

Economic and Demographic Systems Analysis: Nome, Alaska

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**ECONOMIC AND DEMOGRAPHIC SYSTEMS ANALYSIS:
NOME, ALASKA**

Final Technical Report

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Copies of the models described in the report may be obtained on diskettes from the Minerals Management Service.

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Executive Summary

This report documents an economic and demographic projection model for Nome, Alaska. The model was developed for in-house use by the Minerals Management Service (MMS) in analyzing potential employment and population impacts of OCS dredging supported out of Nome. The model is a "worksheet" in the LOTUS 1-2-3 spreadsheet program. The model is available on floppy disks and may be used on IBM compatible computers. Copies of the model may be obtained from the Minerals Management Service.

Data and assumptions in the report are based primarily on previous MMS studies. A sample set of model projections is presented in the report. These projections should be considered an example of one possible version of the future rather than as a prediction of the future.



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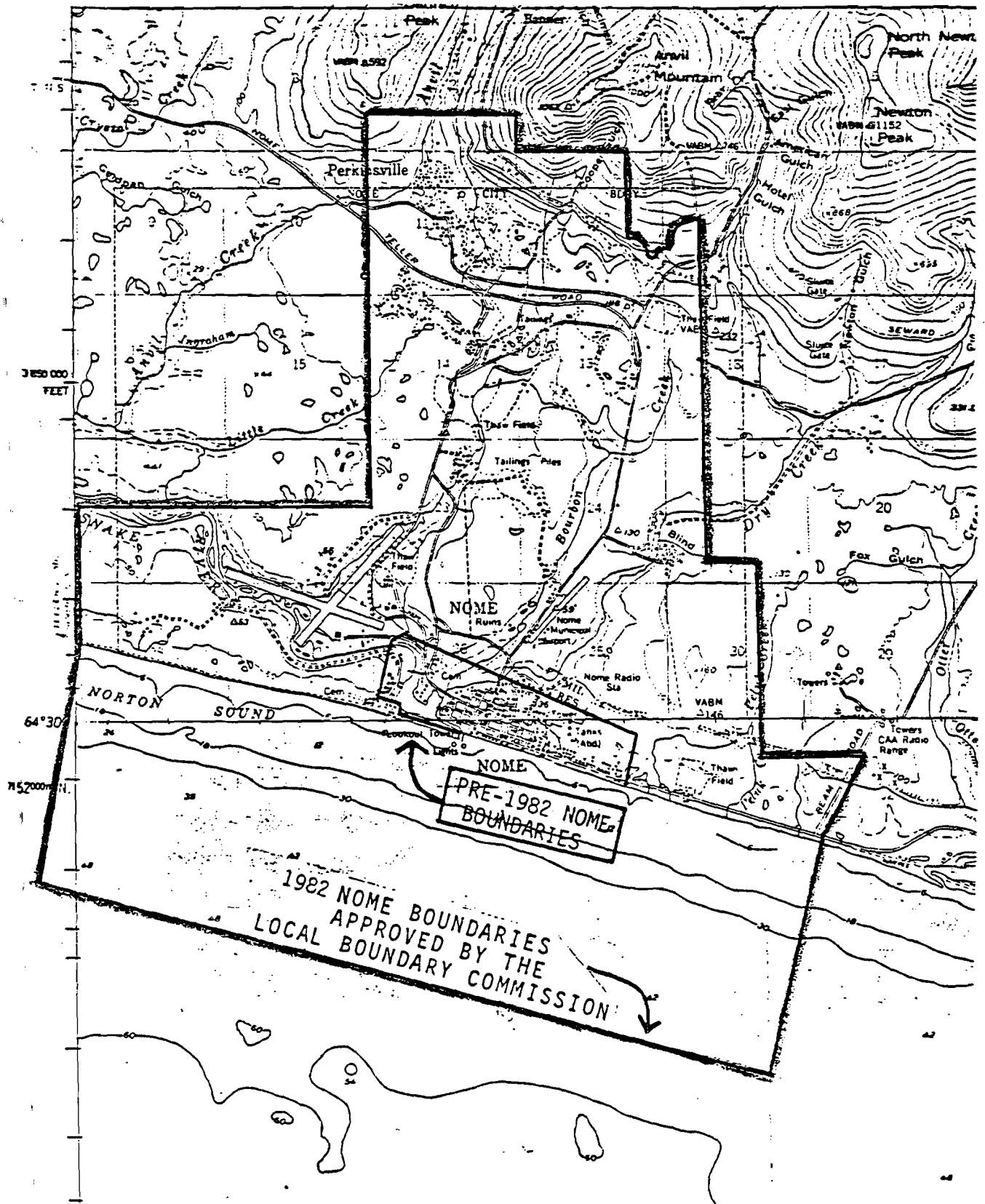
I. INTRODUCTION

This report documents an economic and demographic projection model for the community of Nome, Alaska. The model was developed for use by the Minerals Management Service (MMS) in analyzing potential employment and population impacts of OCS mining (offshore minerals dredging) near Nome. The model is a "worksheet" in the spreadsheet program LOTUS 1-2-3. The model is available on a floppy disk and may be used on IBM compatible computers. Copies of the model may be obtained from the Minerals Management Service.

Chapter II of the report describes the purpose of the model and its structure. Chapter III documents the employment assumptions used in the model. Chapter IV presents a "base case" projection for future employment and population in Nome without OCS mining development. The appendixes describe how to use the model and provide a listing of the model.

The community of Nome has been described in detail in several studies prepared for the Minerals Management Service's Social and Economic Studies Program. Recent studies include a 1984 study by the Institute of Social and Economic Research (*Community Economic and Demographic Systems Analysis of the Norton Basin Lease Sale 100*, Technical Report No. 111), a 1987 study by Impact Assessment, Inc. (*Institutional Change in Nome, 1980-1986*, Technical Report No. 127), a 1988 study by Kevin Waring and Associates (*A Demographic and Employment Analysis of Selected Alaska Rural Communities, Volume II*, Technical Report No. 137), and a 1989 study by Kevin Waring and Associates (*Nome Sociocultural Monitoring Study*, Technical Report No. 131). This report makes extensive reference to these earlier studies, which provided most of the data used in preparing the model. The purpose of the report is not to repeat or duplicate these earlier descriptions of the community, but rather to provide a comprehensive documentation of the model structure and assumptions. The model projections are for the area within the expanded Nome boundaries approved by the local boundary commission in 1982. This area is illustrated in Figure I.1.

Figure I.1: Area Covered by Nome Model Projections



II. STRUCTURE OF THE MODEL

The model documented in this report is 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 (mostly 1980-1987) as well as projections (1988-2010). Completing the model are macro commands which create several tables and graphs. Chapter III documents employment assumptions used in the model, and Chapter IV describes the projections resulting from these assumptions.

Purpose of the Model

The model was 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, specifically offshore gold dredging, in the Norton Basin. The model is similar in structure to other models recently developed for MMS by ISER to project the impacts of lease sales (see for example *Economic and Demographic Systems Analysis: Gulf of Alaska/Cook Inlet*, Technical Report No. 134). The model was used by the Minerals Management Service to prepare projections of the impacts of the proposed OCS Mining Program Norton Sound Lease Sale, as reported on pages IV-B-116 and IV-B-117 and in Appendix C of the Minerals Management Service's *OCS Mining Program Norton Sound Lease Sale: Second Draft Environmental Impact Statement* (June 1990).

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 model presented in this report was 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 in order to explore the effects of alternative assumptions.

Determinants of Model Structure

The structure of the model may be somewhat confusing at first to persons not familiar with the needs of the Minerals Management Service in preparing Environmental Impact Statements, with the economies of small Alaska communities such as Nome, or with Alaska data sources.

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. In some cases the assumptions are carefully estimated using sophisticated econometric techniques. However, if historical data are not available or if the economic structure of the community is changing rapidly, it may be necessary to simply assume relationships based on judgment.

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 model structure 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.

Several factors limit the complexity which is attainable or desirable for a projection model for Nome, including lack of data, lack of information on key economic and demographic relationships, and uncertainty about key external factors affecting future basic industry development, such as gold prices and future gold discoveries. Demographic data in particular are limited for Nome: the most recent U.S. census for which data are available took place more than a decade ago. Data from the 1990 census, when available, should help in providing a more accurate description of the community.

Because of data limitations, in developing the model 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 be. For example, there are no data since the 1980 census which might be used in developing age-race breakdowns for Nome's population or to validate our population projections by age and race.

Because Nome's economy is relatively small and undiversified, it is subject to rapid change in a short period of time. Sensitivity of the local economy to unpredictable changes within specific industries limits the confidence which can be placed in any particular forecast of future employment or population.¹ 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. For any given use of the model, model assumptions should be carefully reviewed on the basis of the most up-to-date information. For example, when data from the 1990 census become available, it will be possible to revise population and labor force participation assumptions in the model.

The structure of the model represents what we believe to be the best tradeoff between simplicity and complexity in meeting the needs of MMS, based on our experience in preparing similar projection models in the past. Essentially, we believe the structure is as complex as can be justified, given data limitations and other uncertainties.

Employment Categories

The measure of economic activity in the model is *annual average employment*. Because there are wide seasonal variations in employment in different industries, actual

¹For example, the day before this report went to press it was announced that operations of the Bima, a large offshore gold dredge and a major employer in Nome, were to be suspended (*Anchorage Daily News*, September 20, 1990).

employment at any given time during a year may differ widely from annual average employment for that year.

The model distinguishes between thirteen "categories" of employment. Table II.1 lists these categories and shows how future employment is calculated in each category.

The employment categories differ with respect to one or more of four factors: industry, residency, sector and origin. *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 data provided by the Alaska Department of Labor for Nome, which are discussed in Chapter III. In the model, with the exception of mining and federal, state and local government, most industries are grouped together in several broad employment categories.

Residency refers to the extent to which employees make their home within the community. "Resident" employees have their primary residence in the community and consider the community their home. "Enclave" employees work in the community, but live in self-sufficient camps or dormitories. In the Nome model, all employment is resident except for assumed enclave shares of offshore and onshore mining employment.

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

Origin is a term which we use in this report (it is not in general use by economists) to distinguish between exogenous employment and several categories of endogenous employment. "Exogenous" or externally-driven employment is determined by factors outside the community. It is not affected by changes in other Nome industries or in the

Table II.1: Calculation of Employment Projections in the Nome Model

Name of Category	Estimated 1987 Level	How Future Employment is Projected in the Model
Offshore mining	60	(Assumed)
Onshore mining	128	(Assumed)
Other basic	3	(Assumed)
Exogenous support (transportation, retail trade, etc., serving tourists or other communities)	324	(Assumed)
Federal government	78	(Assumed)
Exogenous state government (state government activities serving the state or region as a whole, rather than just Nome)	80	(Assumed)
State funded construction	9	Calculated as [previous year total Nome population] x [ratio of 1987 state-funded construction employment to 1986 total population (.00231)] x [ratio of MAP model projected statewide per capita capital expenditures in projection year to statewide per capita capital expenditures in 1987]
Endogenous state government (state government activities serving Nome)	121	Calculated as [previous year total Nome population] x [ratio of 1987 endogenous state government employment to 1986 total population (.031)] x [ratio of MAP model projected statewide per capita operating expenditures in projection year to statewide per capita operating expenditures in 1987]
State-funded local government	27	Calculated as [previous year school age population] x [ratio of 1987 school-district employment to 1986 school-age population (.122)] x [ratio of MAP model projected statewide per capita operating expenditures in projection year to statewide per capita operating expenditures in 1987]
Locally-funded local government	23	Calculated as [previous year total Nome population] x [ratio of 1985 locally-funded local government employment to 1984 total population (.008)]
Nome school district	97	Calculated as [previous year total Nome population] x [ratio of 1987 endogenous state government employment to 1986 total population (.031)] x [ratio of MAP model projected statewide per capita operating expenditures in projection year to statewide per capita operating expenditures in 1987]
Resident-driven endogenous support (retail trade, transportation, etc. serving Nome residents)	456	Proportional to all other resident employment. Calculated as [ratio of 1987 resident-driven endogenous support employment to all other 1987 resident employment] x [all other projection year resident employment (.572)]*
Enclave-driven endogenous support (retail trade, transportation, etc., serving enclave workers)	5	Proportional to enclave employment. Calculated as [assumed multiplier of .05] x [projection year enclave employment]

Note: Derivation of 1985 and 1987 employment estimates is discussed in Chapter III. * After using .572 for the resident driven endogenous support multiplier in our projections, a slight change in our estimate of offshore mining employment in 1987 reduced the estimated multiplier for that year to .557.

population of Nome. Gold-mining provides an example of a purely exogenous industry. If other factors were to cause employment or population in Nome to increase, this would not result in an increase in gold-mining employment.

In the model we distinguish between six categories of exogenous employment. Future employment in each of these categories is assumed directly.

In contrast, "endogenous" or internally-driven employment is determined by factors within the community. Endogenous employment is affected by changes in other industries or the population of Nome. Nome school-district employment provides an example of a purely endogenous industry. If the population of Nome were to decline significantly, school district employment would also decline.

In the model we distinguish between seven categories of endogenous employment. Future employment in each of these categories is projected as a function of either population or other employment, as described in Table II.1.

In Nome, some industries may be considered partially exogenous and partially endogenous. For example, the transportation industry serves both local residents as well as tourists and residents of other Seward Peninsula communities. In the model we distinguish between exogenous and endogenous support employment as well as between exogenous and endogenous state-government employment.

Summary of Development of Model Assumptions

The model provides employment and population figures for the years 1980 through 2010. In general, the figures for the years 1980 through 1987 are based upon historical data, while the figures for the years 1988 through 2010 are "projections." However, for some variables for which data were not available, the figures for years prior to 1988 were estimated.

Historical Employment and Population

In developing the Nome model, we began by estimating historical employment in each of the categories shown in Table II.1. Similarly, we prepared estimates of historical population using the best available data. In Chapter III, we describe the data sources and assumptions which we used to arrive at these estimates. We divided employment in some industries, such as construction and local government, into different categories based on our best judgment as to the relative importance of different types of spending in supporting employment. These historical estimates provided the basis for development of the relationships used in projecting future employment and population.

Future Exogenous Employment

For the six exogenous categories of employment (offshore mining, onshore mining, other basic, exogenous support, federal government, and exogenous state government), in developing our base case projections we assumed future levels of employment directly, based on the best available evidence about future trends in the industries. These exogenous employment assumptions "drive" the model. In Chapter IV, we describe our future exogenous employment assumptions.

The exogenous employment assumptions are critical to the model for two reasons. First, exogenous employment represents almost half of total employment. Second, our exogenous employment assumptions "drive" our projections for endogenous employment as well as population.

Future Endogenous Employment Multipliers

As shown in Table II.1, each category of future endogenous employment is projected by multiplying either total population, school-age population, or all other resident or enclave employment by a multiplier. We calculated these multipliers based on the historical ratios for the last year for which historical data were available (usually 1987). Although this

is a crude procedure for determining a multiplier, we did not have reliable time series data with which to estimate a multiplier using more rigorous econometric estimation techniques. An alternative procedure would have been to use the average ratios for the period 1980-1987; however, this would have resulted in small blips or jumps between 1987 and 1988 even in the absence of changes in exogenous employment.

In addition, for four categories of employment funded by state capital or operating expenditures, we adjusted these historical multipliers by an index of projected future per capita state capital or operating expenditures. These were derived from projections of ISER's MAP model of the Alaska economy, shown in Table II.2. State per capita operating and capital expenditures are both projected to decline substantially during the period 1988-2010. This causes the model to project state-funded employment in Nome to decline even if population and other employment remain constant.

Population Projections

The model divides the Nome population into Natives and non-Natives. These groups are further divided into four age-group categories: pre-school (0-4), school-age (5-18), adult (19-64), and senior (65+).

The population projections are based on estimates derived from the 1980 census of the distribution of the 1980 population by age group and race. Population in each subsequent year is based on changes from the previous year, as a result of migration and natural growth. Natural growth occurs at a fixed rate among the Native population. Both Native and non-Native migration occurs in order to match labor supply with labor demand or employment.

Earlier MMS studies, in particular Technical Reports 131 and 137, provide detailed data on Nome's population. As discussed in these studies, there are widely varying estimates for Nome's population over the past decade. The 1980 census figure of 2,301 is widely believed to have been a substantial underestimate. For our model, we assumed a

Table II-2: State Per Capita Operating and Capital Expenditure Assumptions
(thousands of dollars)

Year	Population	State Operating Expenditures	State Capital Expenditures	Per Capita State Operating Expenditures	Per Capita State Capital Expenditures
1985	540	2295	824	4.250	1.526
1986	536	2308	652	4.306	1.216
1987	529	1965	412	3.715	0.779
1988	524	1743	246	3.326	0.469
1989	528	1836	324	3.477	0.614
1990	528	1790	316	3.390	0.598
1991	532	1894	334	3.561	0.628
1992	535	1888	333	3.532	0.623
1993	538	1778	313	3.306	0.582
1994	547	1976	348	3.610	0.636
1995	552	1953	344	3.539	0.623
1996	555	1795	316	3.235	0.569
1997	564	2054	362	3.645	0.642
1998	573	2125	375	3.711	0.655
1999	581	2015	355	3.471	0.611
2000	588	1932	341	3.286	0.580
2001	594	1833	323	3.087	0.544
2002	604	1948	343	3.225	0.568
2003	612	1888	333	3.086	0.544
2004	620	1860	328	3.000	0.529
2005	636	1837	324	2.889	0.510
2006	652	1833	323	2.810	0.495
2007	662	1802	318	2.723	0.480
2008	677	1968	347	2.909	0.513
2009	691	1941	342	2.808	0.495
2010	706	1888	333	2.675	0.472

Source: Institute of Social and Economic Research MAP model projections, 1988.

1980 population of 3000. These population calculations are discussed in Technical Report 111, Appendix D.

Migration

In the model, migration of Natives and non-Natives is determined by labor market conditions, specifically labor demand and labor supply. Labor demand is assumed to be equal to resident employment.

Labor supply, or "desired employment" is based on assumed adult labor force participation rates for Natives and non-Natives. In the model these are referred to as the "maximum Native employment rate" and the "non-Native employment rate." These represent the maximum share of adult Natives and non-Natives that would take advantage of the opportunity to work in any given year. Labor supply is calculated by applying these rates to the adult population in the previous projection year.

If labor supply is less than labor demand, in-migration will occur to provide additional adult population until labor supply is equal to labor demand. The model provides for an assumption as to the share of Natives among the in-migrating adult population. This determines total in-migration of adult Natives and adult non-Natives. The ratio of Native adult in-migration to the previous year's Native population determines the "Native in-migration rate."

If labor supply is greater than labor demand, the model allocates labor demand among Natives and non-Natives in proportion to their shares in labor supply. The model provides for an assumption as to the ratio of Native hire to this Native share. If this share is less than 1.0, demand for Native labor will be proportionately less than the Native share of total labor supply.

If labor supply is greater than labor demand, non-Natives are assumed to migrate out of the community until the non-Native labor demand is equal to non-Native labor

supply. Natives are assumed to remain unless the adult Native employment rate falls below an assumed "minimum Native employment rate." If this occurs, adult Natives will migrate out of Nome until the Native employment rate equals this minimum Native employment rate.

Population

Non-Native adult population is determined by non-Native labor demand and the non-Native employment rate: migration is assumed to occur so that non-Native labor supply is equal to non-Native labor demand. Non-Native population in other age groups is determined by assumed shares of each age group in the total non-Native population.

Total Native population in each year grows at a rate equal to an assumed "natural growth rate" plus the "Native in-migration rate," which is determined as described above. Native population in each age category is determined by assumed shares of each age group.

"Children in school" is an estimate of the children in Nome schools as an assumed share of the "school age" population. "Children in school" provides the basis for estimation of Nome School District employment. This share is less than 100 percent partly because not all "school-age" children are in school and partly because our population estimates for the years on which our school district employment multiplier assumptions are based may have been lower than actual school-age population.

Labor Market, Migration and Population Assumptions

Table II.3 summarizes our labor market, migration and population assumptions. Our assumptions are constant throughout the entire projection period. All of these assumptions are based on our best judgment rather than empirical analysis. Although the model is theoretically defensible and reasonable, data do not exist to test the model structure and assumptions. Thus we do not claim that the actual processes function in exactly the simplified fashion depicted by the model, or that the assumed model parameters are

Table II.3: Labor Market, Migration and Population Assumptions

Maximum Native employment rate	.5
Minimum Native employment rate	.4
Non-Native employment rate	.7
Ratio of Native hire to Native share of available labor	1.0
Share of Natives among immigrants	.2
Native population natural growth rate	.024
Native population age distribution	
Pre-school (0-4)	.10
School-age (5-18)	.32
Adult (19-64)	.50
Senior (65+)	.08
Non-Native population age distribution	
Pre-school (0-4)	.07
School-age (5-18)	.19
Adult (19-64)	.70
Senior (65+)	.03
Ratio of children in school to school-age population	.75

necessarily correct. As a result we consider the model's population projections to be relatively less reliable than the model's employment projections.

Nevertheless, we believe that the model structure and assumptions represent a reasonable balance between what is theoretically defensible and what is practical, after having explored a number of alternative modeling structures. The model is sufficiently flexible to permit a wide variety of labor market and migration assumptions in order to explore different possible future population paths for Nome.

Understanding the Details of the Model Structure

For users who wish to thoroughly understand the details of the model structure, we recommend that they examine the model worksheet 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 (they have been "unprotected"). Cells which contain formulas do not appear in bold (they are "protected").



III. HISTORICAL EMPLOYMENT DATA AND ASSUMPTIONS

As for most Alaska communities, employment data are the best available measure of economic activity in Nome. However, existing employment data for Nome are imperfect. The 1980 census data are by now well out of date. In addition, the census data were flawed in a number of respects (ISER, Technical Report 111, page 8; Waring, Technical Report 131).

Historical Employment Data

Two sets of employment data are available for the period 1980 through 1986. First, the Alaska Department of Labor, under contract to MMS, has prepared special tabulations of "covered" wage and salary employment in Nome for the period 1980-1986. These data are based on monthly reporting to the Department of Labor by all employers located in Nome. Second, Impact Assessment conducted a detailed employment survey of Nome firms in April 1986, which is reported in their January 1987 report (Technical Report 127).

Table III.1 compares these two sets of employment estimates, by sector. There are substantial differences in the estimates in every sector, although employment estimates are generally of the same magnitude. It is difficult to say which set of estimates is more "correct." We may summarize likely problems for each set of estimates as follows:

Problems with Alaska Department of Labor data:

- o The data do not include self-employed persons.
- o The Department of Labor does not necessarily count employees at their place of work. Thus employees of firms headquartered in Nome who actually work elsewhere may be included in the estimates. Alternatively, employees of firms headquartered elsewhere who work in Nome may not be included (i.e. Ryan Air).

Table III-1: Comparison of Employment Estimates for Nome, 1980-87

	1980	1981	1982	1983	1984	1985	1986	1987(c)
MINING								
Department of Labor	*	*	*	*	100(a)	62	87(b)	
Impact Assessment, Inc.	162	172	192	162	158	107	149	197
CONSTRUCTION								
Department of Labor	22(b)	36(b)	61	75	67	41	31	
Impact Assessment, Inc.	14	16	22	27	29	71	71	26
MANUFACTURING								
Department of Labor	*	*	*	*	*	*	*	
Impact Assessment, Inc.	9	9	9	9	9	9	9	9
TRANSPORTATION, COMMUNICATION AND PUBLIC UTILITIES								
Department of Labor	120	120	120	124	100	74	77	
Impact Assessment, Inc.	68	74	78	108	126	127	144	149
TRADE								
Department of Labor	148	176	196	195(b)	200	202	221	
Impact Assessment, Inc.	222	225	230	235	238	236	225	224
FINANCE, INSURANCE AND REAL ESTATE								
Department of Labor	30	36	37	47	45	61	40	
Impact Assessment, Inc.	10	10	10	10	19	25	21	21
SERVICES								
Department of Labor	540	517	406	432	446	471	456	
Impact Assessment, Inc.	242	261	285	306	353	355	357	356
FEDERAL GOVERNMENT								
Department of Labor	98	89	79	88	91	98	93	
Impact Assessment, Inc.	104	107	107	98	93	93	93	77
STATE GOVERNMENT								
Department of Labor	172	186	213	236	236	240	236	
Impact Assessment, Inc.	201	218	211	219	216	218	214	196
LOCAL GOVERNMENT								
Department of Labor	336	389	435	511	575	604	598	
Department of Labor, Adj.(d)	158	195	194	224	201	175	226	
Impact Assessment, Inc.	136	158	154	145	146	155	154	137
TOTAL								
Department of Labor	1568	1671	1667	1804	1860	1858	1847	
Department of Labor, Adj.(d)	1390	1477	1426	1517	1486	1429	1475	
Impact Assessment, Inc.	1169	1251	1300	1321	1389	1415	1439	1395

* Figures withheld to comply with disclosure regulations.

(a) Prorated from six months of data. (b) Prorated from nine months of data. (c) Projected.

(d) Adjusted by subtracting estimated employment for Bering Straits School District.

- o The estimates of local government employment include employees of the Bering Straits School District, which moved from Nome to Unalakleet in 1982 (Fried). Even prior to the move, most of these employees did not work in Nome. Table III.1 reports adjusted Department of Labor figures for local government employment and total employment, which were derived by subtracting estimated Bering Straits School District employment.

Problems with Impact Assessment, Inc. data:

- o The data are based on survey interviews which asked for retrospective employment data for a six-year period. The data may not include employment in earlier years for firms which were no longer in business at the time the Impact Assessment figures were collected.
- o Impact Assessment apparently did not convert seasonal and part-time employment into average annual equivalents (Waring).
- o Impact Assessment did not classify all employment by sector according to standard Department of Labor procedures (Waring).

If we compare the adjusted Department of Labor total employment figures with the Impact Assessment total figures, we see that the Impact Assessment figures are at first substantially lower but grow closer over time. This suggests that the retrospective Impact Assessment survey may have missed counting employees of firms no longer in business at the time the survey was done.

Despite the potential undercounting of employment in the earlier years by the Impact Assessment data, we have used these data as the basis for our model because they are much more detailed. For purposes of projection, we base most of our model's structural assumptions upon the 1987 data, which are likely to be relatively more accurate

and which are quite close to the Department of Labor figures.

Estimation of Historical Employment by Category

We estimated historical employment in each of the thirteen categories shown in Table II.1 for the years 1980-1987, based on the Impact Assessment employment survey data. Table III-2 shows, in detail, how we allocated Impact Assessment's employment estimates, by sector and firm, among our different employment categories.

Table III-3 summarizes the employment estimates by category derived in Table III-2. The bottom half of this table shows the percentage share of different employment categories in total employment. Exogenous employment accounted for about 48 percent of assumed historical employment for the period 1980-1987. The share of mining in exogenous employment declined during this period, while the share of exogenous support employment increased. Endogenous support employment, endogenous state government employment and Nome school district employment represented the most important categories of endogenous employment.

Table III-4 summarizes estimated employment during the period 1980-1987 based on the type of spending which supports it. Employment was approximately equally divided between that supported by private spending outside the community, that supported by state and federal spending, and that supported by local public and private spending within the community.

Below, we briefly discuss our historical employment estimates for several categories.

Offshore Dredging Employment

Offshore dredging refers to employment on board or directly supporting offshore dredges. At the time the study research was carried out (1988), the only such dredge was the BIMA, which was owned and operated by Western Gold Exploration and Mining

Table III.2: Calculation of Nome Model Historical Employment Assumptions

EMPLOYMENT CATEGORY	ESTIMATION PROCEDURE (based on Impact Assessment, Inc. employment estimates by SECTOR or firm)	1980	1981	1982	1983	1984	1985	1986	1987
		=====	=====	=====	=====	=====	=====	=====	=====
EXOGENOUS EMPLOYMENT		549	590	624	618	645	602	646	674
Offshore dredging	Inspiration Mines (MINING)							40	60
Mining, except offshore dredging	Total	160	170	190	160	150	100	100	128
	Alaska Gold (MINING)	160	170	190	160	125	70	70	100
	Windfall Mining (MINING)					25	30	30	28
Other basic	FISHING	1	1	2	2	2	2	3	3
Support activities for non-local demand	Total	206	228	244	273	315	322	325	324
	50% of Air Carriers (TRANSPORTATION)	11	13	16	29	37	45	46	49
	10% of Marine and Land (TRANSPORTATION)	4	4	4	4	4	4	4	4
	20% of TRADE	44	45	46	47	48	47	45	45
	Norton Sound Health Corporation (SERVICES)	99	117	128	150	178	175	181	181
	Bering Straits Native Corp. (SERVICES)	22	22	22	12	12	12	12	8
	20% of All other services (SERVICES)	24	24	26	29	33	34	33	33
	20% of FINANCE, REAL ESTATE	2	2	2	2	4	5	4	4
Federal government for non-local services	FEDERAL GOVERNMENT	101	104	104	96	91	91	91	78
State government for non-local services	40% of STATE GOVERNMENT	80	87	84	88	86	87	87	80

(continued on next page)

Table III.2: Calculation of Nome Model Historical Employment Assumptions (continued)

EMPLOYMENT CATEGORY	ESTIMATION PROCEDURE (based on Impact Assessment, Inc. employment estimates by SECTOR or firm)	1980	1981	1982	1983	1984	1985	1986	1987
		617	658	668	702	743	810	795	729
ENDOGENOUS EMPLOYMENT									
Construction supported by State spending	Total	2	2	2	2	8	52	54	9
	Luce Rock and Gravel (MINING)					4	4	4	4
	Martinson Gravel (MINING)	2	2	2	2	4	3	5	5
	Kiewit-Pacific (CONSTRUCTION)						45	45	
State government for local services	Total	121	131	127	131	130	131	130	121
	60% of STATE GOVERNMENT	121	131	127	131	130	131	130	121
City of Nome	City of Nome (LOCAL GOVERNMENT)	33	52	46	45	45	52	45	40
Supported by state revenue sharing	(Based on share of "State sources" in total revenues: see page 60).		23	23	18	17	22		
Supported by local taxes			29	23	27	28	30		
Nome School District	Nome School District (LOCAL GOVERNMENT)	103	106	108	100	101	103	109	97
Support jobs created by all other emp.	Total	359	367	385	423	460	472	457	462
	All CONSTRUCTION except Kiewit-Pacific	14	16	22	27	29	26	26	26
	MANUFACTURING	9	9	9	9	9	9	9	9
	50% of Air Carriers (TRANSPORTATION)	11	13	16	29	37	45	46	49
	90% of Marine and Land (TRANSPORTATION)	38	38	38	38	38	38	35	36
	COMMUNICATIONS	5	6	5	9	10	11	12	12
	80% of TRADE	178	180	184	189	191	189	181	180
	80% of All Other Services (SERVICES)	97	98	104	115	130	134	131	134
	80% of FINANCE, REAL ESTATE	8	8	8	8	15	20	17	17
Supported by spending of non-residents	(Based on assumptions that 50% of offshore dredging and other mining employment is non-resident, and 5 resident support jobs are generated for every 100 non-resident jobs.)	4	4	5	4	4	3	4	5
Supported by spending of residents		354	363	380	419	455	470	453	456
TOTAL		1166	1248	1292	1320	1388	1412	1441	1402

NOTES: Employment estimates are based on figures provided in Nome Employment Table in Impact Assessment, Inc., Institutional Change in Nome, 1980-1986, SESP Technical Report No. 127 (1987), pages 87-91. This table is reprinted in Appendix A of this report. Upper case words refer to employment categories. Lower case words refer to specific employers. Errors in totals were corrected.

Table III.3: Summary of Employment Assumptions by Model Employment Category

EMPLOYMENT CATEGORY	PRIMARILY SUPPORTED BY	80	81	82	83	84	85	86	87
NUMBER:									
EXOGENOUS EMPLOYMENT: not affected by other economic activity in Nome		549	590	624	618	645	602	646	674
Offshore dredging	Non-local private spending	0	0	0	0	0	0	40	60
Mining, except offshore dredging	Non-local private spending	160	170	190	160	150	100	100	128
Other basic	Non-local private spending	1	1	2	2	2	2	3	3
Exogenous support	Non-local private spending	206	228	244	273	315	322	325	324
Federal government	Federal spending	101	104	104	96	91	91	91	78
Exogenous state government	State spending for non-local services	80	87	84	88	86	87	87	80
ENDOGENOUS EMPLOYMENT: affected by other economic activity in Nome		617	658	668	702	743	810	795	729
State-supported construction	State capital spending	2	2	2	2	8	52	54	9
Endogenous state government	State spending for local services	121	131	127	131	130	131	130	121
Nome city government	Total	33	52	46	45	45	52	45	40
	State revenue sharing (a)	15	23	23	18	17	22	19	17
	Local taxes (a)	18	29	23	27	28	30	26	23
Nome school district	State education spending	103	106	108	100	101	103	109	97
Endogenous support	Total	359	367	385	423	460	472	457	462
	Spending of non-residents	4	4	5	4	4	3	4	5
	Spending of residents	354	363	380	419	455	470	453	456
TOTAL		1166	1248	1292	1320	1388	1412	1441	1402
PERCENT:									
EXOGENOUS EMPLOYMENT: not affected by other economic activity in Nome		47	47	48	47	46	43	45	48
Offshore dredging	Non-local private spending	0	0	0	0	0	0	3	4
Mining, except offshore dredging	Non-local private spending	14	14	15	12	11	7	7	9
Other basic	Non-local private spending	-	-	-	-	-	-	-	-
Exogenous support	Non-local private spending	18	18	19	21	23	23	23	23
Federal government	Federal spending	9	8	8	7	7	6	6	6
Exogenous state government	State spending for non-local services	7	7	7	7	6	6	6	6
ENDOGENOUS EMPLOYMENT: affected by other economic activity in Nome		53	53	52	53	54	57	55	52
State-supported construction	State capital spending	-	-	-	-	1	4	4	1
Endogenous state government	State spending for local services	10	10	10	10	9	9	9	9
Nome city government	Total	3	4	4	3	3	4	3	3
	State revenue sharing	1	2	2	1	1	2	1	1
	Local taxes	2	2	2	2	2	2	2	2
Nome school district	State education spending	9	8	8	8	7	7	8	7
Endogenous support	Total	31	29	30	32	33	33	32	33
	Spending of non-residents	-	-	-	-	-	-	-	-
	Spending of residents	30	29	29	32	33	33	31	33
TOTAL		100	100	100	100	100	100	100	100

Notes: -: Less than .5 percent. (a) Share supported by State revenue sharing estimated from share of local government revenues supported by State revenue sharing during the years 1981-1985.

Source: Impact Assessment, Inc. 1986 Survey. See Table III.2 for details of calculations.

Table III.4: Estimated Nome Employment by Source of Support, 1980-1987

EMPLOYMENT CATEGORY	80	81	82	83	84	85	86	87
NUMBER:								
EXPORT SUPPORTED EMPLOYMENT	367	399	436	435	467	424	468	515
Offshore dredging	0	0	0	0	0	0	40	60
Mining, except offshore dredging	160	170	190	160	150	100	100	128
Other basic	1	1	2	2	2	2	3	3
Exogenous support	206	228	244	273	315	322	325	324
FEDERALLY SUPPORTED EMPLOYMENT	101	104	104	96	91	91	91	78
STATE SUPPORTED EMPLOYMENT	321	349	344	339	342	395	399	324
Exogenous state government	80	87	84	88	86	87	87	80
Endogenous state government	121	131	127	131	130	131	130	121
State-supported construction	2	2	2	2	8	52	54	9
Nome city government	15	23	23	18	17	22	19	17
Nome school district	103	106	108	100	101	103	109	97
LOCALLY SUPPORTED EMPLOYMENT	377	396	408	450	488	502	483	485
Nome city government	18	29	23	27	28	30	26	23
Endogenous support	359	367	385	423	460	472	457	462
TOTAL	1166	1248	1292	1320	1388	1412	1441	1402
PERCENT:								
EXPORT SUPPORTED EMPLOYMENT	32	32	34	33	34	30	32	37
Offshore dredging	0	0	0	0	0	0	3	4
Mining, except offshore dredging	14	14	15	12	11	7	7	9
Other basic	-	-	-	-	-	-	-	-
Exogenous support	18	18	19	21	23	23	23	23
FEDERALLY SUPPORTED EMPLOYMENT	9	8	8	7	7	6	6	6
STATE SUPPORTED EMPLOYMENT	27	28	27	26	25	28	28	23
Exogenous state government	7	7	7	7	6	6	6	6
Endogenous state government	10	10	10	10	9	9	9	9
State-supported construction	-	-	-	-	1	4	4	1
Nome city government	1	2	2	1	1	2	1	1
Nome school district	9	8	8	8	7	7	8	7
LOCALLY SUPPORTED EMPLOYMENT	32	32	32	34	35	36	34	35
Nome city government	2	2	2	2	2	2	2	2
Endogenous support	31	29	30	32	33	33	32	33
TOTAL	100	100	100	100	100	100	100	100

Notes: -: Less than .5 percent. (a) Share supported by State revenue sharing estimated from share of local government revenues supported by State revenue sharing during the years 1981-1985.

Source: Impact Assessment, Inc. 1986 Survey. See Table III.2 for details of calculations.

Company (Westgold). The operations of the BIMA provide some indication as to the type of employment which might be created by future offshore dredging if further offshore minerals leasing takes place in the Nome area.

The BIMA is the largest offshore mining vessel in the world. Built in 1976 for operation as a tin dredge in Malaysia, it is 14 stories high, 525 feet long and 140 feet wide. It is a self-contained mining and processing unit with a capacity of over 500 cubic yards of material per hour (Inspiration Gold, Inc.).

The BIMA was brought to Nome during the summer of 1986 and completed a 40 day pilot test season, during which it recovered approximately 3,000 ounces of gold from a state lease within the three-mile zone. During the winter of 1986, the BIMA was transported to Tacoma, Washington for modifications. The BIMA returned to Nome in June 1987 and worked in an area approximately 3.5 miles west of Nome in 20-40 feet of water from 2,000-5,000 feet offshore, dredging old beaches formed during the ice ages when the sea level was lower. 1987 production totaled 36,000 ounces of refined gold. During the winter of 1987 the BIMA was docked behind a temporary seawall near Nome while exploration crews drilled the sea floor from the pack ice to test gold deposits for future dredging (Inspiration Gold, Inc.; Associated Press).

According to the Impact Assessment survey, employment on or directly supporting the Bima was 40 in 1986. We assumed annual average employment of 85 in subsequent years. Workers are helicoptered to and from the vessel for each of two shifts. Employment includes both skilled and unskilled jobs (deckhands and roustabouts).

Onshore Mining Employment

Nome's colorful origins were as a gold mining boom town, and onshore gold mining continues to be important today. Most mining operations were shut down before or during World War II. However, gold dredging resumed during the 1970's. Currently several dredges and conventional placer mines are in operation in or near Nome.

According to the Impact Assessment survey, employment in onshore mining declined from about 190 in 1982 to 100 in 1986. Department of Labor data suggest slightly slower onshore mining employment of about 60 (Table II-1). The Impact Assessment data may be overestimated due to seasonal variations.

Other Basic Employment

Economists typically use the term "basic" to refer to resource production and manufacturing industries. Basic employment other than mining is limited to a few jobs in commercial fishing.

Exogenous and Endogenous Support Employment

Economists use the term "support" to refer to industries which provide support services to other industries or individuals, such as transportation, trade, services, finance, insurance and real estate.

Economists use the terms "exogenous" and "endogenous" with the approximate meanings of "external" and "internal." In describing employment in Nome, we use the term "exogenous" to refer to employment which is supported by spending from outside the community or region, and "endogenous" to refer to employment which is supported by spending of firms or residents within the community.

Because Nome is a regional center, it provides support services to surrounding communities. The tourism industry in Nome also provides support services such as hotels and transportation. These support services may be thought of as exogenous because they are supported by spending from outside the community. The remaining support employment may be considered endogenous.

It is not possible to tell exactly how much support employment in Nome is endogenous and how much is exogenous. As shown in Table III.2, we assumed varying

percentage shares of exogenous and endogenous employment for different support industries and firms, based on rough judgments as to the extent to which they are supported by local or non-local spending. As a result of these assumptions, we estimated that about 40 percent of support employment in Nome is exogenous, and about 60 percent is endogenous.

We further divided endogenous support employment into that supported by resident spending and that supported by spending of non-resident workers in offshore and onshore mining. Again, it was not possible to estimate these shares exactly. We assumed that one half of both onshore and offshore mining employment is non-resident. These assumptions result in an estimate of only about five support jobs supported by non-resident spending, with the great majority being supported by resident spending.

Federal Government Employment

Federal government employment in Nome is slightly under 100. The major employers are the National Guard, the Federal Aviation Administration, the Post Office, and the Bureau of Indian Affairs.

Exogenous and Endogenous State Government Employment

State government is a major employer in Nome, generating about 200 jobs. We use the terms "exogenous" and "endogenous" for state government employment with a meaning similar to that which we used for support: we considered that portion of state employment serving the surrounding region or the state as a whole to be "exogenous," and that part serving local residents to be "endogenous." We assumed that 60 percent of state government employment in Nome is endogenous.

State-Supported Construction Employment

During the first half of the 1980's, state construction projects were an important source of employment throughout Alaska. Although private rather than public employment, these jobs were directly supported by state spending. We did not have information on which construction employment in the Impact Assessment survey could be attributed to state spending. The assumptions shown in Table III.2 resulted in our estimating that state-supported construction employment was fairly low in Nome except in 1985 and 1986.

IV. BASE CASE PROJECTIONS

This chapter presents a "base case" set of projections for Nome. As stated earlier, these projections are not intended as a prediction of the future for Nome, but rather as an illustration of one possible future for Nome, assuming that the model assumptions come to pass. The base case presented in this chapter is fairly simplistic, in that the only factors causing change in the model are gradual growth in exogenous support employment, declining state per capita expenditures, and Native natural population growth.

The relative simplicity of this "base case" projection is appropriate for the primary intended use of the model, which is to examine the *impacts* of specific projects upon the community of Nome, in particular OCS mining development. Although many other factors might cause actual growth in the absence of OCS development to be higher or lower than projected in this base case, as long as the base case does not grossly overestimate or underestimate the future size of the community it will provide a reasonable tool with which to examine the employment and population *impacts* of an OCS project.

Base Case Assumptions

As stated above, all future change projected in the base case is driven by three factors. First, exogenous support employment is assumed to increase gradually from its 1987 level of 324 by 2 percent per year to a level of 419 in the year 2000 and 511 in 2010. Second, per capita state government funded employment is assumed to decline gradually over time as statewide per capita expenditures decline, due to declining state oil revenues. Finally, Native population growth continues due to natural growth. This rise in population, which is not offset by out-migration, results in increased employment in sectors where employment is driven by population, in particular local-government employment and state government endogenous employment.

Base Case Projections

Our base case projections are summarized in Table IV-1 and Figures IV-1 and IV-2. In addition, detailed projections through the year 2001 are provided in Appendix B, which provides a complete listing of the model as the worksheet appears on the screen for the base case.

Total employment rises from 1426 in 1987 to 1626 in 2000 and 1765 in 2010. During this period, basic employment remains constant, support employment rises steadily, and government employment fluctuates as the effects of declining state funding are approximately offset by the effects of rising population.

Total Native population increases substantially, from 2223 in 1987 to 3069 in 2000 and 3896 in 2010. Non-Native population fluctuates, as increasing employment opportunities are offset by increasing competition for available jobs from Native workers.

As stated in Chapter II, we consider our employment projections to be more "reliable" than our population projections, in the sense that we are relatively more certain about our assumptions. In particular, the assumptions of continued steady growth of the Native population in the face of assumed low labor force participation and employment rates is hard to defend for several decades into the future. However, we believe these to be *reasonable* assumptions, in the sense that they are as justifiable as other, reasonable assumptions which we might make instead.

Many other factors which would be difficult or impossible to model may well affect the future population as well as the distribution of the population between Natives and non-Natives. Thus it is important to remember that our base case population projections are not a prediction but rather an illustration of the population growth which results from these assumptions.

Table IV.1: Summary of Base Case Employment and Population Projections

YEAR	EMPLOYMENT					POPULATION		
	Dredging	Basic	Support	Gov't	Total	Native	Non-Native	Total
1980	0	161	566	438	1165	1769	1231	3000
1981	0	171	596	480	1247	1859	1421	3280
1982	0	192	630	469	1291	1917	1478	3395
1983	0	162	697	460	1319	1978	1535	3513
1984	0	152	782	453	1387	2051	1641	3693
1985	0	102	846	464	1412	2118	1714	3832
1986	40	103	835	462	1440	2171	1721	3892
1987	85	131	794	416	1426	2223	1649	3872
1988	85	131	815	375	1406	2276	1581	3858
1989	85	131	833	384	1433	2331	1571	3902
1990	85	131	843	383	1441	2387	1561	3948
1991	85	131	862	396	1474	2450	1584	4034
1992	85	131	875	400	1491	2511	1591	4102
1993	85	131	881	391	1487	2571	1571	4142
1994	85	131	906	412	1534	2642	1610	4252
1995	85	131	919	415	1550	2707	1614	4321
1996	85	131	921	400	1537	2772	1584	4355
1997	85	131	952	430	1598	2851	1635	4486
1998	85	131	972	442	1630	2927	1666	4593
1999	85	131	979	433	1628	2997	1647	4644
2000	85	131	986	424	1626	3069	1618	4687
2001	85	131	993	413	1622	3143	1582	4725
2002	85	131	1014	426	1657	3218	1581	4799
2003	85	131	1025	421	1662	3295	1567	4862
2004	85	131	1037	419	1672	3375	1551	4926
2005	85	131	1049	415	1680	3456	1532	4987
2006	85	131	1062	413	1691	3539	1513	5052
2007	85	131	1075	410	1702	3623	1494	5117
2008	85	131	1102	429	1747	3716	1516	5231
2009	85	131	1116	427	1760	3805	1508	5313
2010	85	131	1128	421	1765	3896	1490	5386

Figure IV.1: Base Case Employment Projections

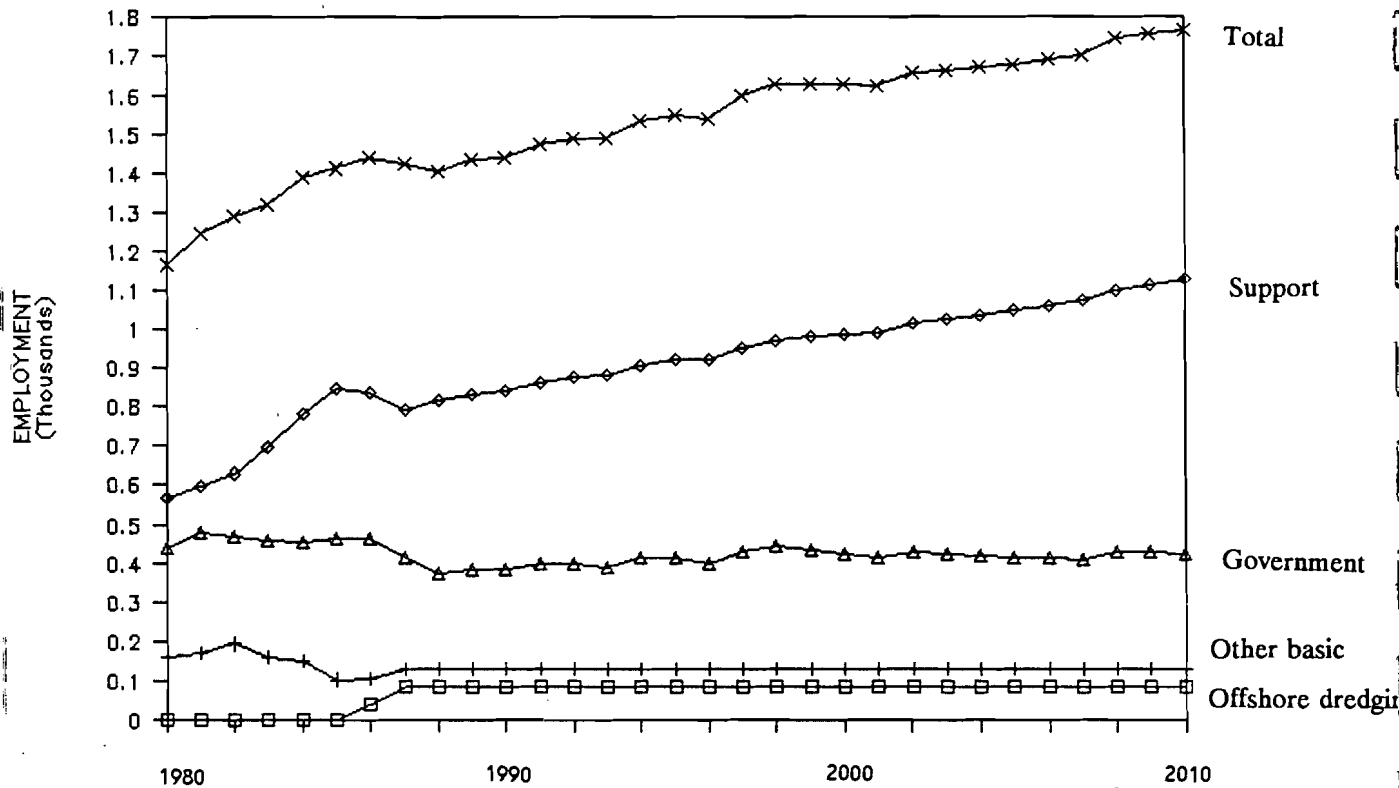
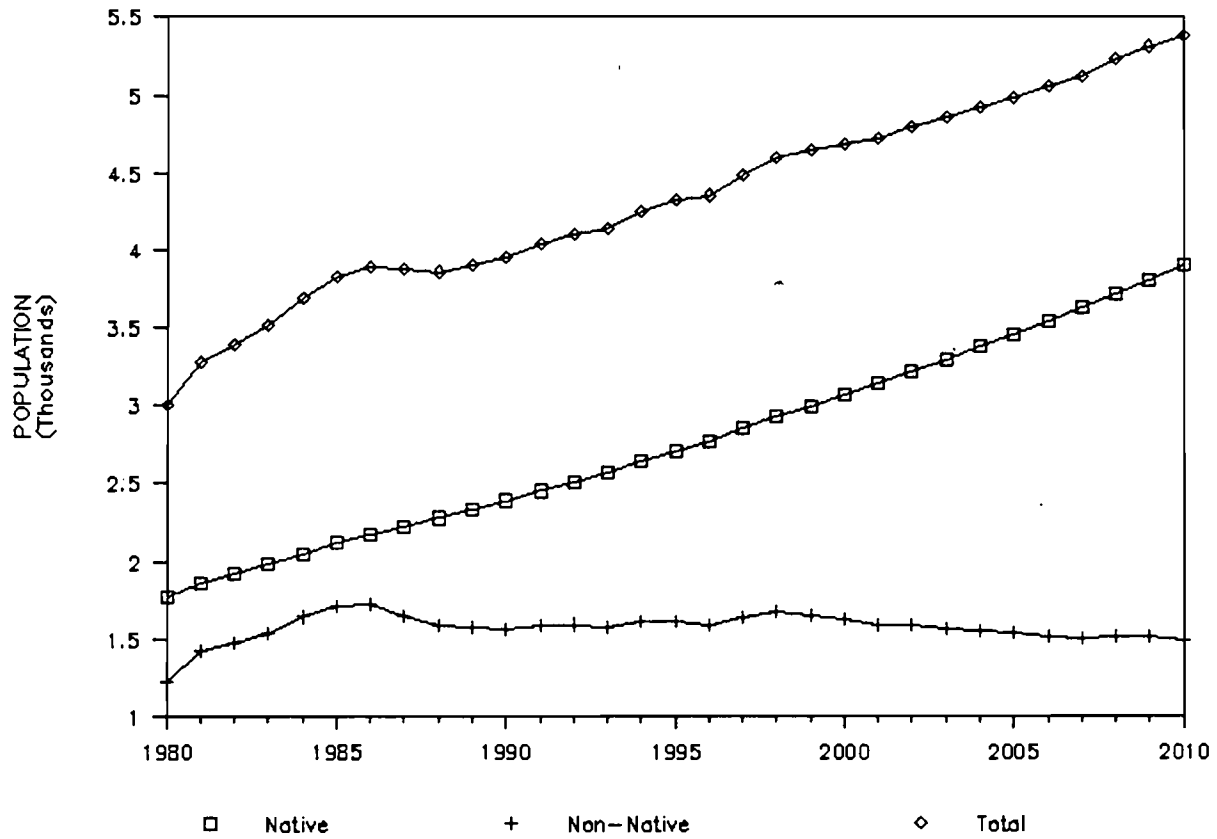


Figure IV.2: Base Case Population Projections



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APPENDIX A: USING THE NOME MODEL

The Nome model is stored on the disk in a file named NOME.WK1. The model is invoked by a Lotus 1-2-3 "File retrieve" command. In the worksheet, each column beginning with column C represents a year. Variable definitions are given in Column B. Macros are listed in the upper-left hand corner of the worksheet.

Variables which were entered directly into the model as assumptions have been "unprotected," so that they appear in bold on the computer screen. Variables which are calculated by the model are "protected" so that they do not appear in bold. Unless the user wishes to explicitly change the model structure, variables should never be entered directly in "protected" cells, because this will replace the formula entered in the cell.

At any time, the worksheet represents one economic and demographic simulation for Nome. In order to examine the impact of a change in an assumption, type in the new assumptions (these should be entered only in cells which appear in bold). Then hit macro "K." This saves a summary of the projections with the initial assumptions in Table 2, recalculates the model for the new assumptions, and saves a summary of the new projections in Table 1. Table 3 and Graph 3 may be used to compare the changes in key model variables as a result of changes in assumptions.

It is useful when working with the model to use the "WORKSHEET TITLES BOTH" command so that the years and variables names are visible wherever one is in the worksheet.

EMPLOYMENT TOTALS	Offshore Dredging	0	0	0	0	0	0	40	85	85
	Basic	161	171	192	162	152	102	103	131	131
	Support	566	596	630	697	782	846	835	794	815
	Government	438	480	469	460	453	464	462	416	375
	Total	1165	1247	1291	1319	1387	1412	1440	1426	1406
	Total pop., actual and calculated	3000	3039	3430	3620	3791	3876	3892	3872	3858
	Total population, calculated	3000	3280	3395	3513	3693	3832	3892	3872	3858
	Non-Native population, total	1231	1421	1478	1535	1641	1714	1721	1649	1581
	Native population, total	1769	1859	1917	1978	2051	2118	2171	2223	2276
LABOR MARKET AND MIGRATION ASSUMPTIONS	Nonresident share of employment									
	Offshore dredging	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40	0.40
	Mining	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Maximum Native emp. rate		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Minimum Native emp. rate		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	Non-Native emp. rate		0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Ratio of Native hire to Native share of available labor	1	1	1	1	1	1	1	1	1
Share of Natives among immigrants		0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	
LABOR MARKET	Resident employment	1085	1162	1196	1239	1312	1362	1374	1328	1308
	Native desired employment		440	462	477	492	510	527	540	553
	Non-Native desired employment		605	699	727	755	807	843	846	811
	Total desired employment		1045	1161	1204	1247	1317	1370	1386	1364
	Native employment		463	469	484	505	519	528	517	530
	Non-Native employment		699	727	755	807	843	846	811	777
POPULATION ASSUMPTIONS	Native population nat. growth rate		0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
	Native pop. age distribution:									
	Pre-school (0-4)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	School-age (5-18)	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
	Adult (19-64)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	Senior (65+)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
	Non-Native pop. age distribution:									
	Pre-school (0-4)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
	School-age (5-18)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
	Adult (19-64)	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
	Senior (65+)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
POPULATION CALCULATIONS	Native in-migration rate		0.0267	0.0075	0.0074	0.0132	0.0088	0.0008	0.0000	0.0000
	Native: Total	1769	1859	1917	1978	2051	2118	2171	2223	2276
	Pre-school (0-4)	180	189	195	201	208	215	220	226	231
	School-age (5-18)	574	603	622	641	665	687	704	721	738
	Adult (19-64)	879	925	954	984	1020	1054	1080	1106	1133
	Senior (65+)	136	142	147	151	157	162	166	170	174
	Non-Native: Total	1231	1421	1478	1535	1641	1714	1721	1649	1581
	Pre-school (0-4)	89	102	106	110	118	123	123	118	113
	School-age (5-18)	239	20	21	21	23	24	24	23	22
	Adult (19-64)	864	998	1038	1079	1153	1204	1209	1158	1111
	Senior (65+)	39	31	33	34	36	38	38	36	35
	Total population	3000	3280	3395	3513	3693	3832	3892	3872	3858
	Pre-school (0-4)	269	291	301	311	326	338	344	344	345
	School-age (5-18)	813	623	643	663	688	711	728	744	760
	Adult (19-64)	1743	1923	1992	2062	2173	2258	2289	2264	2243
	Senior (65+)	175	174	180	185	193	200	204	207	209
	Ratio of children in school to population aged 5-18	0.90							0.75	0.75
	Children in school	732	717	716	731	759	766	795	558	570

85	85	85	85	85	85	85	85	85	85	85	85	85
131	131	131	131	131	131	131	131	131	131	131	131	131
833	843	862	875	881	906	919	921	952	972	979	986	993
384	383	396	400	391	412	415	400	430	442	433	424	413
1433	1441	1474	1491	1487	1534	1550	1537	1598	1630	1628	1626	1622

3902	3948	4034	4102	4142	4252	4321	4355	4486	4593	4644	4687	4725
3902	3948	4034	4102	4142	4252	4321	4355	4486	4593	4644	4687	4725
1571	1561	1584	1591	1571	1610	1614	1584	1635	1666	1647	1618	1582
2331	2387	2450	2511	2571	2642	2707	2772	2851	2927	2997	3069	3143

0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
1	1	1	1	1	1	1	1	1	1	1	1	1

0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
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1335	1343	1376	1393	1389	1436	1452	1439	1500	1532	1530	1528	1524
566	580	594	609	625	640	657	673	689	709	728	746	763
777	773	767	779	782	772	792	794	779	804	819	810	796
1344	1352	1361	1388	1407	1412	1449	1467	1468	1513	1547	1555	1559
563	576	597	610	617	644	658	661	696	713	720	732	746
773	767	779	782	772	792	794	779	804	819	810	796	778

0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
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0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08

0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

0.0000	0.0000	0.0024	0.0007	0.0000	0.0038	0.0004	0.0000	0.0046	0.0027	0.0000	0.0000	0.0000
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2331	2387	2450	2511	2571	2642	2707	2772	2851	2927	2997	3069	3143
237	242	249	255	261	268	275	281	289	297	304	312	319
756	774	795	814	834	857	878	899	925	949	972	996	1019
1160	1188	1219	1249	1279	1315	1347	1379	1418	1456	1491	1527	1564
179	183	188	192	197	202	207	212	218	224	230	235	241

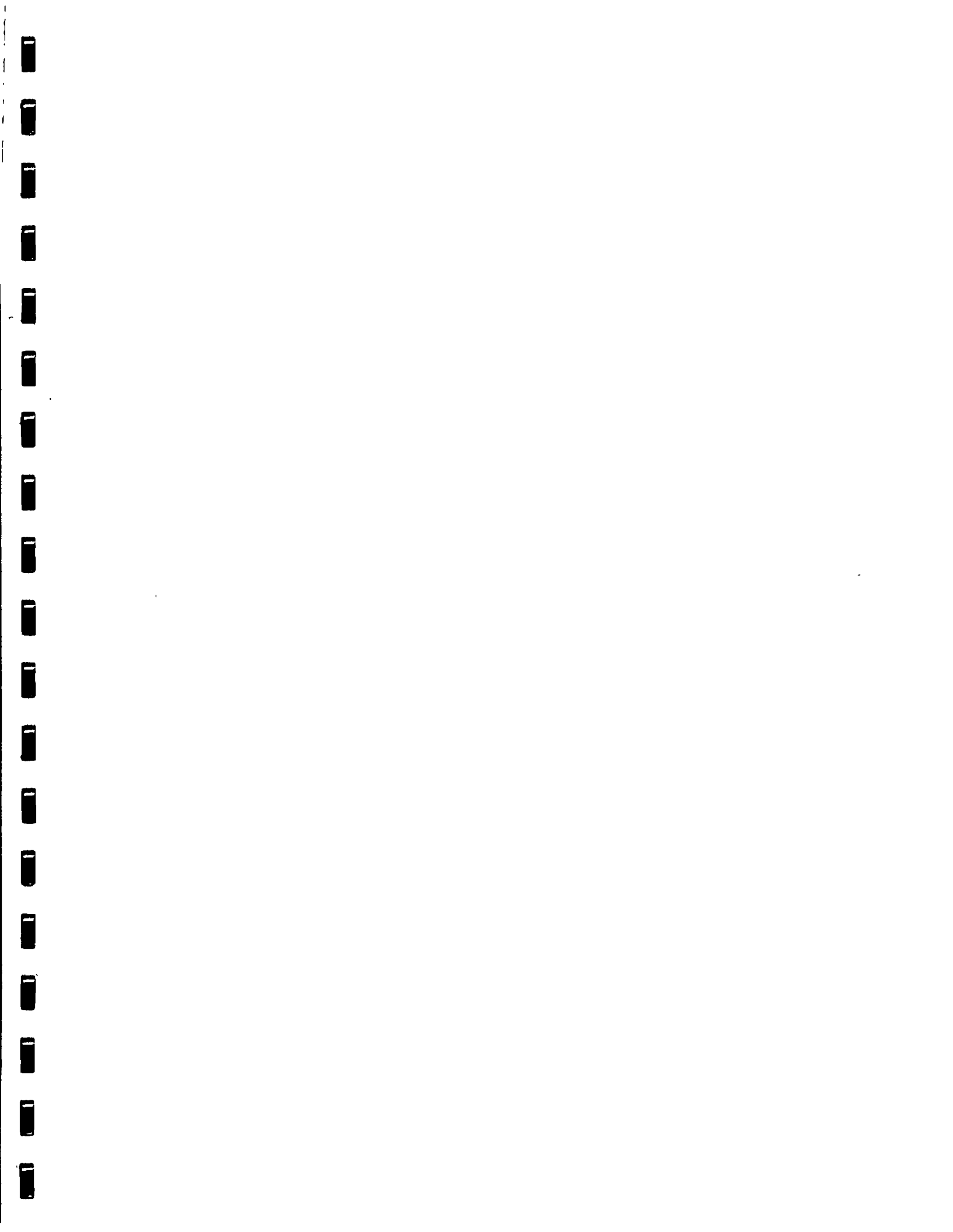
1571	1561	1584	1591	1571	1610	1614	1584	1635	1666	1647	1618	1582
113	112	114	114	113	116	116	114	117	120	118	116	113
22	22	22	22	22	22	23	22	23	23	23	23	22
1104	1096	1113	1118	1104	1131	1134	1113	1149	1171	1157	1137	1111
35	34	35	35	35	36	36	35	36	37	36	36	35

3902	3948	4034	4102	4142	4252	4321	4355	4486	4593	4644	4687	4725
349	354	362	369	374	384	391	395	407	417	422	428	433
778	796	817	837	856	880	900	921	948	973	995	1018	1042
2263	2284	2332	2367	2383	2446	2481	2491	2567	2627	2648	2664	2675
213	217	223	227	232	238	243	247	254	261	266	271	276

0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
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584	597	613	627	642	660	675	691	711	730	746	764	781
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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.

