1987 (Table VII.1). We assumed that 10 percent of employment in this industry was exogenous and 90 percent was endogenous. We assumed that exogenous transportation, communications and utilities employment will grow at 5 percent per year after 1987, based on the assumption that economic activity related to tourism and sports fishing in the Seward area will continue to expand.

Wholesale Trade

Wholesale *trade employment was 42 in 1986 and 46 in 1987 (Table VII.1). In 1986, wholesale trade comprised 20.79 percent of total trade . We estimated wholesale trade for the period 1980-1985 based on this relationship. We assumed that all wholesale trade employment was endogenous.*

Retail Trade

Retail trade average annual employment ranged from 137 in 1980 to 160 in 1986 (Table VII.1). The 1987 retail trade figure

was suppressed and, since wholesale trade was shown for 1987, retail trade was estimated based on the relationship discussed in the preceding section "wholesale trade." We assumed that 25 percent of retail trade employment was exogenous and 75 percent was endogenous. We assumed that exogenous retail trade employment will grow at a rate of 5 percent per year after 1987.

Finance, Insurance, and Real Estate

Average annual employment in "F.I.R.E." increased from 17 employees in 1980 to 23 in 1985 then decreased to 21 in 1987 (Table VII.1). We assumed that all employment in these industries was endogenous.

Services

Annual average employment in services increased from 167 in 1980 to 236 in 1985 then declined to 218 in 1986 (Table VII.1). Since services employment for 1987 was suppressed, we assumed it to be the average of employment in 1984-1986, a value of 218. We assumed that 10 percent of employment in this industry was exogenous and 90 percent was endogenous. For the "base case" scenario, we assumed exogenous employment in services will grow at a rate of 5 percent per year during 1988-2020.

Federal Government

Civilian federal government employment in Seward increased from 34 in 1980 to 42 in 1984 then decreased to 37 in 1986 and 1987 (Table VII.1). The U.S. Coast Guard stations 16 personnel on a 110 foot vessel in Seward. Seward has been vying to become a U.S. Navy home port. However, since it. appears that the U.S. Navy and the State of Alaska are unable to reach an agreement on who will finance the project, we assume that there will not be a home port project in Seward. We assume federal government employment is exogenous and thus project it at the 1987 level for 1988-2020.

State Government

State employment increased from 109 in 1980 to 175 in 1987 (Table VII.1). State employment is assumed to be totally endogenous with the exception of the Spring Creek Correctional Facility. We assume that employees at this maximum security prison are exogenous. Thus, in the model, Spring Creek employment is shown separately.

Operation of the Spring Creek Correctional Facility began in

1988 *with a work force of 200. According to the City of Seward, many of these employees transferred to the Spring Creek facility from other parts of the state. It is our understanding that many of these employees commute during their off-time to residences elsewhere. We assume that these employees and their families are trying to sell their homes in order to relocate permanently to Seward but that this "adjustment" period may be prolonged because of the poor housing market in the state. Therefore, for 1988-1990 we showed a decreasing proportion of Spring Creek employees as non-resident employees. We assume that these non-residents are, for example, sharing apartments with other employees in similar situations and maintaining households and families elsewhere in the state. We assume that after 1990 all the Spring Creek employees will be permanent residents of Seward. We also assume that employment at this facility will remain stable at 200 during 1988-2020.*

Local Government

Local government employment increased from 109 employees in 1980 to 175 employees in 1987 (Table VII.1*). Local government employment includes components "supported by state spending" and* "supported by local *revenues" which we assume to be* endogenous. *It also includes "local government supported by OCS revenues."*

Table VII.3: Estimated Employment in Seward

	1980	1981	1982	1983	1984	1985	1986	1987
Resident Basic	265	265	265	265	265	265	265	265
Fishing	120	120	120	120	120	120	120	120
Fish Processing	114	114	114	114	114	114	114	114
Misc. and Prison	0	0	0	0	0	0	0	0
Other (mining, manufacturing)	31	31	31	31	31	31	31	31
Resident Support	431	427	488	466	554	614	613	619
Exogenous	63	60	67	68	79	82	90	96
Endogenous	360	361	416	388	459	524	505	497
Government Sponsorad	8	6	5	11	16	8	18	25
Enclave Sponsored								
Resident Government*	353	362	392	401	428	447	443	436
Exogenous	50	47	49	51	58	52	53	53
Endogenous	303	315	343	350	370	395	390	383
Total Resident	1049	1054	1145	1132	1247	1326	1321	1320
Total Exogenous	378	372	381	384	402	399	408	414
Total Endogenous	671	682	764	748	845	927	913	906
Non-Resident (Enclave) Employment	171	171	171	171	171	171	171	171
Total Resident plus Non-Resident	1220	1225	1316	1303	1418	1497	1492	1491

* Ooes not include employment at the prison, which is included under Resident Basic.

This category is exogenous and we assume for the base case scenario that it is zero for 1988-2020.

Employment Multipliers

Table VII.4 *summarizes employment* **"multipliers"** *for the period*

1980-1987. In general, these multipliers fluctuate substantially. This suggests that either the economic structure of Seward was fluctuating substantially during this period, or (more likely) our employment assumptions are unreasonable for some years. However, our assumptions nevertheless remain our best estimates given the limited available employment data.

Table VI I.4: Summary of Employment Multipliers, Seward, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Erogenous Employment Multi pliers [EMEDREEX/EMREEX]	0.93	0.95	1.07	0.99	1.12	1.29	1.22	1.18
Local Government Employment Multiplier [EMLGLR/EMEXTO]	0.10	0.10	0.11	0.12	0.12	0.14	0.15	0.15
State Goverrunant Employment Multi plier [EMSG/EMEXTO]	0.35	0.37	0.40	0.39	0.40	0.42	0.38	0.36
State-Supported Construction Multiplier [EMCOSS/EMEXTO]	0.06	0.05	0.03	0.08	0.11	0.06	0.13	0.17
State-Supported Local Government Employment Multiplier [EMLGSS/EMEXTO]	0.10	0.10	0.11	0.12	0.12	0.14	0.15	0.15

Population Assumptions

Table VII.5 *summarizes available population data for Seward for the period 1980-1987, as well as our population assumptions for this period. Our 1980 assumption for total population was based on the*

1980 census. Our assumptions for 1981-1983 are based on Department of Labor, Alaska Population Overview publications. For 1984-1987 we used population numbers from the City of Seward.

Our age distribution assumptions are based on the 1980 census. We assume that this age distribution remains constant throughout the projection period.

The ratio of assumed resident population to assumed resident exogenous employment increased from 6.80 in 1980 to 7.60 in 1987. The fact that this ratio was relatively constant suggests that our assumption is a reasonable one that this ratio remains constant for future years at the 1987 level.

Table VI I.5: Population Data for Seward, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Population Data								
1980 Census	1843							
by age group								
0-4	128							
5-19								
20-64								
65+	144							
Alaska Population Overview								
Seward, city	1843	1943	1839	1925				
City of Seward								
Seward, city					2072	2175	2223	2324
Populated area outside city (est's)	900	900	900	900	900	935	953	996
Total Seward area population	2743	2843	2739	2825	2972	3110	3176	3320
Permanent Fund Dividend								
Distributions			2877	2732	2823	3081		
Adult			2156	2057	2089	2276		
Children			721	675	734	805		
School Enrollment			472	453	511	561	586	585
Population Assumptions								
Resident Population: Total	2572	2672	2568	2654	2801	2937	3005	3149
Age Distribution (percent)								
Pre-School (0-4)	0.07							
School-age (5-19)	0.21							
Adult (20-64)	0.64							
Senior (65+)	0.08							
Resident Exogenous Employment	378	372	381	384	402	399	408	414
Ratio of Resident Population to Resident Exogenous Employment	6.80	7.19	6.73	6.92	6.96	7.36	7.37	7.60

Base Case Projections

Figure VII.2 and Table **VII.6** *summarize* **our** *base case projections for Seward. Total population rises gradually over* **the** *projection period. This is due primarily to increasing tourism* **and** *assumed expansion of the industrial base.*

Figure VII-2: Seward Base Case Projections

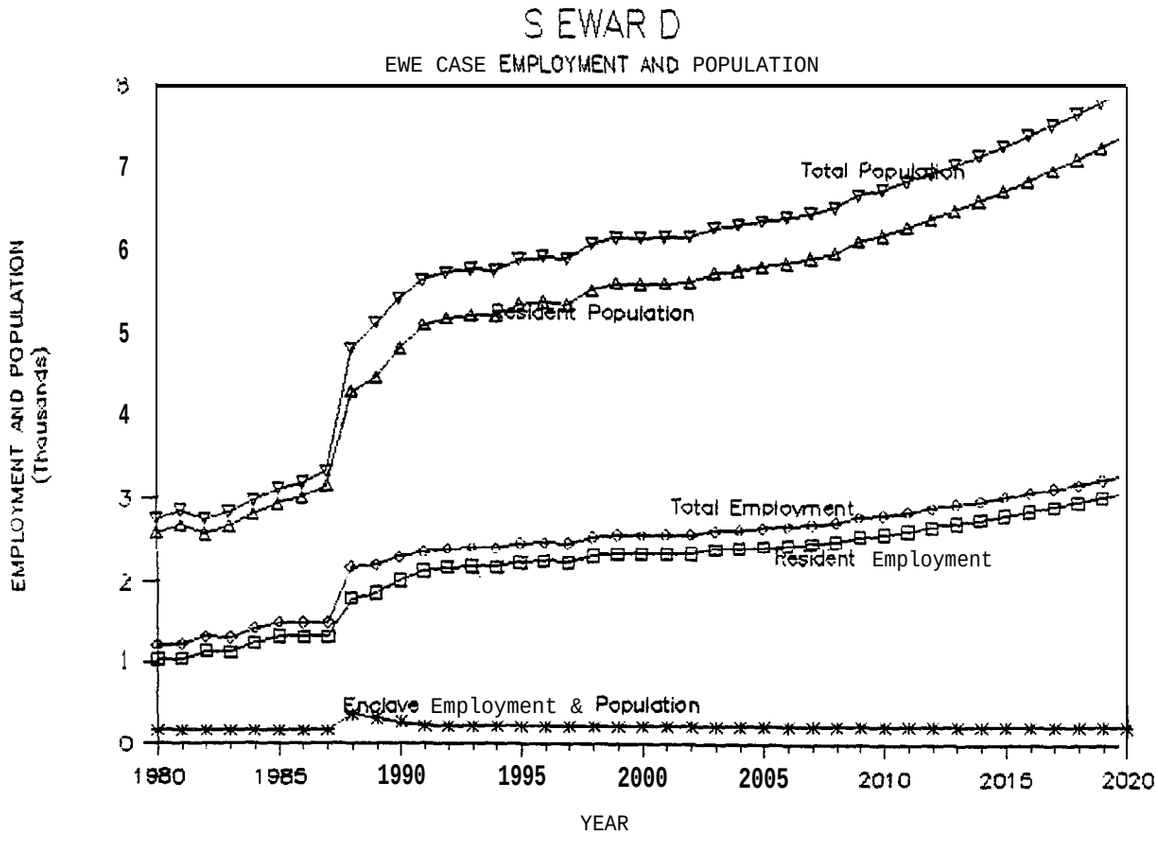


Table VI 1.6: **Summary** of **Employment** and Population Projections for Base Case

	EMPLOYMENT						POPULATION			
YEAR	Resident Non-OCS	Resident Ocs	Resident Total	Enc l ave Fish-Process.	Enclave Ocs	Enclave Total	Total, Resident snd Enclave	Resident	Enclave	Tota l
1980	1049	0	1049	171	0	171	1220	2572	171	2743
1981	1054	0	1054	171	0	171	1225	2672	171	2843
1982	1145	0	1145	171	0	171	1316	2568	171	2739
1983	1132	0	1132	171	0	171	1303	2654	171	2825
1984	1247	0	1247	171	0	171	1418	2801	171	2972
1985	1326	0	1326	171	0	171	1497	2937	171	3108
1986	1321	0	1321	171	0	171	1492	3005	171	3176
1987	1320	0	1320	171	0	171	1491	3149	171	3320
1988	1792	0	1792	225	0	375	2167	4300	375	4803
1989	1863	0	1863	225	0	325	2188	4470	325	5115
1990	2008	0	2008	225	0	275	2283	4819	275	5414
1991	2123	0	2123	225	0	225	2348	5095	225	5640
1992	2162	0	2162	225	0	225	2387	5189	225	5734
1993	2178	0	2178	225	0	225	2403	5228	225	5773
1994	2172	0	2172	225	0	225	2397	5214	225	5759
1995	2231	0	2231	225	0	225	2456	5353	225	5898
1996	2245	0	2245	225	0	225	2470	5387	225	5932
1997	2231	0	2231	225	0	225	2456	5354	225	5899
1998	2306	0	2306	225	0	225	2531	5535	225	6080
1999	2340	0	2340	225	0	225	2565	5616	225	6161
2000	2337	0	2337	225	0	225	2562	5609	225	6154
2001	2341	0	2341	225	0	225	2566	5619	225	6164
2002	2345	0	2345	225	0	225	2570	5627	225	6172
2003	2392	0	2392	225	0	225	2617	5742	225	6287
2004		0	2406	225	0	225	2631	5773	225	6318
2005	2427	0	2427	225	0	225	2652	5824	225	6369
2006	2445	0	2445	225	0	225	2670	5869	225	6414
2007	2470	0	2470	225	0	225	2695	5928	225	6473
	2494	0	2494	225	0	225	2719	5986	225	6531
2009	2558	0	2558	225	0	225	2783	6140	225	6685
2010	2584	0	2584	225	0	225	2809	6201	225	6746
2011	2625	0	2625	225	0	225	2850	6301	225	6846
2012	2669	0	2669	225	0	225	2894	64	225	6950
2013	2714	0	2714	225	0	225	2939	6514	225	7059
2014	2761	0	2761	225	0	225	2986	6627	225	7172
2015	2811	0	2811	225	0	225	3036	6746	225	7291
2016	2862	0	2862	225	0	225	3087	6869	225	7414
2017	2916	0	2916	225	0	225	3141	6998	225	7543
2018	2972	0	2972	225	0	225	3197	7133	225	7678
2019	3031	0	3031	225	0	225	3256	7274	225	7819
2020	3092	0	3092	225	0	225	3317	7422	225	7967

References

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles, 1982-1985.

Alaska Transportation Consultants, Inc.; CCC Architects and Planners; Kevin Waring Associates. Seward Aimort Land Use and Development Plan, Final Report. Prepared for the City of Seward. December 1985.

CCC Architects Alaska, Kevin Waring Associates, and Alaska Transportation Consultants, City of Seward Comprehensive Plan, Adopted by the Kenai Peninsula Borough, November 5, 1985.

Chemical Bank, Information Memorandum. Seward Marine Industrial Center, March 6, 1985.

Kenai Peninsula Borough, Situation and Prospects, 1985, 1986, May 1987, August 1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Martin, Gary. City of Seward. Telephone Interview. October 28, 1988.

Merritt, R. D., "Public-Data File 86-95, The Seward Coal Terminal 1985," Alaska Division of Mining and Geological and Geophysical Surveys, December 1986.

National Park Service, Anchorage, Alaska, Draft Environmental Impact Statement for the Wilderness Recommendation, Kenai Fiords National Park, Alaska, 1988.

Seward, Alaska, Detailed Project Report and Final EIS for Proposed Small Boat Harbor Navigational Improvements, Appendix B,

Economics, April 1982.

Seward, City of, "On the Move... A Community Profile," (Undated).

U.S. Census, 1980.

CHAPTER VIII. DESCRIPTION AND MODEL ASSUMPTIONS: YAKUTAT

Overview

Yakutat is a fairly self-contained community without close economic relationships with other communities, the nearest of which is Cordova (225 miles northwest) . There are daily air connections between Anchorage (380 air miles) and Juneau (225 air miles) . Yakutat Bay opens to the unprotected waters of the Gulf of Alaska, making regular access to Yakutat possible only by ocean-going vessels. The Alaska Marine Highway System does not serve Yakutat.

Commercial fishing and seafood processing dominate the economy. In addition there is a small amount of logging. One of the principal reasons that Yakutat was originally established as a town was fishing. A cannery was constructed which drew workers to the site. Fishing is a way of life in Yakutat; a 'Traditional occupation acknowledged by the community" (OEDP Update, 1988) .

Government is the second most important sector in the economy, providing stable year-round employment. The community is encouraging tourist and recreation oriented businesses, particu-

larly emphasizing the world-class sport fishing offered in the Situk River. According to the OEDP Update (1987):

> "A 1987 study prepared for the Alaska Division of Sport Fisheries estimates 6,581 sport fishing trips were made in 1986 in the Yakutat area, with a total of 11,020 days fished. .." (ibid., p. 19)

Total employment in Yakutat increased slightly between 1980 and 1987.

Major Data Sources

The primary data source for our analysis of Yakutat was Department of Labor data on employment for Yakutat. In addition we refer to the Overall Economic Development Program, 1988 Update, the Yakutat Comprehensive Plan (November 1983); the Yakutat Airport Master Plan Report (December 1987); and "Gulf of Alaska Economic and Demographic Systems Analysis," Social and Economic Studies Program, Technical Report Number 98, March 1984 (subsequently referred to as TR 98). We spoke with Carla Moore, a Planner with the City, who was very helpful in providing information.

We have listed all of the sources used in our analysis at the end of this chapter.

Study Area

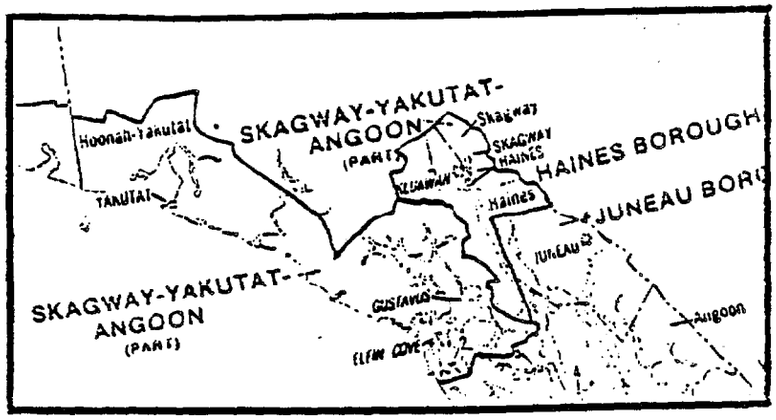
Figure VIII.1 shows the area which we are defining as "Yakutat." Our employment and population assumptions and projections for this study refer to employment and population within this area. This includes the City of Yakutat and the surrounding road connected area and approximately corresponds to the sub-sub area used by Department of Labor for employment statistics.

Employment Assumptions

Table VIII.1 shows Alaska Department of Labor employment data for Yakutat for the years 1980-1987. These data formed the primary basis for the development of our employment assumptions, and are the basis for all employment data not otherwise cited.

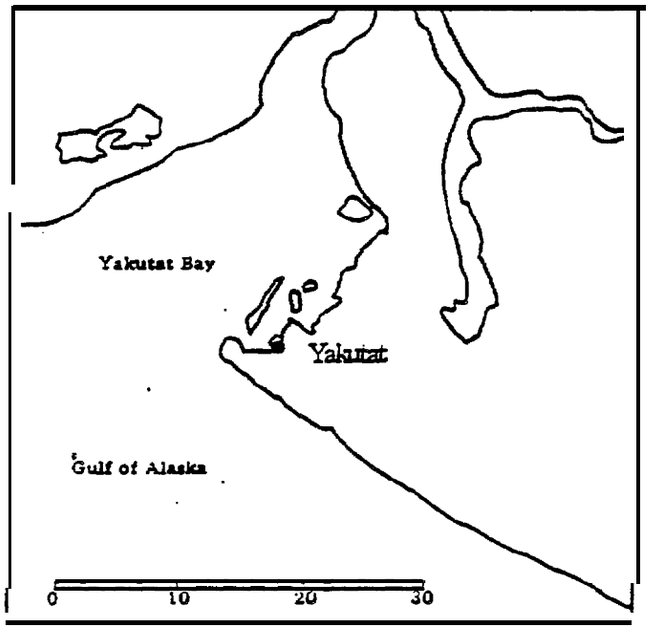
We made additional assumptions to account for industries not included in the Department of Labor data (e.g. fish harvesting) or which were fully or partially suppressed (e.g. manufacturing and wholesale trade), and to allocate employment within a given

Figure VIII-1: Yakutat Study Area



Source: U. S. Bureau of the Census

A. Skagway - Yakutat - Angoon *Census Area*



Adapted from AEIDC AK Regional Pro files

B. City of Yakutat

Note: The study area for our descriptions and pro j ections is the area connected by road to the community of Yakutat. Most people live within five miles of the community.

industry between resident and enclave shares, exogenous and endogenous shares, etc. Our resulting employment assumptions for the years 1980-1987 are shown in Table **VIII.2.** *Below we discuss these assumptions by industry.*

Table VII I. 1: **Summary** of Department of Labor **Employment** Data for **Yakutat**

Category	Code	1980	1981	1982	1983	1984	1985	**1986**	1987
Mining	1	0	0	0	0	0	0	0	0
Construction	2	*	*	•	*	*	*	•	*
Manufacturing	3	*	*	55	57	54	*	*	*
Trans., **Comm.,** Utilities	4	13	13	13	21	29	29	27	17
Wholesa le Trade	5	*	*	*	*	*	*	*	0
Retail Trade	6	28	24	22	25	26	25	34	34
Fin., Ins., & Real Estate	7	*	13	15	15	13	10	**12**	*
Services	8	*	*	*	20	19	20	27	25
Forestry, Ag., Fisheries	9	0	0	0	0	•	*	*	*
Federa l Government	10	19	19	18	18	16	16	16	18
State **Government**	11	0	0	0	0	0	0	**0.**	0
Loca 1 **Government**	12	48	51	53	53	55	59	59	58
TOTAL		164	216	209	215	221	200	222	174

* Data Suppressed.

Table VI II.2: Summary of Employment Assumptions for Yakutat, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Fish harvesting	38	38	38	38	38	38	38	38
Mining	0	0	0	0	0	0	0	0
Non-OCS resident	0	0	0	0	0	0	0	0
OCS res i dent	0	0	0	0	0	0	0	0
OCS enclave	0	0	0	0	0	0	0	0
Construct ion	2	3	3	3	3	2	3	2
Generated by state spending	1	1	1	1	1	1	1	1
Exogenous	1	1	1	1	1	1	1	1
Endogenous	1	2	2	2	2	1	2	1
Manufacture ing	41	55	55	57	54	50	56	44
Resident fish processing	5	14	14	14	14	13	14	11
Enclave fish processing	31	41	41	43	41	38	42	33
Other manufacturing	5	0	0	0	0	0	0	0
T ransp., communications, utilities	13	13	13	21	29	29	27	17
Exogenous	1	1	1	1	1	1	1	1
Endogenous	12	12	12	20	28	28	26	16
Wholesale trade	1	1	1	1	1	1	2	0
Retail trade	28	24	22	25	26	25	34	34
Exogenous	3	2	2	3	3	3	3	3
Endogenous	25	22	20	23	23	23	31	31
Finance, insurance and Real Estate	13	13	15	15	13	10	12	12
Services	12	14	17	20	19	20	27	25
Exogenous	1	1	1	1	1	1	1	1
Endogenous	11	13	16	19	18	19	26	24
Misc. 'Logging	39	39	39	39	39	39	39	39
Res. Logging	10	10	10	10	10	10	10	10
Enclave Logging	29	29	29	29	29	29	29	29
Federal government	19	19	18	18	16	16	16	18
State government	6	6	6	11	11	11	11	11
Local government	48	51	53	53	55	59	59	58
Supported by local revenues	24	26	27	27	28	30	30	29
Supported by state spending	24	26	27	27	28	30	30	29
Supported by OCS revenues	0	0	0	0	0	0	0	0
Total	260	276	280	301	304	300	324	298

Fish Harvesting

According to **Yakutat's** *QEDP Update (1988):*

"In *1987 Commercial Fisheries Entry Commission issued* **118** *commercial setnet permits, 58 hand* **troll** *permits and five power troll permits to people who show Yakutat as their place of residence. Based upon this number of issued permits, and local knowledge of* **crewmember** *participation, it is estimated that over 150 residents of Yakutat fish commercially."*

"Sitka *Sound Seafoods, based in* **Sitka,** *AK, has leased both processing sites from the City. A well known operation, they have drawn a larger number of fishing boats to Yakutat. Thus far into the 1988 season they have maintained a crew of 50-70 depending on volumes of product going through the* **plant."**

"Rainier Seafoods,a *Seattle based company, has leased from Yak-Tat* **Kwaan** *the site previously used as an oil-service base. .."*

The Alaska Department of Labor showed the **"forestry,** *agriculture, and fisheries" category with zero employment in 1980*

through 1983 (Table VIII.1). This category should include fish harvesting employment. The 1980 census counted 16 employed persons claiming forestry, fishing, or farming as an occupation TR 98). In TR 98, it is speculated that . . . "a significant portion Of Yakutat's resident, licensed fishermen could have been omitted from the [1980] census tabulations because they were not actually working in the designated time period of the survey..." and an FTE figure of 38 is used. The Yakutat OEDP Update (1988, p. 17) estimates that over 150 residents" fish commercially but seasonally. Coughenower (Commercial Fishing Industry Study, Homer, Alaska) states that one seasonal fish harvesting job (in Homer) averages 2.4 months in duration. If this relationship is also applicable to Yakutat, then full-time equivalent fish harvesting employment would actually be 30. In the absence of any other data, we have assumed 38 FTE fish harvesting employees for the period 1980-1987. We have also assumed that fish harvesting employment will remain constant at this level for the period 1988-2020.

Mining

Non-OCS Resident. Little if any mining or mineral development is currently occurring in the Yakutat area. The Alaska Department of Labor omits mining; thus we assume that

mining employment is zero (Table VIII.1). Development of offshore gold dredging has been discussed within the community although we do not know of any actual plans to begin production.

We assume that non-OCS mining employment was zero from 1980 through 1987 and that it will remain at zero during the period 1988-2020.

OCS Mining. We have assumed zero OCS mining employment in Yakutat during the period 1980-1987. Similarly, our "base case" model assumptions assume zero OCS mining employment during the period 1988-2020.

Construction

The Alaska Department of Labor figures were suppressed (Table VIII.1). In 1987, construction employment in the Skagway-Yakutat-Angoon Census Area was 1.2 percent of total employment. We assumed that this relationship was also valid for the Yakutat sub-sub area and estimated construction employment of between two and three for the years 1980-1987 (Table VIII.2).

We assumed that 25 percent of construction employment during

the period 1980-1987 was supported by state government capital spending, 25 percent was exogenous, and 50 percent was endogenous, based on our best judgment in the absence of any data.

We assumed exogenous employment of 3 during the period 1988-2020, based on on our best judgment in the absence of any data.

Manufacturing

Fish Processing Employment. Manufacturing in Yakutat is primarily fish processing. Sitka Sound Seafoods leased two processing sites from the city. During the 1988 season there was a crew of 50-70. Rainier Seafoods (Seattle) leased, a plant site and will apparently be processing seafood this year (Yakutat OEDP Update, 1988, p. 18).

Department of Labor showed employment levels only for 1982-1984--55 employees in 1982, 57 in 1983, and 54 in 1984 Table VIII.1). Manufacturing employment was between 24 and 26 percent of the total Department of Labor employment figure. In comparison, in 1980, 33 residents and one non-resident were employed in fish processing on an FTE basis; there were 5 FTE's in "other" manufacturing (TR 98) . There is no manufacturing other than fish processing in Yakutat. Thus we show "other"

manufacturing as zero in 1981 through 1987 (Table VIII.2).

One seafood processor in Yakutat had 20 percent of total hours worked by residents and 80 percent by non residents during June through September 1988. The resident share was about 38 percent during April and May 1988. In comparison, in 1980 the resident share was assumed to be .8 (TR 98), We assume that the resident share of fish processing employment at .25 during the period 1980-1987. Resident fish processing employment is thus shown at 11 and non-resident fish processing employment at 33 in 1987 (Table VIII.2).

We assumed that both resident and non-resident fish processing employment will remain constant at the 1987 levels during the period 1988-2020.

Transportation, Communications, and Utilities

Employment in transportation, communications and utilities increased from 13 in 1980 to 29 in 1984 and 1985, then declined to 17 in 1987 (Table VIII.1). We assumed that 5 percent of employment in this industry was exogenous and 95 percent was endogenous. We assumed that exogenous transportation, communications and utilities employment will grow at 3 percent per year

after 1987, based on an assumption that economic activity related to tourism will continue to expand.

Wholesale Trade

wholesale trade figures were suppressed by the Department of Labor (Table VIII.1). However, in 1980 wholesale trade was 5 percent of total trade. Thus, to estimate wholesale trade during 1980-1987, we assumed that wholesale trade remained constant at 5 percent of total trade. Since retail trade figures were available, wholesale trade employment was estimated based on these relationships wholesale trade is shown at 1 in 1980-1985 and 2 in 1986 (Table VIII.2). In 1987 Department of Labor showed no wholesale trade employment in Yakutat (Table VIII.1). We assumed that all wholesale trade employment was endogenous.

Retail Trade

Retail trade average annual employment shown by Department of Labor decreased from 28 in 1980 to 22 in 1982, then increased to 26 in 1984 and 34 in 1986 and 1987 (Table VIII.1). We assumed that 10 percent of retail trade employment was exogenous and 90 percent was endogenous. We assumed that exogenous retail trade

employment will grow at a rate of 3 percent per year after 1987.

Finance, Insurance, and Real Estate

Average annual employment in finance, insurance and real estate ranged between 10 and 15 during 1981 through 1986. Data were suppressed for 1980 and 1987. We assumed that "FIRE" employment in 1980 was the same as in 1981 and that employment in 1987 was the average of employment during the preceding three years (1984-1986) (Table VIII.2). We assumed that all employment in these industries was endogenous.

Services

Annual average employment in services ranged between 20 and 27 between 1983 and 1987. Twelve employees were assumed for 1980 (TR 98) (Table VIII.2). Figures were then interpolated for 1981 and 1982. We assumed that 5 percent of employment in this industry was exogenous and 95 percent was endogenous. We assumed that exogenous services employment will grow at a rate of 3 percent per year after 1987.

Miscellaneous--Logging

Since 1980 the local timber industry has been a relatively stable sector of the economy. Timber is harvested primarily from land owned by Yak-Tat Kwaan, the local native village corporation. "Kwaan . . . sold the majority of its timber stumpage rights to Silver Bay Logging which operates the sorting yard, and sells round logs to buyers. A saw mill was built by Kwaan in 1983, but other than test runs, it. has never operated nor is it expected to operate in the future (OEDP Update, 1988, p. 16)." According to the OEDP Update, approximately 50 loggers are employed in Yakutat, of which only 10-15 are local residents. Timber harvesting on Yak-Tat Kwaan lands is only expected to last for two to three more years. The city and the U.S. Forest Service are grappling with the trade-offs between continued timber harvest on federal land with related economic benefits and protection of fish habitat and promotion of tourism. The city council has requested that there be no logging west of the Dangerous River on the Yakutat Forelands.

Logging is also included in the "forestry, agriculture, and fisheries" category for the Department of Labor's purposes in enumerating employment. Yakutat has had a relatively stable timber industry since 1980 and it is expected to continue for

the next two to *three years--we assume through 1990. There are 50* **loggers,** *only 10 to 15 of whom are local residents. In addition, 65 longshoremen work approximately 35 days per year loading vessels with timber. We estimate that the longshoremen are equivalent to 9 full-time jobs and that the logging operations provide 30 full-time-equivalent jobs but the resident share is only .2-.3. For 1980 through 1987 we assume 10 resident logging/loading jobs* **(FTE)** *and 29 non-resident (enclave) jobs. We assume that these figures will remain the same for 1988 through 1990 at which time logging employment will be zero. This could, however, change if logging begins on U.S. Forest Service lands.*

Federal Government

Federal government employment in Yakutat between 1980 and 1987 decreased from 19 in 1980 to 16 in 1984-1986. In 1987 federal employment was 18 (Table **VIII.1**). *Federal agencies located in Yakutat are the U.S. Forest Service, National Park Service, Federal Aviation Administration, and the Post Office. We assume that federal employment is totally exogenous and project it at the 1987 level for 1988-2020.*

State Government

According to the Department of Labor, there is no state government employment in Yakutat (Table VIII.1). However, because the Department of Labor reports employment by census division, there can be state employment in Yakutat but it ends up in a different sub-sub area (Airport Plan Phase I). In 1980, there were 6 FTE state employees in Yakutat (TR 98) and a 1983 telephone survey of Yakutat employers showed 10 state employees. ALaska Department of Fish and Game and the Department of Transportation/-Public Facilities both have offices in Yakutat. Thus, we assume that state employment was 6 during 1980-1982 and 11 for the period 1983-1987.

Local Government

Department of Labor average annual employment data show 48 local government employees for Yakutat in 1980. This increases to 59 in 1985 and 1986 and 58 employees in 1987 (Table VIII.1). Local government employment includes components 'supported by state spending" and "supported by local revenues" which we assume to be endogenous. It also includes "local government supported by OCS revenues." This category is exogenous and we assume that it is zero for 1988-2020.

Table VIII.3: Estimated Employment in Yakutat

	1980	1981	1982	1983	1984	1985	1986	1987
Resident Basic	58	62	62	62	61	60	62	59
Fishing	38	38	38	38	38	38	38	38
Fish Processing	5	14	14	14	14	13	14	11
Logging	10	10	10	10	10	10	10	10
Other (mining, manufacturing)	5	0	0	0	0	0	0	0
Residant Support	69	68	71	85	91	87	105	90
Exogenous	5	5	4	5	6	5	7	6
Endogenous	64	63	66	79	85	81	97	84
Government Sponsored	1	1	1	1	1	1	1	1
Enclave Sponsored								
Resident Government	73	76	77	82	82	86	86	87
Exogenous	19	19	18	18	16	16	16	18
Endogenous	54	57	59	64	66	70	70	69
Total Resident	200	206	210	229	234	233	253	236
Total Exogenous	82	85	84	85	83	82	85	83
Total Endogenous	118	121	126	144	151	152	168	153
Non-Resident (Enclave) Employment	60	71	71	72	70	67	71	62
Total Resident plus Non-Resident	260	276	280	301	304	300	324	298

Employment *Multipliers*

Table VIII.4 *summarizes employment* "multipliers" *for the period 1980-1987. In general, these multipliers remain relatively constant, except for the* endogenous *employment multiplier which increased through 1986 then decreased in 1987. This suggests that the* **economic structure of Yakutat was relatively stable during**

this period.

Table VIII.4: Summary of Employment Multipliers, Yakutat, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Endogenous Employment Multipliers [EMEDREEX/EMREEX]	0.76	0.71	0.75	0.89	0.99	0.97	1.12	0.99
Local Government Employment Multiplier [EMLGLR/EMEXTO]	0.17	0.16	0.17	0.17	0.18	0.20	0.19	0.20
State Government Employment Multiplier [EMSG/EMEXTO]	0.04	0.04	0.04	0.07	0.07	0.07	0.07	0.08
State-Supported Construction Multiplier [EMCOSS/EMEXTO]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
State-Supported Local Government Employment Multiplier [EMLGSS/EMEXTO]	0.17	0.16	0.17	0.17	0.18	0.20	0.19	0.20

Population Assumptions

Table VIII.5 summarizes available population data for Yakutat for the period 1980-1987, as well as our population assumptions for this period. Our 1980 assumption for total population was based on the 1980 census. Our assumptions for 1981-1984 are based on Department of Labor, "Alaska Population Overview" publications. For 1985-1987 we used population figures provided by the City of Yakutat.

Our age distribution assumptions are based on the 1980 census. We assume that the age distributions remains constant throughout the projection period.

The ratio of assumed resident population to assumed resident exogenous employment varied from 6.49 in 1981 to 7.17 in 1984. The fact that this ratio was relatively constant suggests that our assumption is a reasonable one that this ratio remains constant for future years at the 1987 level. The highest ratio was 7.85 in 1980 which may indicate that either our employment figures or our population data (or both) may be unreliable, or our assumption is not justified that these two figures are closely correlated. However, in the absence of better data we nevertheless assume that in the future this ratio remains constant at the 1987 level.

Table VIII.5: Population Data for Yakutat, 1980-1987

	1980	1981	1982	1983	1984	1985	1986	1987
Population Data (1980 Census)								
Total Population (by age group)	449							
0-4	94							
5-19	127							
20-64	247							
65+	26							
Native population (by age group)	279							
0-4	35							
5-19	134							
20-64	133							
65+	20							
Non-native Population (by age group)	170							
0-4	14							
5-19	54							
20-64	114							
65+	6							
Yakutat (Alaska Pop. Overview)	449	430	462	440	453			
Yakutat (City of Yakutat)						462	462	462
Outside city limits (City of Yakutat)	189	189	189	189	189	189	189	189
Total Yakutat area population	638	619	651	629	642	651	651	651
Permanent Fund Dividends								
Total			645	640	667	625		
Adult			430	436	454	429		
Children			215	204	213	196		
School Enrollment			130	130	130	130	130	130
Population Assumptions								
Resident Population: Total	638	549	581	557	572	584	580	589
Age Distribution (percent)								
Pre-School (0-4)	0.11							
School-age (5-19)	0.28							
Adult (20-64)	0.55							
Senior (65+)	0.06							
Age Distribution--Native Population (percent)								
Pre-School (0-4)								
School-age (5-19)								
Adult (20-64)								
Senior (65+)								
Resident Exogenous Employment	81	85	83	85	83	81	84	83
Ratio of Resident Population to Resident Exogenous Employment	7.85	6.49	6.96	6.57	6.94	7.17	6.89	7.14

Base Case Projections

Figure **VIII.2** *and Table* **VIII.6** *summarize our base case projections for Yakutat. Total population declines in 1991 due to termination of logging operations then rises gradually. This is due primarily to increasing tourism.*

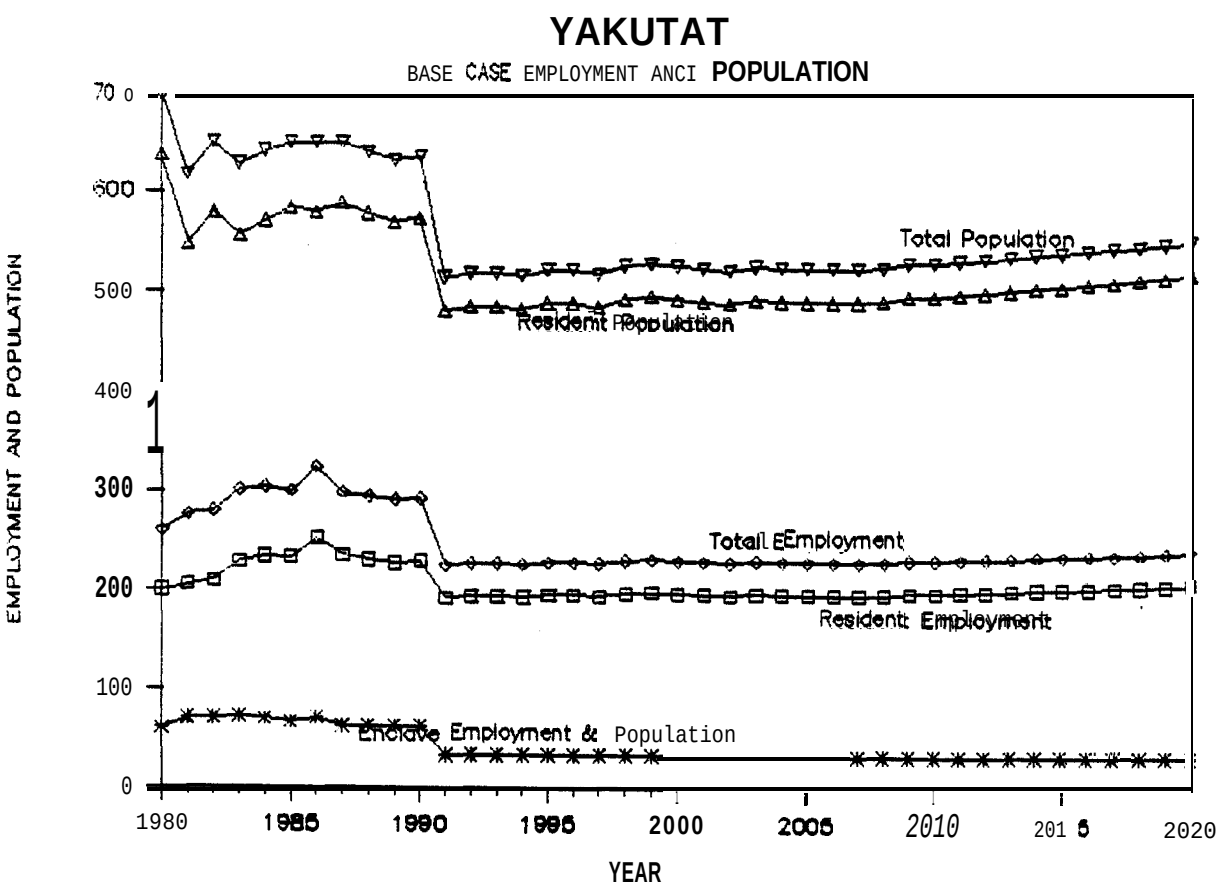

YAKUTAT
BASE CASE EMPLOYMENT ANCI POPULATION
EMPLOYMENT AND POPULATION
700
600
500
400
300
200
100
0
Total Population
Resident Population
Total Employment
Resident Employment
Enclave Employment & Population
1980
1985
1990
1995
2000
2005
2010
2015
2020
YEAR

Table VIII.6: Summary of Employment and Population Projections for Base Case

	EMPLOYMENT							POPULATION				
Year	Resident Non-OCS	Resident Ocs	Resident Total	Enclave Fish-Process.	Enclave Ocs	Enclave Total	Total, Resident and Enclave	Resident	Resident Native	Resident Non-Native	Enclave	Total
1980	200	0	200	31	0	60	260	638	279	359	60	698
1981	206	0	206	41	0	71	276	549	279	270	71	619
1982	210	0	210	41	0	71	280	581	279	302	71	651
1983	229	0	229	43	0	72	301	557	279	278	72	629
1984	234	0	234	41	0	70	304	572	279	293	70	642
1985	233	0	233	38	0	67	300	584	279	305	67	651
1986	253	0	253	42	0	71	324	580	279	301	71	651
1987	236	0	236	33	0	62	298	589	279	310	62	651
1988	231	0	231	33	0	63	294	579	285	294	63	642
1989	228	0	228	33	0	63	291	570	290	280	63	633
1990	230	0	230	33	0	63	293	575	296	279	63	638
1991	193	0	193	33	0	33	226	482	302	180	33	515
1992	195	0	195	33	0	33	228	486	308	178	33	519
1993	195	0	195	33	0	33	228	487	314	173	33	520
1994	194	0	194	33	0	33	227	484	320	164	33	517
1995	196	0	196	33	0	33	229	491	327	164	33	524
1996	196	0	196	33	0	33	229	491	333	157	33	524
1997	195	0	195	33	0	33	228	487	340	147	33	520
1998	198	0	198	33	0	33	231	495	347	149	33	528
1999	199	0	199	33	0	33	232	498	348	149	33	531
2000	198	0	198	33	0	33	231	495	347	149	33	528
2001	197	0	197	33	0	33	230	493	345	148	33	526
2002	197	0	197	33	0	33	230	491	344	147	33	524
2003	198	0	198	33	0	33	231	495	347	149	33	528
2004	198	0	198	33	0	33	231	494	346	148	33	527
2005	198	0	198	33	0	33	231	494	346	148	33	527
2006	198	0	198	33	0	33	231	494	346	148	33	527
2007	198	0	198	33	0	33	231	494	346	148	33	527
2008	198	0	198	33	0	33	231	495	346	148	33	528
2009	200	0	200	33	0	33	233	500	350	150	33	533
2010	200	0	200	33	0	33	233	500	350	150	33	533
2011	201	0	201	33	0	33	234	502	351	151	33	535
2012	202	0	202	33	0	33	235	504	353	151	33	537
2013	202	0	202	33	0	33	235	506	354	152	33	539
2014	203	0	203	33	0	33	236	508	356	152	33	541
2015	204	0	204	33	0	33	237	510	357	153	33	543
2016	205	0	205	33	0	33	238	512	359	154	33	545
2017	206	0	206	33	0	33	239	515	360	154	33	548
2018	207	0	207	33	0	33	240	517	362	155	33	550
2019	208	0	208	33	0	33	241	520	364	156	33	553
2020	209	0	209	33	0	33	242	522	365	157	33	555

References

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles,

Easterwood, Cheryl. City of Yakutat. Personal Communication. November 4, 1988, December 5, 1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Knapp, Gunnar; Nebesky, W.; Hull, l?. ; White, K.; Reeder, B.; and Zimicki, J. Gulf of Alaska Economic and Demographic Systems Analysis. University of Alaska, Institute of Social and Economic Research, (Prepared for Minerals and Management Service, Alaska OCS Office) Social and Economic Studies Program, Technical Report Number 98, March 1984.

Livey, Jay, and Keiser, Gretchen. Public School Financing in Alaska. Alaska State Legislature, House Research Agency Report 87-A, February 1987.

TRA/Farr, Yakutat Airport Master Plan Report, Phase I and Phase II, December 1987.

Yakutat, City of, Yakutat Comprehensive Plan, November 1983.

Yakutat, City of, Overall Economic Development Program, 1988 Update.

U.S. Census, 1980.

CHAPTER IX: USING THE MODEL

Chapter II described the purpose and structure of the model **along** *with a discussion of comparative economic assumptions between the six communities being studied. This chapter provides details on actually using the model in its Lotus* **1-2-3** *spreadsheet form .*

Loading *the Model*

After booting up Lotus, use /File Retrieve to load the model of choice. Model names are:

Cordova.wk1

Homer.wk1

Kenai.wk1

Kodiak.wk1

Seward.wk1

Yakutat.wk1

Menu

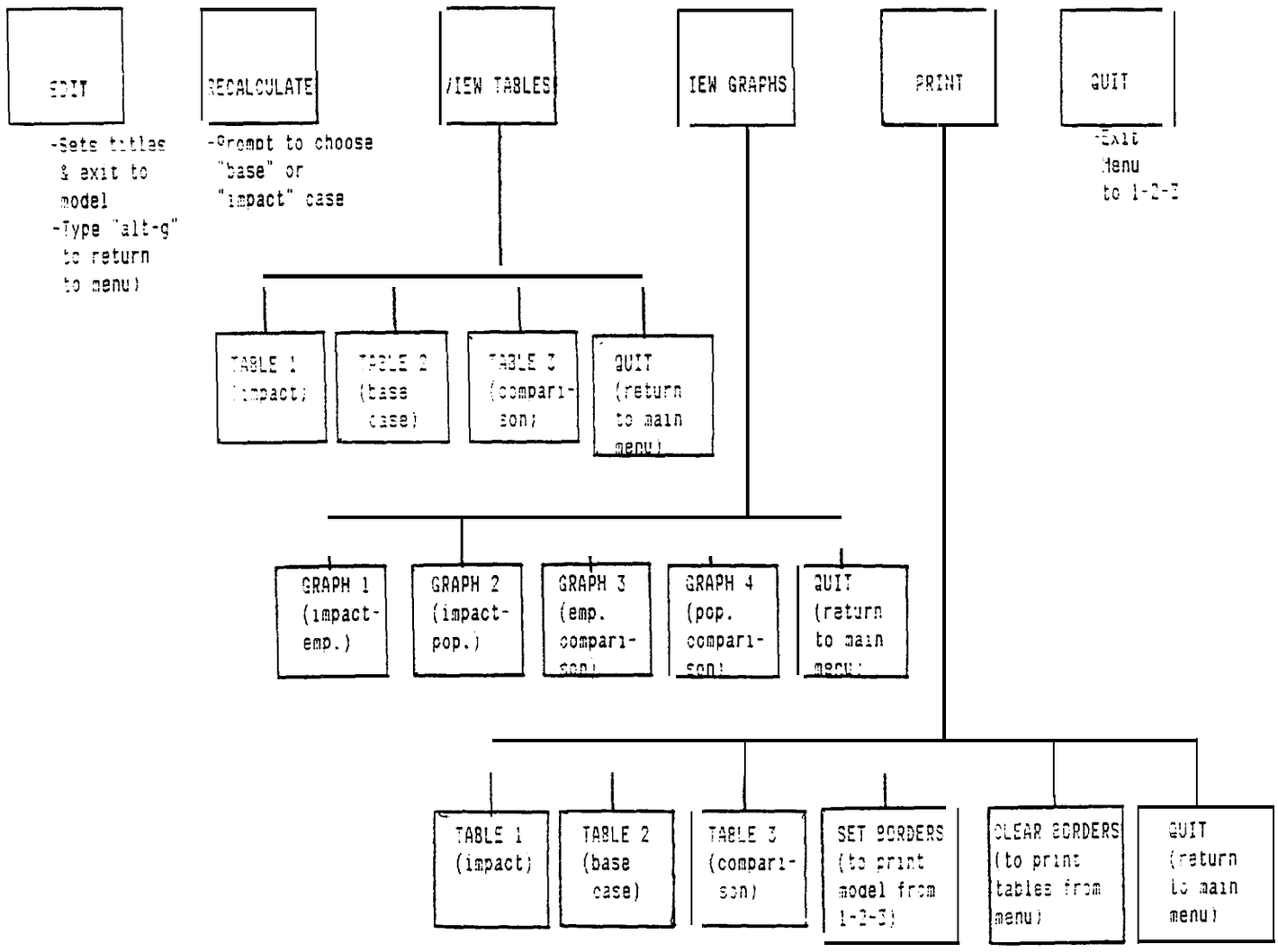
A menu program can be called by typing "alt-g" (Figure 1X.1). *Menu choices include recalculate the* **model** *and. create the summary tables, view summary tables, view graphs, and print tables. The graphs require that the summary tables be created using the menu choice.*

Choosing "edit" causes you to leave the macro and when, needed, the menu macro can be re-started by typing **alt-g.** *When making changes in the assumptions, use the* **F9** *key* **to** *recalculate the spreadsheet.* **It** *may be necessary to press* **F9 up** *to seven times to have* **all of** *the dependent references recalculated.* **An** *easy way to check is* **to** *scroll through the spreadsheet comparing* **the last** *historic year (1987) to the first projected year (1988).*

How to Change Exogenous Assumptions

Assumed exogenous employment levels for 1988-2020 can be changed in each model. These figures are highlighted on the screen (i.e., in **"unprotected" cells).** *To make changes, type* **"alt-g"** *for menu, then choose "edit." This sets the titles and puts the cursor in the top left corner of the model. From here, scroll across to the years and down to the variables which you*

Figure IX-1: Model Menu Structure



Note: To obtain menu, type **"alt-g"** *after loading model.*

want to change. Variables with an exogenous component that can be changed in future years are:

Fish harvesting

Mining, non-OCS

Construction

Manufacturing

Transportation? communications, utilities

Retail trade

Services

Miscellaneous (usually logging)

Federal government

OCS assumptions can also be varied as can "local government employees supported by OCS development."

How to do Impact Analyses

After you have changed exogenous variables to reflect impact case assumptions, type "alt-g" to access the menu. Choose "recalculate." Depending on the speed of the computer, it may take a few minutes for the recalculations to be performed. Once the model is recalculated, you are asked to choose "base case" or "impact case." Choosing "impact" will cause Table 1 (see Table 1X.1) and Table 3 (see Table 1X.3) to be recalculated. If yOU choose "base case," results of the new base case will be

calculated as Table 2 (see Table 1X.2) and Table 3 will be recalculated. **If** *you choose the "base case" option, then you will need to develop an impact scenario and repeat the process of typing* **"alt-g"** *and choosing* **"recalculate"** *then* **"impact case."**

After you have finished changing exogenous variables and recalculating the summary tables, you can choose "view **tables,"** *view graphs," or "print." "View tables" and "print" lets you choose Tables 1, 2 or 3. Print also has options to "set borders" and "clear borders." Choose* **"clear** *borders" before printing Tables 1, 2 or 3. Choose "set* **borders"** *before exiting to the model in 1-2-3 if you plan to print the model. Then define your print range starting in cell C23.*

*"View graphs***"** *lets you view graphs drawn from Tables 1, 2 and 3. These graphs are illustrated in Figures 1X.2, 1X.3, 1X.4 and 1X.5. If you wish to print the graphs, you need to save the graphs in 1-2-3 then use* ***Print Graph*** *in the* ***Lotus Access System*****.**

If changes in historical assumptions or model structure are desired, please contact the authors.

Table 1X.1: **Summary** of Employment and Population Projections for **Impact** Case

	EMPLOYMENT						POPULATION			
Year	Resident Non-OCS	Resident Ocs	Resident Total	Enc 1 ave Fish-Process.	Enclave OCS	Enclave Tots l	Total, Resident and Enclave	Resident	Enclave	Tota l
1980	1065	0	1065	166	0	166	1231	2320	166	2486
1981	1180	0	1 180	166	0	166	1346	2498	166	2664
1982	1316	0	1316	166	0	166	1482	2519	166	2685
1983	1281	0	1281	166	0	166	1447	2441	166	2607
1984	1186	0	1186	166	0	166	1352	2795	166	2961
1985	1073	0	1073	158	0	158	1231	2793	158	2951
1986	1030	0	1030	158	0	158	1188	2783	158	2941
1987	1027	0	1027	158	0	158	1185	2793	158	2951
1988	1007	0	1007	158	0	158	1164	2739	158	2896
1989	995	0	995	158	0	158	1152	2706	158	2863
1990	1002	0	1002	158	0	158	1159	2725	158	2883
1991	1001	0	1001	158	0	158	1158	2722	158	2879
1992	1008	0	1008	158	0	158	1165	2742	158	2899
1993	1009	0	1009	158	0	158	1166	2744	158	2901
1994	1003	0	1003	158	0	158	1161	2729	158	2887
1995	1015	0	1015	158	0	158	1173	2761	158	2918
1996	1015	0	1015	158	0	158	1172	2760	158	2917
1997	1007	0	1007	158	0	158	1164	2738	158	2896
19%3	1022	0	1022	158	0	158	1180	2780	158	2938
1999	1026	0	1026	158	0	158	1184	2792	158	2950
2000	1021	0	1021	158	0	158	1178	2777	158	2934
2001	1017	0	1017	158	0	158	1175	2766	158	2924
2002	1013	0	1013	158	0	158	1170	2755	158	2912
2003	1020	0	1020	158	0	158	1177	2774	158	2931
2004	1018	0	1018	158	0	158	1175	2768	158	2925
2005	1017	0	1017	158	0	158	1175	2767	158	2924
2006	1016	0	1016	158	0	158	1174	2764	158	2922
2007	1016	0	1016	158	0	158	1174	2764	158	2922
2008	1016	0	1016	158	0	158	1174	2764	158	2921
2009	1025	0	1025	158	0	158	1183	2788	158	2946
2010	1025	0	1025	158	0	158	1182	2787	158	2944
2011	1028	0	1028	158	0	158	1185	2795	158	2952
2012	1031	0	1031	158	0	158	1188	2803	158	2961
2013	1034	0	1034	158	0	158	1191	2812	158	2969
2014	1037	0	1037	158	0	158	1195	2821	158	2978
2015	1040	0	1040	158	0	158	1198	2830	158	2987
2016	1044	0	1044	158	0	158	1201	2839	158	2997
2017	1047	0	1047	158	0	158	1205	2849	158	3006
2018	1051	0	1051	158	0	158	1209	2859	158	3016
2019	1055	0	1055	158	0	158	1212	2869	158	3027
2020	1059	0	1059	158	0	158	1216	2880	158	3037

Table 1X.2: Summary of Employment and Population Projections for Base Case

	EMPLOYMENT						POPULATION			
Year	Resident Non-OCS	Resident Ocs	Resident Total	Enclave Fish-Process.	Enclave Ocs	Enclave Total	Total Resident and Enclave	Resident	Enclave	Total
1980	1065	0	1065	166	0	166	1231	2320	166	2486
1981	1180	0	1180	166	0	166	1346	2498	166	2664
1982	1316	0	1316	166	0	166	1482	2519	166	2685
1983	1281	0	1281	166	0	166	1447	2441	166	2607
1984	1186	0	1186	166	0	166	1352	2795	166	2961
1985	1073	0	1073	158	0	158	1231	2793	158	2951
1986	1030	0	1030	158	0	158	1188	2783	158	2941
1987	1027	0	1027	158	0	158	1185	2793	158	2951
1988	1007	0	1007	158	0	158	1164	2739	158	2896
1989	995	0	995	158	0	158	1152	2706	158	863
1990	1002	0	1002	158	0	158	1159	2725	158	2883
1991	1001	0	1001	158	0	158	1158	2722	158	2879
1992	1008	0	1008	158	0	158	1165	2742	158	899
1993	1009	0	1009	158	0	158	1166	2744	158	2901
1994	1003	0	1003	158	0	158	1161	2729	158	2887
1995	1015	0	1015	158	0	158	1173	2761	158	2918
1996	1015	0	1015	158	0	158	1172	2760	158	2917
1997	1007	0	1007	158	0	158	1164	2738	158	2896
1998	1022	0	1022	158	0	158	1180	2780	158	2938
1999	1026	0	1026	158	0	158	1184	2792	158	2950
2000	1021	0	1021	158	0	158	1178	2777	158	2934
2001	1017	0	1017	158	0	158	1175	2766	158	2924
2002	1013	0	1013	158	0	158	1170	2755	158	2912
2003	1020	0	1020	158	0	158	1177	2774	158	2931
2004	1018	0	1018	158	0	158	1175	2768	158	2925
2005	1017	0	1017	158	0	158	1175	2767	158	2924
2006	1016	0	1016	158	0	158	1174	2764	158	2922
2007	1016	0	1016	158	0	158	1174	2764	158	2922
2008	1016	0	1016	158	0	158	1174	2764	158	2921
2009	1025	0	1025	158	0	158	1183	2788	158	2946
2010	1025	0	1025	158	0	158	1182	2787	158	2944
2011	1028	0	1028	158	0	158	1185	2795	158	2952
2012	1031	0	1031	158	0	158	1188	2803	158	2961
2013	1034	0	1034	158	0	158	1191	2812	158	2969
2014	1037	0	1037	158	0	158	1195	2821	158	2978
2015	1040	0	1040	158	0	158	1198	2830	158	2987
2016	1044	0	1044	158	0	158	1201	2839	158	2997
2017	1047	0	1047	158	0	158	1205	2849	158	3006
2018	1051	0	1051	158	0	158	1209	2859	158	3016
2019	1055	0	1055	158	0	158	1212	2869	158	3027
2020	1059	0	1059	158	0	158	1216	2880	158	3037

Table 1X.3: **Compari** son of Ease **Case** and Impact Caae

	RESIDENT EMPLOYMENT			ENCLAVE EMPLOYMENT			RESIDENT POPULATION			TOTAL **POPULAT** ION			Tot Non-Res i
YEAR	Impact Case	Base Case	Impact	Impact Case	Base Case	I mpact	Impact Caae	Base Case	Impact	Impact Case	Base Case	Impact	Empl
1980	1065	1065	0	166	166	0	2320	2320	0	2486	2486	0	
1981	1180	1180	0	166	166	0	2498	2498	0	2664	2664	0	
1982	1316	1316	0	166	166	0	2519	2519	0	2685	2685	0	
1983	1281	1281	0	166	166	0	2441	2441	0	2607	2607	0	
1984	1186	1 186	0	166	166	0	2795	2795	0	2961	2961	0	
1985	1073	1 073	0	158	158	0	2793	2793	0	2951	2951	0	
1986	1030	1030	0	158	158	0	2783	2783	0	2941	2941	0	
1987	1027	1027	0	158	158	0	2793	2793	0	2951	2951	0	
1988	1007	1007	0	158	158	0	2739	2739	0	2896	2896	0	
1989	995	995	0	158	158	0	2706	2706	0	2863	2863	0	
1990	1002	1002″	0	158	158	0	2725	2725	0	2883	2883	0	
1991	1001	1001	0	158	158	0	2722	2722	0	2879	2879	0	
1992	1008	1008	0	158	158	0	2742	2742	0	2899	2899	0	
1993	1009	1009	0	158	158	0	2744	2744	0	2901	2901	0	
1994	1003	1003	0	158	158	0	2729	2729	0	2887	2887	0	
1995	1015	1015	0	158	158	0	2761	2761	0	2918	2918	0	
1996	1015	1015	0	158	158	0	2760	2760	0	2917	2917	0	
1997	1007	1007	0	158	158	0	2738	2738	0	2896	2896	0	
1998	1022	1022	0	158	158	0	2780	2780	0	2938	2938	0	
1999	1026	1026	0	158	158	0	2792	2792	0	2950	2950	0	
2000	1021	1021	0	158	158	0	2777	2777	0	2934	2934	0	
2001	1017	1017	0	158	158	0	2766	2766	0	2924	2924	0	
2002	1013	1013	0	158	158	0	2755	2755	0	2912	2912	0	
2003	1020	1020	0	158	158	0	2774	2774	0	2931	2931	0	
2004	1018	1018	0	158	158	0	2768	2768	0	2925	2925	0	
2005	1017	1017	0	158	158	0	2767	2767	0	2924	2924	0	
2006	1016	1016	0	158	158	0	2764	2764	0	2922	2922	0	
2007	1016	1016	0	158	158	0	2764	2764	0	2922	2922	0	
2008	1016	1016	0	158	158	0	2764	2764	0	2921	2921	0	
2009	1025	1025	0	158	158	0	2788	2788	0	2946	2946	0	
2010	1025	1025	0	158	158	0	2787	2787	0	2944	2944	0	
2011	1028	1028	0	158	158	0	2795	2795	0	2952	2952	0	
2012	1031	1031	0	158	158	0	2803	2803	0	2961	2961	0	
2013	1034	1034	0	158	158	0	2812	2812	0	2969	2969	0	
2014	1037	1037	0	158	158	0	2821	2821	0	2978	2978	0	
2015	1040	1040	0	158	158	0	2830	2830	0	2987	2987	0	
2016	1044	1044	0	158	158	0	2839	2839	0	2997	2997	0	
2017	1047	1047	0	158	158	0	2849	2849	0	3006	3006	0	
2018	1051	1051	0	158	158	0	2859	2859	0	3016	3016	0	
2019	1055	1055	0	158	158	0	2869	2869	0	3027	3027	0	
2020	1059	1059	0	158	158	0	2880	2880	0	3037	3037	0	

Figure IX-2

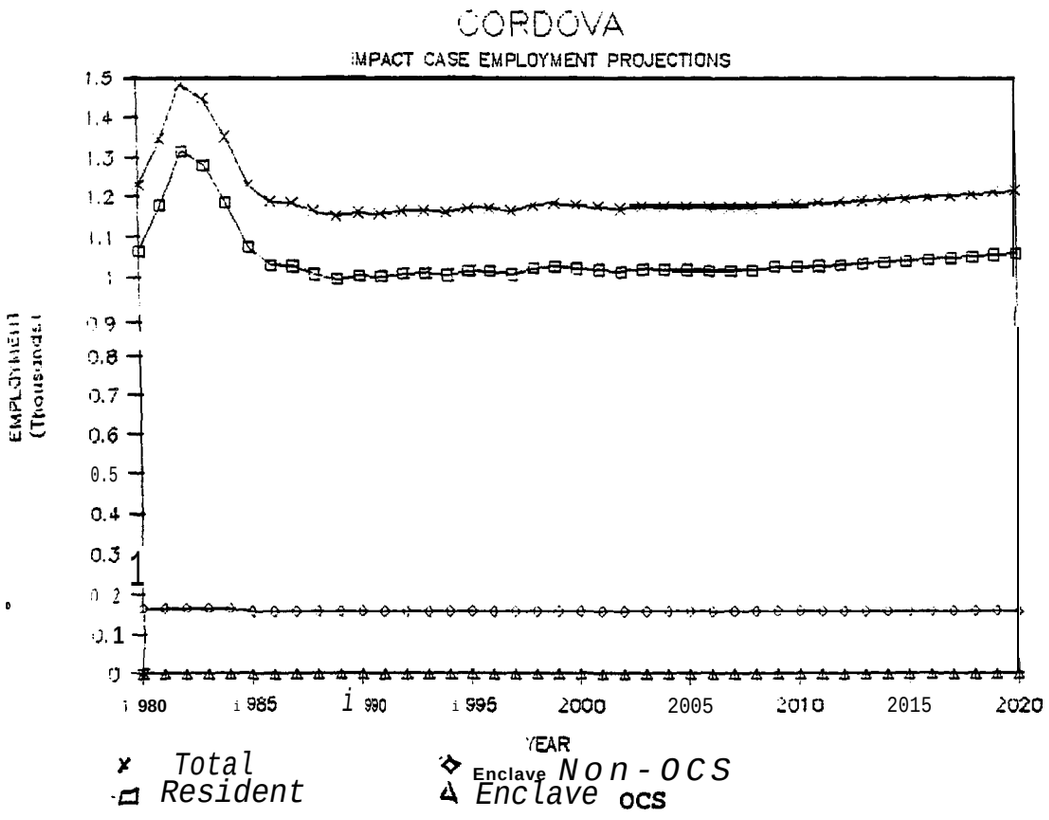


Figure IX-3

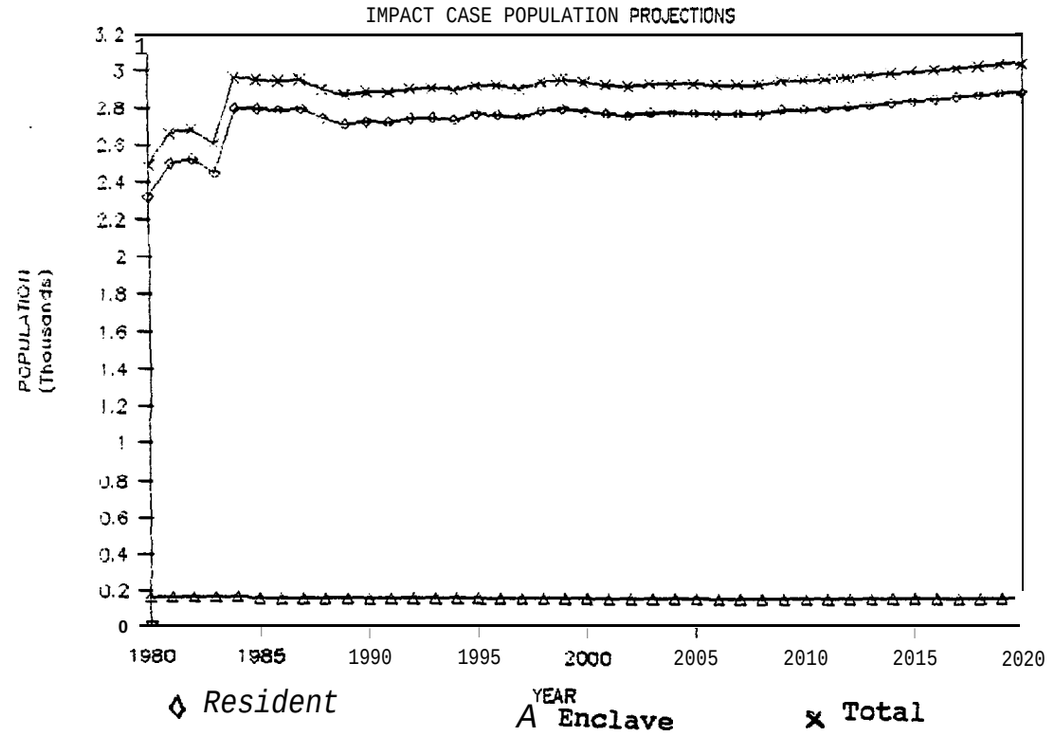


Figure 1X-4

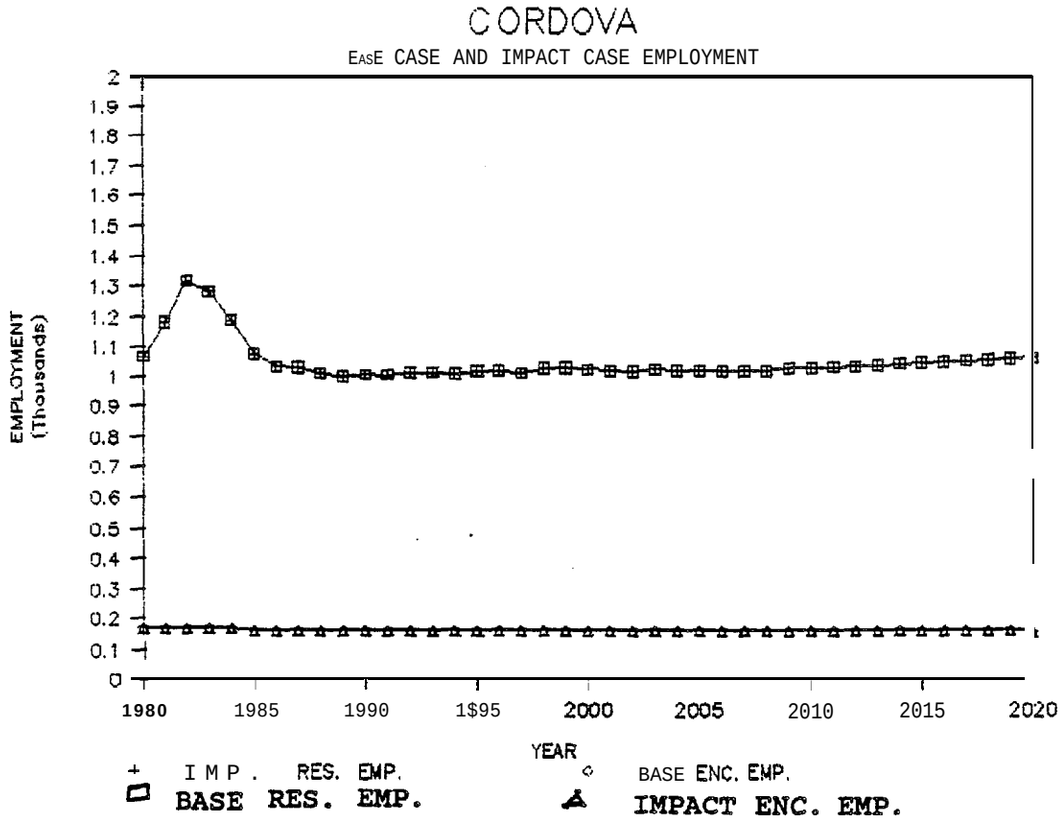


Figure **IX-5**

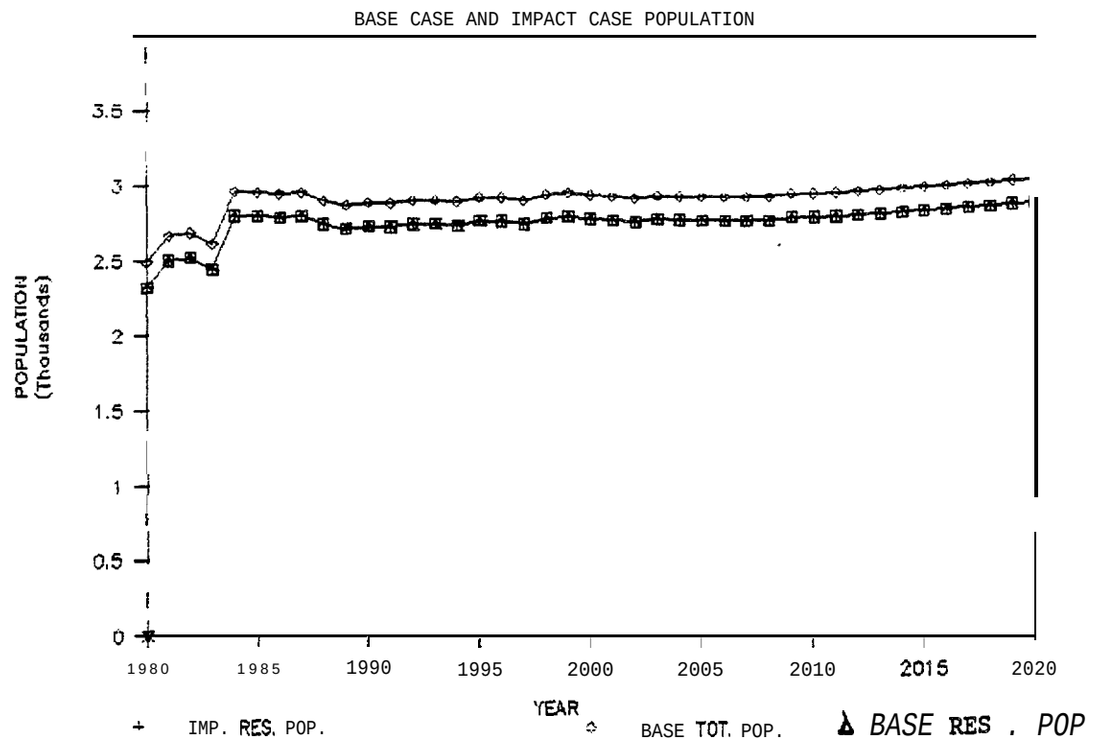
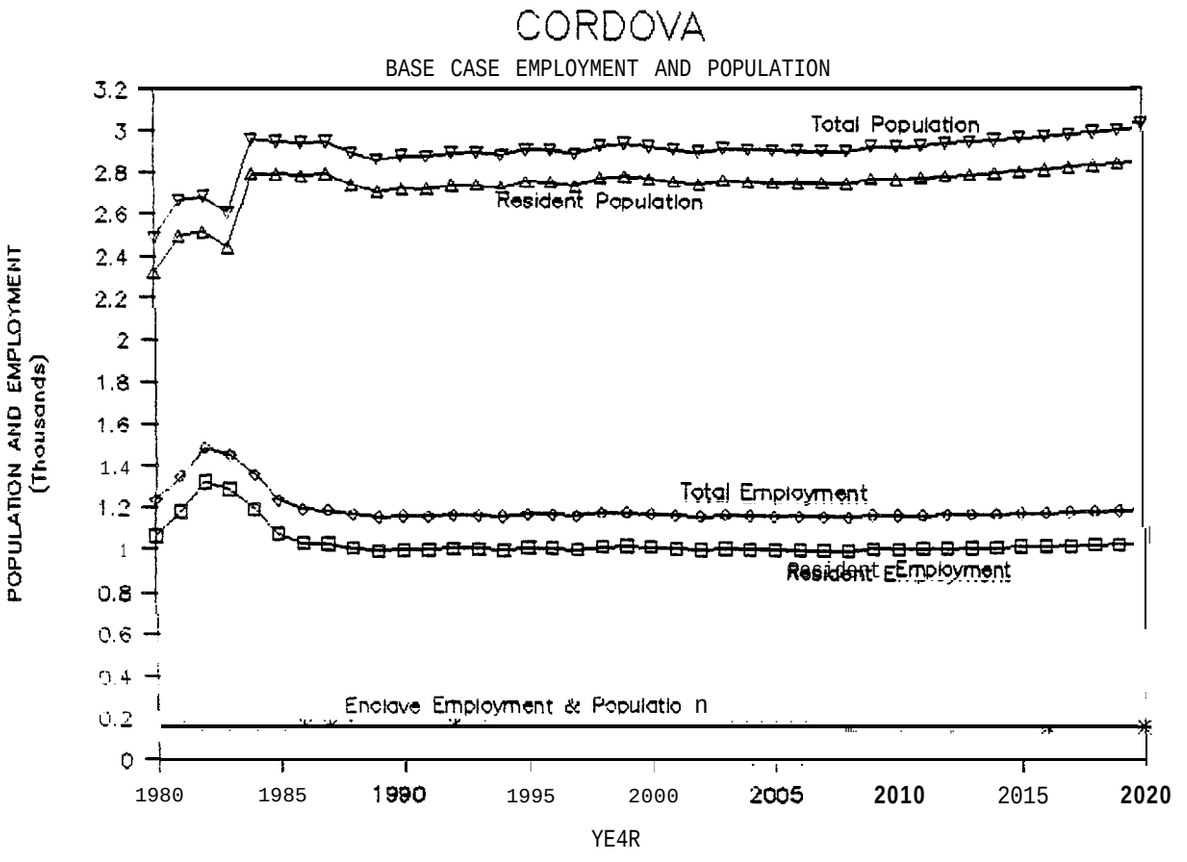


Figure **IX-6**


CORDOVA
BASE CASE EMPLOYMENT AND POPULATION
POPULATION AND EMPLOYMENT (Thousands)
3.2
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Total Population
Resident Population
Total Employment
Resident Employment
Enclave Employment & Populatio n
1980
1985
1990
1995
2000
2005
2010
2015
2020
YE4R

LIST OF REFERENCES

Alaska Department of Commerce and Economic Development, Kodiak: An Alaska Community Profile, Juneau, Alaska, 1984.

Alaska Department of Labor, Alaska Population Overview 1985 Estimates, April 1987.

Alaska Department of Labor, Employment Database Files for Cordova, Homer, Kenai, Kodiak, Seward, and Yakutat, November 1988 (unpublished).

Alaska Department of Labor, Geographical Area Classification Manual. January 1981.

Alaska Department of Labor, July 1 Population Estimates, News Release, March 1, 1988.

Alaska Department of Revenue, Permanent Fund Dividend Recipient Profiles.

Alaska Power Authority, F.E.R.C. Application for License for Major

Unconstructed Project, Bradley Lake Hydroelectric Project, Bradley River, Kenai Peninsula, Alaska, Volume 3, Exhibit E, Chapter 5, Report on Socioeconomic Impacts (received by Federal Resources Library, Anchorage, Alaska August 1, 1988).

Alaska Transportation Consultants, Inc.; CCC Architects and Planners; Kevin Waring Associates. Seward Airport Land Use and Development Plan, Final Report. Prepared for the City of Seward. December 1985.

Bechtol, Eileen R. *City of Homer, Telephone Interview.* **October 28, 1988.**

CCC Architects Alaska, Kevin Waring Associates, and Alaska Transportation Consultants, City of Seward Comprehensive Plan, Adopted by the Kenai Peninsula Borough, November 5, **1985.**

Chemical *Bank, Information Memorandum. Seward Marine Industrial Center, March 6, 1985.*

Cordova, *City of, Draft Comprehensive Plan, Funded by Alaska Coastal Management Program, January 1988.*

Coughenower, D. Douglas, Commercial Fishing Industry Study Homer, Alaska, University of Alaska, Marine Advisory Program, Marine Advisory Bulletin #33, November 1987.

Dames and Moore, Homer Spit Coastal Development Program, Identification of Homer Spit Coastal Development Needs, prepared for Kenai Peninsula Borough, City of Homer, and Alaska Coastal Management Program, 1981.

Easterwood, Cheryl. City of Yakutat. Personal Communication. November 4, 1988, December 5, 1988.

Fried, Neal, "Employment in Alaska's Seafood Industry," Alaska Economic Trends, Juneau, Alaska: Alaska Department of Labor, July 1987.

Fried, Neal, The Center of Alaska's Bottomfish Grounds: Kodiak and the Aleutian Islands," Alaska Economic Trends, Juneau, Alaska: Alaska Department of Labor, July 1988.

Homer, City of, "Preparing for Tomorrow Today, " Informational Brochure.

Kenai Peninsula Borough, Situation and Prospects, 1985-1988.

Keiser, Gretchen, and Pierce, Brad. State of Alaska Budget, FY 84-FY 87. Alaska State Legislature, House Research Agency Report 87-C, February 1987.

Knapp, Gunnar; Nebesky, Will; and Hull, Teresa. Cordova: Present and Projected Levels of Population, Employment, and Income. University of Alaska, Institute of Social and Economic Research, March 1983 (unpublished draft report prepared for Minerals Management Service, Alaska OCS Office).

Knapp, Gunnar; Nebesky, W.; Hull, T. ; White, K.; Reeder, B. ; and Zimicki, J. Gulf of Alaska Economic and Demographic Systems Analysis. University of Alaska, Institute of Social and Economic Research, (Prepared for Minerals and Management Service, Alaska OCS Office) Social and Economic Studies Program, Technical Report Number 98, March 1984.

Livey, Jay, and Keiser, Gretchen. Public School Financing in Alaska. Alaska State Legislature, House Research Agency Report 87-A, February 1987.

Logsdon, Charles L. Alaska Department of Revenue, Oil and Gas

Audit Division. Personal Communication. December 28, 1988.

Martin, Gary. City of Seward. Telephone **Interview.** *October 28, 1988.*

Merritt, **R. D., "Public-Data File 86-95, The Seward Coal Terminal 1985,"Alaska** *Division of Mining and Geological and Geophysical Surveys, December 1986.*

Moore, Carla. City of Cordova. Telephone Interview, October 28, 1988 and December **1,** *1988.*

National Park Service, Anchorage, Alaska, Draft Environmental **Impact** *Statement for the Wilderness Recommendation, Kenai Fiords National Park, Alaska, 1988.*

Pacific Rim Planners and Engineers a Division of Olympic Associates Company, **City** *of Homer, Comprehensive Plan, 1983.*

Seward, Alaska, Detailed **Project Report** *and Final EIS for* **Proposed** *Small Boat Harbor Navigational Improvements,* **Appendix B,** *Economics, April 1982.*

Seward, City of, "On the Move... A Community **Profile,"** *(Undated) .*

TRA/Farr, *Yakutat Airport Master Plan Report, Phase I and Phase II*, December 1987.

Yakutat, City of, *Yakutat Comprehensive Plan*, November 1983.

Yakutat, City of, *Overall Economic Development Program, 1988 Update*.

United States, Department of the Interior. *Technical Report Number 122: A Description of the Economic and Social Systems of the Kodiak-Shumagin Region*. Anchorage: Cultural Dynamics Ltd., 1986.

U.S. Census, 1980.

	VARIABLE	1980	1981	1982	1983	1984	1985	1986	1987
OCS EMPLOYMENT TOTALS	Onshore short-term skilled	0	0	0	0	0	0	0	0
	Onshore short-term non-skilled	0	0	0	0	0	0	0	0
	Onshore long-term skilled	0	0	0	0	0	0	0	0
	Onshore long-term non-skilled	0	0	0	0	0	0	0	0
	Offshore short-term skilled	0	0	0	0	0	0	0	0
	Offshore short-term non-skilled	0	0	0	0	0	0	0	0
	Offshore long-term skilled	0	0	0	0	0	0	0	0
	Offshore long-term non-skilled	0	0	0	0	0	0	0	0
OCS EM PLOYMENT RESIDENT SHARE	Onshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Onshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OCS EMPLOYMENT ENCLAVE SHARE	Onshore short-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore short-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore short-term non-skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OTHER OCS ASSUMPTIONS	Local government employment supported by OCS revenues	0	0	0	0	0	0	0	0
STATE GOV'T PER CAPITA SPENDING ASSUMPTIONS	State population	420	435	461	495	523	540	536	536
	State operating expenditures	1253	1564	1983	2239	2255	2295	2308	2308
	State capital expenditures	328	467	559	549	451	324	652	652
	Per capita operating expenditures	2.99	3.60	4.30	4.52	4.31	4.25	4.31	4.31
	Per capita capital expenditures	0.78	1.07	1.21	1.11	1.24	1.53	1.22	1.22
EMPLOYMENT CALCULATIONS	Fish harvesting (resident)	186	186	186	186	186	186	186	186
	Mining: total	0	0	0	0	0	0	0	0
	Non-OCS resident (exog.)	0	0	0	0	0	0	0	0
	OCS resident (exog.)	0	0	0	0	0	0	0	0
	OCS enclave	0	0	0	0	0	0	0	0
	Construction: total	17	22	30	26	34	37	25	25
EMCOSS	Generated by state spending	4	6	9	7	9	9	6	6
	Ratio of st. pc exp. to '87								
	Ratio of tot. ex. em. to '87								
	Endogenous	9	11	15	13	17	19	13	13
	Endogenous share	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Exogenous	4	6	9	7	9	9	6	6
	Exogenous share	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25

	VARIABLE	1980	1981	1982	1983	1984	1985	1986	1987
	Manufacturing: total	277	277	277	277	277	263	263	263
	Resident fish processing (exog.)	111	111	111	111	111	105	105	105
	Enclave fish processing	166	166	166	166	166	158	158	158
	Resident share	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
	Other Manufacturing	0	0	0	0	0	0	0	0
	Trans., comm. and utilities	117	185	261	242	189	78	70	79
	Resident exogenous	6	9	13	12	9	4	4	4
	Resident, endogenous support	111	176	248	230	180	74	67	75
	Exogenous share	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
	Wholesale trade (endogenous)	16	19	22	20	17	19	17	18
	Retail trade	132	151	177	163	141	154	140	143
	Resident exogenous	13	15	18	16	14	15	14	14
	Resident, endogenous support	119	136	159	147	127	139	126	129
	Exogenous share	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Fin., ins. and real estate (end.)	25	26	24	23	23	25	25	26
	Services	111	105	122	124	113	102	103	96
	Resident exogenous	6	5	6	6	6	5	5	5
	Resident, endogenous support	105	100	116	118	107	97	98	91
	Exogenous share	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Miscellaneous (exog.)	10	10	10	10	10	10	10	10
	Federal government (exog.)	92	99	94	91	89	87	87	88
	State government	81	87	87	88	92	96	96	99
	Ratio of st. pc op. exp. to '87								
	Ratio of tot. ex. em. to '87								
	Local government	167	179	192	197	181	174	166	162
	Supported by local revenues	67	72	77	79	72	70	66	117
	Ratio of tot. ex. em. to '87								
	Supported by state spending	100	107	115	118	109	104	100	45
	Ratio of st. pc op. exp. to '87								
	Ratio of tot. ex. em. to '87								
	Supported by OCS revenues	0	0	0	0	0	0	0	0
	Share supported by state	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CALCULATION	Total endogenous support	385	467	584	550	471	372	345	351
	Construction	9	11	15	13	17	19	13	13
OF ENDOGENOUS	Trans., comm. and utilities	111	176	248	230	180	74	67	75
SUPPORT	Wholesale trade	16	19	22	20	17	19	17	18
EMPLOYMENT	Retail trade	119	136	159	147	127	139	126	129
	Fin., ins. and real estate	25	26	24	23	23	25	25	26
	Services	105	100	116	118	107	97	98	91
	Generated by:								
	Enclave employment	9	9	9	9	8	8	8	9
	Endogenous support employment generated per enclave employee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Resident exogenous driven	377	459	576	542	462	364	337	344

	VARIABLE	1980	1981	1982	1983	1984	1985	1986	1987
	Mult: Change in Res. Exog. Emp.								
	Shares of endogenous support:								
	Construction	0.02	0.02	0.03	0.02	0.04	0.05	0.04	0.04
	Trans., comm. and utilities	0.29	0.38	0.42	0.42	0.38	0.20	0.19	0.21
	Wholesale trade	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05
	Retail trade	0.31	0.29	0.27	0.27	0.27	0.37	0.37	0.37
	Fin., ins. and real estate	0.06	0.06	0.04	0,04	0.05	0.07	0.07	0.07
	Services	0.27	0.21	0.20	0.21	0.23	0.26	0.28	0.26
EMPLOYMENT	Fish harvesting	186	186	186	186	186	186	186	186
SUMMARY:	Mining	0	0	0	0	0	0	0	0
TOTAL	Construction	17	22	30	26	34	37	25	25
	Manufacturing	277	277	277	277	277	263	263	263
	Trans., comm. and utilities	117	185	261	242	189	78	70	79
	Wholesale trade	16	19	22	20	17	19	17	19
	Retail trade	132	151	177	163	141	154	140	143
	Fin., ins. and real estate	25	26	24	22	23	25	25	26
	Services	111	105	122	124	113	102	103	96
	Miscellaneous	10	10	10	10	10	10	10	10
	Federal government	92	99	94	91	89	87	87	88
	State government	81	87	87	88	92	96	96	89
	Local government	167	179	192	197	181	174	166	162
	Total, resident and enclave	1231	1346	1482	1447	1352	1231	1188	1185
	Total exogenous (res. + enc.)	594	507	611	605	600	580	575	576
	Total enclave employment	166	166	166	166	166	158	158	158
	Total resident	1065	1180	1316	1281	1186	1073	1030	1027
	Resident OCS	0	0	0	0	0	0	0	0
	Resident Non-OCS	1065	1180	1316	1281	1186	1073	1030	1027
	Total exogenous resident	428	441	445	439	434	422	417	419
	Total endogenous resident	637	739	871	842	752	651	613	609
	Total endogenous support	385	467	584	550	471	372	345	351
	Enclave-driven	8	8	8	8	8	8	8	8
	Resident exogenous-driven	377	459	576	542	462	364	337	344
	State government	81	87	87	88	92	96	96	89
	State-supported construction	4	6	8	1	9	9	6	6
	State supported local gov't	100	107	115	118	109	104	100	45
	Locally supported local gov't	67	72	77	79	72	70	66	117
POPULATION	Res. population age distribution:								
ASSUMPTIONS	Pre-school (0-4)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	School-age (5-18)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	Adult (19-64)	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	Senior (65+)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
POPULATION	Resident populati On: total	2320	2498	2519	2441	2795	2793	2783	2793
CALCULATIONS	Pre-school (0-4)	209	225	227	220	252	252	251	252
	School-age (5-14)	396	426	430	417	477	477	475	477
	Adult (15-64)	1606	1729	1743	1689	1934	1933	1926	1933
	Senior (65+)	109	118	119	115	132	132	131	132
	Ratio, res. pop. to res. emp.	2.18	2.12	1.91	1.91	2.36	2.60	2.70	2.72
	Resident population	2320	2498	2519	2441	2795	2793	2783	2793

	VARIABLE	1980	1981	1982	1983	1984	1985	1986	1987
	Enclave population	166	166	166	166	166	158	158	158
	Total pop., enclave plus resident	2486	2664	2685	2607	2961	2951	2941	2951
CHECKS FOR	School enrollment	467	431	429	443	392	386	439	420
POPULATION	Ratio, school enrollment to	1.18	1.01	1.00	1.06	0.82	0.81	0.92	0.88
PROJECTIONS	projected school-age pop.								
	Perm. Fund. Div. Applications			2540	2424	2227	2282		
	Ratio, PFD app's to res. pop.			1.01	0.99	0.80	0.82		
	Ratio, PFD App's to total pop.			0.95	0.93	0.75	0.77		

	VARIABLE	1988	1989	1990	1991	1992	1993	1994	1995
OCS	Onshore short-term skilled	0	0	0	0	0	0	0	0
EMPLOYMENT	Onshore short-term non-skilled	0	0	0	0	0	0	0	0
TOTALS	Onshore long-term skilled	0	0	0	0	0	0	0	0
	Onshore long-term non-skilled	0	0	0	0	0	0	0	0
	Offshore short-term skilled	0	0	0	0	0	0	0	0
	Offshore short-term non-skilled	0	0	0	0	0	0	0	0
	Offshore long-term skilled	0	0	0	0	0	0	0	0
	Offshore long-term non-skilled	0	0	0	0	0	0	0	0
OCS	Onshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EMPLOYMENT	Onshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RESIDENT	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SHARE	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	[illegible]	0.10	0.10	0.10	0.10	0.10
OCS	Onshore short-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EMPLOYMENT	Onshore short-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ENCLAVE	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SHARE	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore short-term non-skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OTHER OCS ASSUMPTIONS	Local government employment supported by OCS revenues	0	0	0	0	0	0	0	0
STATE GOV'T	State population	529	524	528	528	532	535	[illegible]	547
PER CAPITA	State operating expenditures	1965	1743	1836	[illegible]	[illegible]	[illegible]	[illegible]	1976
SPENDING	State capital expenditures	412	246	324	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ASSUMPTIONS	Per capita operating expenditures	3.71	3.33	3.48	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	Per capita capital expenditures	0.78	0.47	0.61	[illegible]	0.63	[illegible]	0.58	[illegible]
EMPLOYMENT CALCULATIONS	Fish harvesting (resident)	186	186	186	186	186	186	186	186
	Mining: total	0	0	0	0	0	0	0	0
	Non-OCS resident (exog.)	0	0	0	0	0	0	0	0
	OCS resident (exog.)	0	0	0	0	0	0		0
	OCS enclave	0	0	0	0	0	[illegible]	0	0
	Construction: total	23	21	22	22	22	[illegible]	[illegible]	22
EM OSS	Generated by state spending	4	2	3	3	3	[illegible]	3	3
	Ratio of st. pc exp. to '87	0.64	0.39	0.50	0.49	0.52	0.51	0.48	0.52
	Ratio of tot. ex. em. to '87	1.00	1.00	1.00	1.00	1.01	1.01	1.0	1.01
	Endogenous	13	13	13	13	13	13	13	13
	Endogenous share								
	Exogenous	6	6	6	6	6	6	[illegible]	6
	Exogenous share								

	VARIABLE	1988	1989	1990	1991	1992	1993	1994	1995
	Manufacturing: total	263	263	263	263	263	263	263	263
	Resident fish processing (exog.)	105	105	105	105	105	105	105	105
	Enclave fish processing	158	158	158	158	158	158	158	158
	Resident share	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
	Other Manufacturing	0	0	0	0	0	0	0	0
	Trans., comm. and utilities	79	79	80	80	80	80	81	81
	Resident exogenous	4	4	4	4	5	5	5	5
	Resident, endogenous support	75	75	75	75	76	76	76	76
	Exogenous share	0.051	0.053	0.054	0.056	0.057	0.059	0.060	0.062
	Wholesale trade (endogenous)	18	18	18	18	18	18	18	18
	Retail trade	143	144	145	146	146	147	148	149
	Resident exogenous	15	15	16	16	17	17	18	18
	Resident, endogenous support	129	129	129	129	130	130	130	130
	Exogenous share								
	Fin., ins. and real estate (end.)	26	26	26	26	26	26	26	26
	Services	96	96	97	97	97	98	98	98
	Resident exogenous	5	5	5	5	6	6	6	6
	Resident, endogenous support	91	91	92	92	92	92	92	92
	Exogenous share								
	Miscellaneous (exog.)	10	10	10	10	10	10	10	10
	Federal government (exog.)	88	88	88	88	88	88	88	88
	State government	77	69	72	70	74	73	69	75
	Ratio of st. pc op. exp. to '87	0.86	0.77	0.81	0.79	0.83	0.82	0.77	0.84
	Ratio of tot. ex. em. to '87	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.01
	Local government	156	152	154	153	155	155	153	156
	Supported by local revenues	117	117	117	117	117	117	118	118
	Ratio of tot. ex. em. to '87	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.01
	Supported by state spending	39	35	37	36	38	37	35	38
	Ratio of st. pc op. exp. to '87	0.86	0.77	0.81	0.79	0.83	0.82	0.77	0.84
	Ratio of tot. ex. em. to '87	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.01
	Supported by OCS revenues	0	0	0	0	0	0	0	0
	Share supported by state								
CALCULATION	Total endogenous support	352	352	353	353	354	355	355	356
	Construction	13	13	13	13	13	13	13	13
OF ENDOGENOUS	Trans., comm. andutilities	75	75	75	75	76	76	76	76
SUPPORT	Wholesale trade	18	18	18	18	18	18	18	18
EMPLOYMENT	Retail trade	129	129	129	129	130	130	130	130
	Fin., ins. and real estate	26	26	26	26	26	26	26	26
	Services	91	91	92	92	92	92	92	92
	Generated by:								
	Enclave employment	8	8	8	8	8	8	8	8
	Endogenous support employment generated per enclave employee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Resident exogenous driven	344	344	345	346	346	347	348	348

	VARIABLE	1988	1989	1990	1991	1992	1993	1994	1995
	Mult: Change in Res. Exog. Emp.	1.00	1.00	1.00	1.01	1.01	1.01	1.01	1.01
	Shares of endogenous support:								
	Construction	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Trans., comm. arid utilities	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Wholesale trade	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Retail trade	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
	Fin., ins. and real estate	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
	Services	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
EMPLOYMENT	Fish harvesting	186	186	186	186	186	186	186	186
SUMMARY:	Mining	0	0	0	0	0	0	0	0
TOTAL	Construction	23	21	22	22	22	22	22	22
	Manufacturing	263	263	263	263	263	263	263	263
	Trans., comm. and utilities	19	79	80	80	80	80	81	81
	Wholesale trade	18	18	18	18	18	18	18	18
	Retail trade	143	144	145	146	146	147	148	149
	Fin., ins. and real estate	26	26	26	26	26	26	26	26
	Services	96	96	97	97	97	98	98	98
	Miscellaneous	10	10	10	10	10	10	10	10
	Federal government	88	88	88	98	88	88	88	88
	State government	77	69	72	70	74	73	69	75
	Local government	156	152	154	153	155	155	153	156
	Total, resident and enclave	1164	1152	1159	1158	1165	1166	1161	1173
	Total exogenous (res. + enc.)	516	571	578	578	579	580	581	582
	Total enclave employment	158	158	158	158	158	158	158	158
	Total resident	1007	995	1002	1001	1008	1009	1003	1015
	Resident OCS	0	0	0	0	0	0	0	0
	Resident Non-OCS	1007	995	1002	1001	1008	1009	1003	1015
	Total exogenous resident	419	419	420	421	422	423	423	424
	Total endogenous resident	588	575	582	580	586	586	580	591
	Total endogenous support	352	352	353	353	354	355	355	356
	Enclave-driven	8	8	8	8	8	8	8	8
	Resident exogenous-driven	344	344	345	346	346	347	348	348
	State government	77	69	72	70	74	73	69	75
	State-supported construction	4	2	3	3	3	3	3	3
	State supported local gov't	39	35	37	36	38	37	35	38
	Locally supported local gov't	117	117	117	117	117	117	118	118
POPULATION	Res. population age distribution:								
ASSUMPTIONS	Pre-school (0-4)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	School-age (5-18)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	Adult (19-64)	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	Senior (65+)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
POPULATION	Resident population: total	2739	2706	2725	2722	2742	2744	2729	2761
MLCUL9TIONS	Pre-school (0-4)	247	244	245	245	247	247	246	249
	School-age (5-14)	467	462	465	465	468	468	466	471
	Adult (15-64)	1896	1873	1886	1884	1898	1899	1889	1911
	Senior (65+)	129	127	128	128	129	129	128	130
	Ratio, res. pop. to res. emp.	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
	Resident population	2739	2706	2725	2722	2742	2744	2729	2761

	VARIABLE	1988	1989	1990	1991	1992	1993	1994	1995
	Enclave population	158	158	158	158	158	158	158	158
	Total pop., enclave plus resident	2896	2867	2883	2879	2899	2901	2887	2918
CHECKS FOR POPULATION PROJECTIONS	School enrollment	429							
	Ratio, school enrollment to projected school-age pop,	0.92							
	Perm. Fund. Div. applications								
	Ratio, PFD app's to res. pop.								
	Ratio, PFD App's to total pop,								

	VARIABLE	1996	1997	1998	1999	2000	2001	2002	2003
	Mult: Change in Res. Exog. Emp.	1.02	1.02	1.02	1.02	1.02	1.03	1.03	1.03
	Shares of endogenous support:								
	Construction	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Trans., comm. and utilities	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Wholesale trade	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Retail trade	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
	Fin., ins. and real estate	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
	Services	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
EMPLOYMENT	Fish harvesting	186	186	186	196	186	186	196	186
SUMMARY:	Mining	0	0	0	0	0	0	0	0
TOTAL	Construction	22	22	22	22	22	22	22	22
	Manufacturing	263	263	263	263	263	263	263	263
	Trans., comm. and utilities	81	82	82	82	83	83	83	84
	Wholesale trade	18	18	18	18	18	18	19	19
	Retail trade	149	150	151	152	153	154	155	156
	Fin., ins. and real estate	26	26	27	27	27	27	27	27
	Services	99	99	100	100	100	101	101	102
	Miscellaneous	10	10	10	10	10	10	10	10
	Federal government	88	88	88	88	88	88	88	88
	State government	74	68	76	78	73	69	65	68
	Local government	156	153	157	158	156	154	152	154
	Total, resident and enclave	1172	1164	1180	1184	1178	1175	1170	1177
	Total exogenous (res. + enc.)	583	583	584	585	586	587	588	589
	Total enclave employment	158	158	158	158	158	158	158	158
	Total resident	1015	1007	1022	1026	1021	1017	1013	1020
	Resident OCS	0	0	0	0	0	0	0	0
	Resident Non-OCS	1015	1007	1022	1026	1021	1017	1013	1020
	Total exogenous resident	425	426	427	428	429	430	431	432
	Total endogenous resident	590	581	595	599	592	587	582	588
	Total endogenous support	357	358	358	359	360	361	362	363
	Enclave-driven	8	8	8	8	8	8	8	8
	Resident exogenous-driven	349	350	350	351	352	353	354	355
	State government	74	68	76	78	73	69	65	68
	State-supported construction	3	3	3	3	3	3	3	3
	State supported local gov't	38	34	39	40	37	35	33	35
	Locally supported local gov't	118	118	118	118	119	119	119	119
POPULATION	Res. population age distribution:								
ASSUMPTIONS	Pre-school (0-4)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	School-age (5-18)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	Adult (19-64)	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	Senior (65+)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
POPULATION	Resident population: total	2760	2738	2780	2792	2777	2766	2755	2774
CALCULATIONS	Pre-school (0-4)	249	247	250	252	250	249	248	250
	School-age (5-14)	471	467	475	477	474	472	470	473
	Adult (15-64)	1910	1895	1925	1933	1922	1915	1907	1920
	Senior (65+)	130	129	131	131	131	130	130	131
	Ratio, res. pop. to res. emp.	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
	Resident population	2760	2738	2780	2792	2777	2766	2755	2774

	V&R ABLE	1996	1997	1998	1999	2000	2001	2002	2003
	Enclave population	158	158	158	158	158	158	158	158
	Total pop., enclave plus resident	2917	2896	2938	2950	2934	2932	2912	2931
CHECKS FOR POPULATION PROJECTIONS	School enrollment								
	Ratio, school enrollment to projected school-age pop.								
	Perm. Fund. Div. Applications								
	Ratio, PFD app's to res. pop.								
	Ratio, PFD App's to total pop								

	VARIABLE	2004	2005	2006	2007	2008	2009	2010	2011
OCS EMPLOYMENT TOTALS	Onshore short-term skilled	0	0	0	0	0	0	0	0
	Onshore short-term non-skilled	0	0	0	0	0	0	0	0
	Onshore long-term skilled	0	0	0	0	0	0	0	0
	Onshore long-term non-skilled	0	0	0	0	0	0	0	0
	Offshore short-term skilled	0	0	0	0	0	0	0	0
	Offshore short-term non-skilled	0	0	0	0	0	0	0	0
	Offshore long-term skilled	0	0	0	0	0	0	0	0
	Offshore long-term non-skilled	0	0	0	0	0	0	0	0
OCS EMPLOYMENT RESIDENT SHARE	Onshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Onshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OCS EMPLOYMENT ENCLAVE SHARE	Onshore short-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore short-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore short-term non-skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OTHER OCS ASSUMPTIONS	Local government employment supported by OCS revenues	0	0	0	0	0	0	0	0
STATE GOV'T PER CAPITA SPENDING ASSUMPTIONS	State population	612	620	636	652	662	677	691	691
	State operating expenditures	1988	1960	1937	1933	1902	1938	1941	1941
	State capital expenditures	333	328	324	322	318	347	342	342
	Per capita operating expenditures	3.09	3.00	2.89	2.81	2.72	2.91	2.81	2.81
	Per capita capital expenditures	0.54	0.53	0.51	0.50	0.48	0.51	0.49	0.49
EMPLOYMENT CALCULATIONS	Fish harvesting (resident)	186	186	186	186	186	186	186	186
	Mining: total	0	0	0	0	0	0	0	0
	Non-OCS resident (exog.)	0	0	0	0	0	0	0	0
	OCS resident (exog.)	0	0	0	0	0	0	0	0
	OCS enclave	0	0	0	0	0	0	0	0
	Construction: total	22	22	22	22	22	22	9	9
EMCOSS	Generated by state spending	3	3	3	3	3	3	3	3
	Ratio of st. pc exp. to '87	0.45	0.43	0.42	0.41	0.39	0.42	0.41	0.41
	Ratio of tot. ex. em. to '87	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04
	Endogenous	13	13	13	13	13	13	13	13
	Endogenous share								
	Exogenous	6	6	6	6	6	6	6	6
	Exogenous share								

	VARIABLE	2004	2005	2006	2007	2008	2009	2010	2011
	Manufacturing: total	263	263	263	263	263	263	263	263
	Resident fish processing (exog.)	105	105	105	105	105	105	105	105
	Enclave fish processing	158	158	158	158	158	158	158	158
	Resident share	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
	Other Manufacturing	0	0	0	0	0	0	0	0
	Trans., comm. and utilities	84	85	85	85	86	86	87	87
	Resident exogenous	7	7	7	7	7	8	8	8
	Resident, endogenous support	78	78	78	78	78	79	79	79
	Exogenous share	0.078	0.080	0.082	0.084	0.086	0.088	0.090	0.092
	Wholesale trade (endogenous)	19	19	19	19	19	19	19	19
	Retail trade	157	158	159	160	161	162	164	165
	Resident exogenous	24	24	25	26	27	27	28	29
	Resident, endogenous support	133	133	134	134	135	135	136	136
	Exogenous share								
	Fin., ins. and real estate (end.)	27	27	27	27	27	27	27	27
	Services	102	103	103	104	104	105	105	106
	Resident exogenous	8	8	8	8	8	9	9	10
	Resident, endogenous support	94	95	95	95	95	96	96	96
	Exogenous share								
	Miscellaneous (exog.)	10	10	10	10	10	10	10	10
	Federal government (exog.)	88	88	88	88	88	88	88	88
	State government	65	64	61	60	59	62	61	59
	Ratio of st. pc op. exp. to '87	.72	0.70	0.67	0.65	0.63	0.68	0.65	0.65
	Ratio of tot. ex. em. to '87	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04
	Local government	153	152	151	151	150	152	152	152
	Supported by local revenues	120	120	120	120	121	121	121	121
	Ratio of tot. ex. em. to '87	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04
	Supported by state spending	33	32	31	31	30	32	31	31
	Ratio of st. pc op. exp. to '87	0.72	0.70	0.67	0.65	0.63	0.68	0.65	0.65
	Ratio of tot. ex. em. to '87	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04
	Supported by OCS revenues	0	0	0	0	0	0	0	0
	Share supported by state								
CALCULATION	Total endogenous support	363	364	365	366	367	368	369	371
	Construction	13	13	13	13	13	13	13	13
OF ENDOGENOUS	Trans., comm. and utilities	78	78	78	78	79	79	79	79
SUPPORT	Wholesale trade	19	19	19	19	19	19	19	19
EMPLOYMENT	Retail trade	133	133	134	134	135	135	135	136
	Fin., ins. and real estate	27	27	27	27	27	27	27	27
	Services	94	95	95	95	95	96	96	96
	Generated by:								
	Enclave employment	8	8	8	8	8	8	8	8
	Endogenous support employment generated per enclave employee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Resident exogenous driven	356	356	357	358	359	361	362	363

	VARIABLE	2004	2005	2006	2007	2008	2009	2010	2011
	Mult: Change in Res. Exog. Emp.	1.03	1.04	1.04	1.04	1.05	1.05	1.05	1.06
	Shares of endogenous support:								
	Construction	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Trans., comm. and utilities	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Wholesale trade	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Retail trade	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
	Fin., ins. and real estate	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
	Services	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
EMPLOYMENT	Fish harvesting	186	186	186	186	186	186	186	186
SUMMARY:	Mining	0	0	0	0	0	0	0	0
TOTAL	Construction	22	22	22	22	22	22	9	9
	Manufacturing	263	263	263	263	263	263	263	263
	Trans., comm. and utilities	84	85	85	85	86	86	87	87
	Wholesale trade	19	19	19	19	19	19	19	19
	Retail trade	157	158	159	160	161	162	164	165
	Fin., ins. and real estate	27	27	27	27	27	27	27	27
	Services	102	103	103	104	104	105	105	106
	Miscellaneous	10	10	10	10	10	10	10	10
	Federal government	88	88	88	88	88	88	88	88
	State government	65	64	61	60	58	62	60	60
	Local government	153	152	151	151	150	152	152	152
	Total, resident and enclave	1175	1175	1174	1174	1174	1183	1182	1185
	Total exogenous (res. + enc.)	591	592	593	594	595	597	598	599
	Total enclave employment	158	158	158	158	158	158	158	158
	Total resident	1018	1017	1016	1016	1016	1025	1025	1028
	Resident OCS	0	0	0	0	0	0	0	0
	Resident Non-OCS	1018	1017	1016	1016	1016	1025	1025	1028
	Total exogenous resident	433	434	435	437	438	439	440	442
	Total endogenous resident	585	583	581	580	578	586	584	586
	Total endogenous support	363	364	365	366	367	368	369	371
	Enclave-driven	8	8	8	8	8	8	8	8
	Resident exogenous-driven	356	356	357	358	359	361	362	363
	State government	65	64	61	60	58	62	60	60
	State-supported construction	3	3	3	3	3	3	3	3
	State supported local gov't	33	32	31	31	30	32	31	31
	Locally supported local gov't	120	120	120	120	121	121	121	121
POPULATION	Res. population age distribution:								
ASSUMPTIONS	Pre-school (0-4)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	School-age (5-18)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	Adult (19-64)	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	Senior (65+)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
POPULATION	Resident population: total	2768	2767	2764	2764	2764	2788	2787	2795
CALCULATIONS	Pre-school (0-4)	249	249	249	249	249	251	251	252
	School-age (5-14)	472	472	472	472	472	476	476	477
	Adult (15-64)	1916	1915	1913	1913	1913	1930	1929	1935
	Senior (65+)	130	130	130	130	130	131	131	132
	Ratio, res. pop. to res. emp.	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
	Resident population	2768	2767	2764	2764	2764	2788	2787	2795

	VARIABLE	2004	2005	2006	2007	2008	2009	2010	2011
	Enclave population	158	158	158	158	158	158	158	158
	Total POD, , enclave plus resident	2925	2924	2922	2922	2921	2946	2944	2952
CHECKS FOR POPULATION PROJECTIONS	School enrollment								
	Ratio, school enrollment to projected school-age pop.								
	Perm. Fund. Div. Applications								
	Ratio, PFD app's to res. pGp.								
	Ratio, PFD App's to total pop.								

	VARIABLE	2012	2013	2014	2015	2016	2017	2018	2019
OCS EMPLOYMENT TOTALS	Onshore short-term skilled	0	0	0	0	0	0	0	0
	Onshore short-term non-skilled	0	0	0	0	0	0	0	0
	Onshore long-term skilled	0	0	0	0	0	0	0	0
	Onshore long-term noci-skilled	0	0	0	0	0	0	0	0
	Offshore snort-term skilled	0	0	0	0	0	0	0	0
	Offshore short-tern non-skilled	0	0	0	0	0	0	0	0
	Offshore long-term skilled	0	0	0	0	0	0	0	0
	Offshore long-term non-skilled	0	0	0	0	0	0	0	0
OCS EMPLOYMENT RESIDENT SHARE	Onshore short-term skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Onshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.00	0.00	0.00	0,00	0.00	0.00	0.00	0.00
	Offshore short-term non-skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OCS EMPLOYMENT ENCLAVE SHARE	Onshore short-term willed	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore short-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Onshore long-term non-skilled	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Offshore short-term skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore short-term non-skilled	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Offshore long-term skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Offshore long-term non-skilled	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
OTHER OCS ASSUMPTIONS	Local government employment supported by OCS revenues	0	0	0	0	0	0	0	0
STATE GOV'T PER CAPITA SPENDING ASSUMPTIONS	State population	691	691	691	691	691	691	691	691
	State operating expenditures	1941	1941	1941	1941	1941	1941	1941	1941
	State capital expenditures	342	342	342	342	342	342	342	342
	Per capita operating expenditures	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81
	Per capita capital expenditures	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
EMPLOYMENT CALCULATIONS	Fish harvesting (resident)	186	186	186	186	186	186	186	186
	Mining: total	0	0	0	0	0	0	0	0
	Non-OCS resident (exog.)	0	0	0	0	0	0	0	0
	OCS resident (exog.)	0	0	0	1	0	0	0	0
	OCS enclave	0	0	0	0	0	0	0	0
	Construction: total	9	9	9	9	9	9	9	9
EMCOSS	Generated by state spending	3	3	3	3	3	3	3	3
	Ratio of st. pc exp. to '87	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
	Ratio of tot. ex. em. to '87	1.04	1.04	1.05	1.05	1.05	1.06	1.06	1.06
	Endogenous	13	13	13	13	13	13	13	14
	Endogenous share								
	Exogenous	6	6	6	6	6	6	6	6
	Exogenous share								

	VARIABLE	2012	2013	2014	2015	2016	2017	2018	2019
	Manufacturing: total	263	263	263	263	263	263	263	263
	Resident fish processing exog.)	105	105	105	105	105	105	105	105
	Enclave fish processing	158	158	158	158	158	158	158	158
	Resident share	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
	Other Manufacturing	0	0	0	0	0	0	0	0
	Trans., comm. and utilities	88	88	89	89	90	90	91	92
	Resident exogenous	8	9	9	9	9	10	10	10
	Resident, endogenous support	79	80	80	80	80	81	81	81
	Exogenous share	0.094	0.097	0.099	0.101	0.104	0.106	0.109	0.111
	Wholesale trade (endogenous)	19	19	19	19	19	19	19	20
	Retail trade	166	167	169	170	172	173	175	176
	Resident exogenous	30	31	32	33	34	35	36	37
	Resident, endogenous support	136	137	137	137	138	138	139	139
	Exogenous share								
	Fin ins and real estate (end)	28	28	28	28	28	28	28	28
	Services	107	107	108	108	109	110	110	111
	Resident exogenous	11	10	11	11	11	12	12	12
	Resident, endogenous support	96	97	97	97	98	98	98	99
	Exogenous share								
	Miscellaneous exog.)	10	10	10	10	10	10	10	10
	Federal government (exog.)	88	88	88	88	88	88	88	88
	State government	61	61	61	61	61	61	61	62
	Ratio of st. pc op. exp. to '87	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Ratio of tot. ex. em. to '87	1.04	1.04	1.05	1.05	1.05	1.06	1.06	1.06
	Local government	152	153	153	154	154	154	155	155
	Supported by local revenues	122	122	122	122	123	123	123	124
	Ratio of tot. ex. em. to '87	1.04	1.04	1.05	1.05	1.05	1.06	1.06	1.06
	Supported by state spending	31	31	31	31	31	31	31	31
	Ratio of st. pc op. exp. to '87	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	Ratio of tot. ex. em. to '87	1.04	1.04	1.05	1.05	1.05	1.06	1.06	1.06
	Supported by OCS revenues	0	0	0	0	0	0	0	0
	Share supported by state								
CALCULATION	Total endogenous support	372	373	374	375	377	378	379	381
	Construction	13	13	13	13	13	13	13	14
OF ENDOGENOUS	Trans., comm. and utilities	79	80	80	80	80	81	81	81
SUPPORT	Wholesale trade	19	19	19	19	19	19	19	20
EMPLOYMENT	Retail trade	136	137	137	137	138	138	139	139
	Fin., ins. and real estate	28	28	28	28	28	28	28	28
	Services	96	97	97	97	98	98	98	99
	Generated by:								
	Enclave employment	8	8	8	8	8	8	8	8
	Endogenous support employment generated per enclave employee	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Resident exogenous driven	364	366	366	366	369	370	372	373

	VARIABLE	2012	2013	2014	2015	2016	2017	2018	2019
	Mult: Change in Res. Exog. Emp.	1.06	1.06	1.07	1.07	1.07	1.08	1.08	1.09
	Shares of endogenous support:								
	Construction	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Trans., comm. and utilities	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
	Wholesale trade	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Retail trade	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
	Fin., ins. and real estate	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
	Services	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
EMPLOYMENT	Fish harvesting	186	186	186	186	186	186	186	186
SUMMARY:	Mining	0	0	0	0	0	0	0	0
TOTAL	Construction	9	9	9	9	9	9	9	9
	Manufacturing	263	263	263	263	263	263	263	263
	Trans., comm. and utilities	88	88	89	89	90	90	91	92
	Wholesale trade	19	19	19	19	19	19	19	20
	Retail trade	166	167	169	170	172	173	175	176
	Fin., ins. and real estate	28	28	28	28	28	28	28	28
	Services	107	107	108	108	109	110	110	111
	Miscellaneous	10	10	10	10	10	10	10	10
	Federal government	88	88	88	88	88	88	88	88
	State government	61	61	61	61	61	61	61	62
	Local government	152	153	153	154	154	154	155	155
	Total, resident and enclave	1188	1191	1195	1198	1201	1205	1209	1212
	Total exogenous (res. + enc.)	601	602	604	605	607	608	610	612
	Total enclave employment	158	158	158	158	158	158	158	158
	Total resident	1031	1034	1037	1040	1044	1047	1051	1055
	Resident OCS	0	0	0	0	0	0	0	0
	Resident Non-OCS	1031	1034	1037	1040	1044	1047	1051	1055
	Total exogenous resident	443	445	446	448	449	451	453	454
	Total endogenous resident	587	589	591	593	595	596	598	600
	Total endogenous support	372	373	374	375	377	378	379	381
	Enclave-driven	8	8	8	8	8	8	8	9
	Resident exogenous-driven	364	365	366	368	369	370	372	373
	State government	61	61	61	61	61	61	61	62
	State-supported construction	3	3	3	3	3	3	3	3
	State supported local gov't	31	31	31	31	31	31	31	31
	Locally supported local gov't	122	122	122	122	123	123	123	124
POPULATION	Res. population age distribution:								
ASSUMPTIONS	Pre-school (0-4)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
	School-age (5-18)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
	Adult (19-64)	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
	Senior (65+)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
POPULATION	Resident population: total	2803	2812	2821	2830	2839	2849	2859	2869
CALCULATIONS	Pre-school (0-4)	253	253	254	255	256	257	258	258
	School-age (5-14)	478	480	481	483	485	486	488	490
	Adult (15-64)	1940	1946	1952	1959	1965	1972	1979	1986
	Senior (65+)	132	132	133	133	134	134	135	135
	Ratio, res. pop. to res. emp.	2.72	2.72	2.72	2.72	2.72	2.72	2.72	2.72
	Resident population	2803	2812	2821	2830	2839	2849	2859	2869

	VARIABLE	2012	2013	2014	2015	2016	2017	2017	2018	2019
		1.								
	Enclave population	158	158	158	158	158	158	158	158	
	Total pop. , enclave plus resident	2961	2969	2978	2987	2997	3006	3016	3027	
CHECKS FOR POPULATION PROJECTIONS	School enrollment									
	Ratio, school enrollment to projected school-age pop,									
	Perm. Fund. Div. Applications									
	Ratio, PFD app's to res. pop.									
	Ratio, PFD App's to total pop.									

	VARIABLE	2020
OCS EMPLOYMENT TOTALS	Onshore short-term skilled	0
	Onshore short-term non-skilled	0
	Onshore long -term sk illed	0
	Onshore long-term non-skilled	0
	Offshore short-tern skilled	0
	Offshore short-term non-skilled	0
	Offshore long-term skilled	0
	Offshore long-term con-skilled	0
Ocs EMPLOYMENT RESIDENT SHARE	Onshore short-term skilled	0.00
	Onshore short-term non-skilled	0,00
	Onshore long-term skilled	1,00
	Onshore long-term non-skilled	1.00
	Offshore short-term skilled	0.00
	Offshore short-tern non-skilled	0.00
	Offshore long-term skilled	0.10
	Offshore long-term non-skilled	0.10
OCS EMPLOYMENT ENCLAVE SHARE	Onshore short-term skilled	1.00
	Onshore short-term non-skilled	1.00
	Onshore long-tern skilled	1.00
	Onshore long-term non-skilled	1.00
	Offshore short-term skilled	0.50
	Offshore short-term non-skilled	0.50
	Offshore long-term skilled	0.10
	Offshore long-term non-skilled	0,10
OTHER OCS ASSUMPTIONS	Local government employment supported by OCS revenues	0
STATE GOV'T PER CAPITA SPENDING ASSUMPTIONS	State population	691
	State operating expenditures	1941
	State capital expenditures	342
	Per capita operating expenditures	2.81
	Per capita capital expenditures	0,49
EMPLOYMENT CALCULATIONS	Fish harvesting (resident)	186
	Mining: total	0
	Non-OCS resident (exog.)	0
	OCS resident (exog.)	0
	OCS enclave	0
	Construction: total	9
EMCOSS	Generated by state spending	3
	Rat io of st. pc exp. to '87	0.41
	Ratio of tot. ex. em. to '97	1.06
	Endogenous	14
	Endogenous share	
	Exogenous	6
	Exogenous share	

	VARIABLE	2020
	Manufacturing: total	263
	Resident fish processing (exog.)	105
	Enclave fish processing	158
	Resident share	0.400
	Other Manufacturing	0
	Trans., comm. and utilities	92
	Resident exogenous	10
	Resident, endogenous support	82
	Exogenous share	0.114
	Wholesale trade (endogenous)	20
	Retail trade	178
	Resident exogenous	38
	Resident, endogenous support	140
	Exogenous share	
	Fin., ins. and real estate (end.)	28
	Services	112
	Resident exogenous	13
	Resident, endogenous support	99
	Exogenous share	
	Miscellaneous (exog.)	10
	Federal government (exog.)	88
	State government	62
	Ratio of st. PC op. exp. to '87	0.65
	Ratio of tot. ex. em. to '87	1.06
	Local government	156
	Supported by local revenues	124
	Ratio of tot. ex. em. to '87	1.06
	Supported by state spending	32
	Ratio of st. PC op. exp. to '87	0.65
	Ratio of tot. ex. em. to '87	1.06
	Supported by OCS revenues	0
	Share supported by state	
CALCULATION	Total endogenous support	382
	construction	14
OF ENDOGENOUS	Trans., comm. and utilities	82
SUPPORT	Wholesale trade	20
EMPLOYMENT	Retail trade	140
	Fin., ins. and real estate	28
	Services	99
	Generated by:	
	Enclave employment	8
	Endogenous support employment	0.05
	generated per enclave employee	
	Resident exogenous driven	374

	VARIABLE	2020
	Mult: Change in Res. Exog. Emp.	1.09
	Shares of endogenous support:	
	Construction	0.04
	Trans., comm. and utilities	0.21
	Wholesale trade	0,05
	Retail trade	0.37
	Fin., ins. and real estate	0.07
	Services	0.26
EMPLOYMENT	Fish harvesting	186
SUMMARY :	Mining	0
TOTAL	Construction	9
	Manufacturing	263
	Trans., comm. and utilities	92
	Wholesale trade	20
	Retail trade	17a
	Fin., ins. and real estate	28
	Services	112
	Miscellaneous	10
	Federal government	88
	State government	62
	Local government	156
	Total, resident and enclave	1216
	Total exogenous (res. + enc.)	614
	Total enclave employment	158
	Total resident	1059
	Resident OCS	0
	Resident Non-OCS	1059
	Total exogenous resident	456
	Total endogenous resident	603
	Total endogenous support	382
	Enclave-driven	8
	Resident exogenous-driven	374
	State government,	62
	State-supported construction	3
	State supported local gov't	32
	Locally supported local gov't	124
POPULATION	Res. population age distribution:	
ASSUMPTIONS	Pre-school (0-4)	0.09
	School-age (5-18)	0,17
	Adult (19-64)	0.69
	Senior (65+)	0.05
POPULATION	Resident population total	2880
CALCULATIONS	Pre-school (0-4)	259
	School-age (5-14)	491
	Adult (15-64)	1993
	Senior (65+)	136
	Ratio, res. pop, to res. emp.	2.72
	Resident population	2880

	VARIABLE	2020
	Enclave population	158
	Total pop, , enclave plus resident	3037
CHECKS FOR POPULATION PROJECTIONS	School enrollment	
	Ratio, school enrollment to projected school-age pop.	
	Perm. Fund. Div. applications	
	Ratio, PFD app's to res. pop.	
	Ratio, PFD App's to total pop.	

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration.