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SUSITNA HYDROELECTRIC PROJECT

ENVIRONMENTAL STUDIES

SUBTASK 7.05: SOCIOECONOMIC ANALYSIS

PHASE I REPORT

APRIL, 1982



**Terrestrial
Environmental
Specialists, Inc.**

ALASKA POWER AUTHORITY

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**Environmental Studies Final Report
Subtask 7.05: Socioeconomic Analysis**

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SUMMARY

Major and important potential socioeconomic impacts of the Susitna Hydroelectric Project are summarized below by topic area. Other potential impacts, not summarized below, are discussed in the report.

When reviewing the summary of impacts, two things should be kept in mind. First the magnitude and geographic distribution of these impacts are determined, in part, by a series of carefully and systematically developed judgments and assumptions. Some of the key assumptions include: (1) the number (and relocation timing) of construction workers that will relocate from outside the Railbelt region or outside Alaska to communities in the Railbelt region; (2) the number (and relocation timing) of construction workers that will relocate from various areas of the Railbelt region to communities of the Matanuska-Susitna (Mat-Su) Borough; and (3) the number of workers that will remain at place of relocation after construction ends at the Watana and Devil Canyon sites. These and other assumptions are elaborated upon in Section 5.

Second, estimates of employment and population influx reflect the labor demands of the project. If the project attracts more labor than required, there will be an oversupply of labor and a greater population influx than the estimates in this report indicate.

Description of the Project

- . The Susitna hydroelectric project consists of construction of the Watana and Devil Canyon Dams. The Watana dam will be constructed in two phases, with an ultimate generating capacity of 1,020 megawatts (MW). The first installment of 680 MW's will be completed in 1993 with additional generating capacity being completed in 1994.
- . Construction of the 600 MW Devil Canyon Dam begins in 1994 and is expected to be completed in 2002.

- . The operations and maintenance work force for both dams will total 170 persons by the year 2002: 70 persons in 1993; a total of 145 in 1994; and finally 170 in 2002. It is expected that this work force, and families, will reside at a permanent village to be constructed in the vicinity of the Watana dam site.
- . On-site construction manpower requirements will reach a peak of 3,500 in 1990, followed by a decrease through 1995 after which a second peak of 1699 is reached in 1999 associated with construction of the Devil Canyon dam. The first phase of the Watana dam requires a significantly greater number of workers than both the second phase of Watana and Devil Canyon combined.
- . To accomodate the construction work force it has been proposed that a single-status camp and family-status village should be constructed in the vicinity of the project sites. The family-status village, with facilities for management and professionals, will accomodate approximately 350 families. The single-status camp will consist of portable dorms suitable for 3,150 single workers. Additional services and facilities will also be constructed in both the village and camp.
- . Not all construction workers will choose to live at the camp; however, it is assumed that a majority of workers will do so, rather than locating housing and incurring the additional costs for rent and commuting.

Employment

- . There will be significant employment opportunities for Alaskans. It is estimated that more than 75 percent of the peak-year construction jobs (about 2,800 jobs) will be filled by Alaskans. The majority of these jobs will be filled by Anchorage residents; residents of the Mat-Su Borough and Fairbanks will also fill a substantial number of these jobs.

- . About 2,800 support jobs will be available in 1990, the peak construction year. Most of these will be filled by Alaskans who reside in Anchorage and the Mat-Su Borough.
- . Construction will occur during 1983-2002. An average of about 1,500 construction jobs will be available annually during this period.
- . The 170 permanent jobs that will be available during the operations phase are anticipated to be filled primarily by Alaskans.
- . Some of the construction workers currently living in Anchorage, Fairbanks and the Kenai Peninsula will relocate to communities of the Mat-Su Borough during the mid to late 1980's. Almost all of these workers will remain at the new residence when their employment on the project ends.
- . About 30 percent of those workers who work on the project and originate from outside of the Railbelt region will relocate to the Railbelt. They will settle predominantly in Anchorage and communities of the Mat-Su Borough. About half of these workers will move out of the Railbelt when their employment on the project ends in the mid 1990's or early 2000's.
- . On a relative basis, Trapper Creek and Talkeetna will experience the greatest employment impacts. The project will provide substantially more employment opportunities for residents of these communities than will exist in these communities without the project. This also applies to support sector jobs. Service businesses will grow in response to demands made by resident construction workers and construction and other project employees that use services in the area.
- . There will be a decline in construction employment during the early to mid 1990's. It is anticipated that some of the workers that

relocated to the Railbelt region will remain and seek other employment. As construction employment rises during the late 1990's to the peak at Devil Canyon (1999), many of those workers that remained will again seek employment on the project. After 1999, construction employment will decrease rapidly until 2003, when it will end. There will be a second exodus of workers from the area.

- . During the construction employment lull in the mid 1990's, Trapper Creek and Talkeetna, as well as other communities of the Railbelt region, could experience significant increases in unemployment, particularly if outmigration is not great and few job opportunities are available.

Income

- . Substantial personal income will be generated for construction and operations workers; for those persons who are employed by firms that provide goods and services for construction and operations (indirect workers) and for those persons who are employed by service and related firms where construction workers spend their income (induced workers).
- . Total payroll that will be earned by construction and operations workers during 1983-2002 is \$888 million; all but \$54 million of this amount is construction payroll.
- . During the operations phases for both dams (2002 and thereafter), payroll will be about \$6.5 million annually. Prior to 2002, when only the Watana facility will be in operation, payroll will be approximately \$5.6 million annually.
- . A little more than half of the 1983-2002 payroll (\$475 million) will be spent in the State. About \$436 million will be spent in the Railbelt region and \$72 million will be spent in the Mat-Su Borough.

- . Substantial income will also accrue to construction, operations and support sector workers, especially to residents of the Mat-Su Borough and Anchorage.

Population

In the initial years of construction the population influx into the Railbelt region will consist of construction workers and their families. There will be a large number of workers moving from other areas of the Railbelt region to the Mat-Su Borough. The majority of the work force will be supplied by Alaska residents, and they will, in almost all cases, live at the work camp. Engineers and professionals will have the option of relocating their families to the construction village. Many workers coming from other areas of Alaska (primarily Anchorage) will view their employment on the project as an opportunity to move to the Mat-Su Borough. There will also be some relocation to the Railbelt region of out-of-state workers and their families.

Further population influx will occur as secondary employment opportunities are generated as a result of the Susitna construction, employing individuals at jobs that closely parallel the existing service-oriented jobs in the Railbelt. Here, too, a percentage of jobs will be filled by out-of-staters, many of whom are dependents accompanying immigrating construction workers.

The analysis of population impacts focuses on the immigrant population that resettles in communities outside of the work camp and village. The population influx projections include direct workers on the project and their families as well as indirect and induced workers and their dependents.

- . The population of the Mat-Su Borough will increase moderately due to construction of the project. The project-induced increase will be about 1,100 by 1990. The Susitna project will be only one of several factors contributing to the Borough's rapid growth during

about 1,100 by 1990. The Susitna project will be only one of several factors contributing to the Borough's rapid growth during this period. Approximately half of the project-related immigrants are expected to settle in the area of Trapper Creek and Talkeetna. Most immigration will occur between 1986 and 1990.

- . With construction of the project, Trapper Creek's population is expected to rise to 660 by 1990, more than doubling the community's projected population in that year.
- . Project-induced population influx into Talkeetna, over 260 by 1990, will represent a 26 percent increase over the baseline forecast level (i.e. without the project).
- . Between 1990 and 1995, there will be a lull in project construction which is expected to be reflected in some outmigration of project-related population. Trapper Creek will experience a net decline in population during this period. Elsewhere in the Mat-Su Borough, population levels will continue to increase due to spillover growth from Anchorage and the stimulus of other projects.
- . Outside of the Mat-Su Borough, population impacts are expected to be minimal (less than one percent of total population).
- . Approximately half of the immigrant population into the Mat-Su Borough will remain after construction of the project is completed.
- . The degree to which workers move to the Borough in anticipation of gaining employment on either the Susitna project or elsewhere is unknown, although it is certain that this will occur. The magnitude of influx can be better established at a time closer to when the project will begin and will be a function of the health of the Alaska and Lower-48 economies, among other things.

Housing

- . Short-term housing shortages and rapid residential construction are expected to occur in Trapper Creek and Talkeetna during the late 1980's. Housing conditions in other areas of the Mat-Su Borough and the Railbelt region are not expected to be significantly affected.
- . The expected near-term shortfall in housing supply in Trapper Creek and Talkeetna might be compensated in whole or in part by speculative advance construction, temporary residence in local lodges and hotels and the use of mobile homes and trailers.
- . The large increase in demand for housing will exert upward pressure on land and housing prices in Trapper Creek and, to a lesser extent, Talkeetna.

Public Facilities and Services

- . Rapid population growth in Talkeetna and Trapper Creek can have the potential for hastily built housing development that does not meet health standards for wells and septic tanks. It is anticipated that Borough and State oversight can prevent such problems.
- . Increased traffic on the Parks Highway can be expected during the construction phase; this traffic will include trucks carrying supplies and equipment and workers commuting to the work sites.
- . In the Trapper Creek and Talkeetna area, the rapid population increase will result in a corresponding need for increased maintenance of local roads and some requirements for new roads.
- . The access road to the dam sites could be a major addition to the Mat-Su Borough's road system, possibly contributing to more mineral development and recreational activity in the area.

- . An increase of between two and four State Troopers at the substation in Trapper Creek will be required, to accommodate the increase in population in the northern part of the Borough.
- . Trapper Creek may experience an increased need for fire protection and medical care services that are currently not available in the community.
- . Increased Mat-Su Borough population related to the project may contribute modestly to requirements for additional hospital and landfill facilities in the 1990's.
- . Increased student enrollment related to project-induced population influx is expected to result in the need for additional classroom space and teachers at the Trapper Creek and Talkeetna elementary schools and Susitna Valley High School.
- . The work camp and family village at the dam sites will provide extensive housing and facilities and services; thus it is likely that residents of the camp and village will have a negligible impact on most categories of existing community facilities in the Mat-Su Borough.

Fiscal Impacts on Local Government

The methodology used in the fiscal impact analysis is the per capita multiplier method and average cost technique. It assumes current per capita revenues and costs are a good approximation of future flows, other variables remaining constant. The fiscal impact analysis is to be viewed as a set of trend indicators of future fiscal flows, and not as a predictor of actual receipts and costs to be incurred.

- . Fiscal impacts will be generally twice as great in 1990 (Watana peak) as they will be in 1999 (Devil Canyon Peak); however, in all cases these impacts will be small, both absolutely and relatively.

- . The Mat-Su Borough will experience relatively more fiscal impacts than will incorporated communities in the Borough. The Borough administration will experience a short-term impact from the lag between receipt of revenues and outlays for service costs. There may be an initial net deficit due to the costs of delivering services to substantially larger customer groups and receiving additional revenues, both local and state. Increases in local revenues will be generated in the form of property taxes and service user charges.
- . The tax base in the Mat-Su Borough is expected to expand enough to generate sufficient additional revenues to cover project-induced expenditures. Per capita shares of property taxes in the Mat-Su Borough decline from \$256 in 1981 to \$195 in 1990, and \$179 in 1999 under the baseline forecast. Declines in per capita share of property taxes with the project are \$199 in 1990 and \$184 in 1999, over 1981 levels.
- . The Service Area Fund of the Mat-Su Borough Budget will be impacted most by the project, causing a 28 percent increase in revenues over baseline in 1990, while other funds will average a 2.6 percent change due to the project. Changes in the 1999 impact forecast over baseline forecast will be 50 percent less than those in 1990, averaging 1.3 percent for all funds excluding the Service Area Fund. However, Service Area Fund revenues in 1999 and 2005 will remain a constant 25 percent over those forecast without the project. This is consistent with the population settlement forecasts that the majority of the population influx will reside in the outlying areas of the Borough.
- . The cost of delivering services in the Mat-Su Borough almost doubles by 1990 with or without the project. Costs for administration, fire service, and road maintenance and repair are likely to experience the largest increases. Service user charges are anticipated to rise proportionately to the increases in costs of service delivery.

- . Project-induced growth will cause Mat-Su Borough School District revenues to increase on average 2.5 percent over the baseline forecast by 1990; 1.1 percent by 2000 and 0.7 percent by 2005.
- . Expenditures for social services and facilities will rise approximately 0.9 percent over the baseline forecast in 1990 at a slightly slower rate than increases in total revenues. Expenditures with the project in 1999 will increase approximately half of one percent over the baseline forecast. Between 1990 and 1999 expenditures will average a 41 percent increase among all services with or without the project.
- . Actual impacts associated with the project will be very small, with increases in revenues and expenditures averaging about 1.2 percent over the baseline forecast in 1990 and about 0.5 percent over the baseline forecast in 1999.
- . Project-induced fiscal impacts on the cities of Palmer, Wasilla and Houston will be minimal. Growth which will occur in these communities whether the Susitna dams are constructed or not will have much larger fiscal impacts.
- . Constant rapid growth for the community of Talkeetna can be anticipated with or without the project. The exact impact of the project will therefore be relatively small when compared to changes due to normal growth. However, relative to project-induced changes in other communities, the impact of the project on Talkeetna is substantial.
- . Fiscal impacts relating to residents of Talkeetna will directly impact the Borough budget through service area funds i.e. road; fire, and flood control. Total revenues from these funds to the Borough will increase 130 percent from 1981 to 1990, and 135 percent from 1990 to 1999 without the project. Total revenues to the

Borough with the project will increase 9 percent by 1990 and 3.4 percent by 1999 over baseline forecast.

- . The community of Talkeetna is assumed not to incorporate before 2000 if the Susitna project is not built. Under these conditions the Matanuska- Susitna Borough will continue to provide areawide and non-areawide services. These will be administered by Borough officials and paid for by the Borough government out of funds derived both locally and from the State. Property located within the service boundary will continue to be liable for taxes levied to cover the costs of service delivery.
- . The impact of the Susitna hydroelectric project is assumed to accelerate the time-table in which the Talkeetna community will decide to incorporate. The increased population influx will act as an impetus for the community to organize itself such that it can control the delivery of necessary services, and thereby be responsible for fiscal flows of revenues and expenditures. Other types of local informal government/community organization may result in areas that are now sparsely populated but which are anticipated to experience rapid growth.
- . Total expenditures in Anchorage are projected to increase one-half of one percent in 1990 due to the project and to remain almost the same as baseline forecasts for 1999. Normal growth as measured by baseline forecast will result in a 32 percent increase in expenditures by 1990 over 1981 levels and a 12 percent increase between 1990 and 1999.
- . Total expenditures in Fairbanks are projected to increase eight-tenths of one percent over the baseline forecast for both 1990 and 1999. This constant rate of change is reflected by the fact that with or without the project, the population in Fairbanks will increase approximately 31 percent between 1981-1990 and 18 percent between 1990-1999.

1 - INTRODUCTION

Consideration of socioeconomic impacts resulting from construction and operation of a hydroelectric project in the upper Susitna basin is crucial to meaningful assessment of project feasibility. Such impacts are important not only in their own right, but also because of the degree of socioeconomic concern so prevalent in Alaska. The intensity of this concern was recently exemplified as the proposed Rampart Project on the Upper Yukon River was deferred indefinitely. This project was deferred in large part because the homelands of the Interior Natives, areas of habitat for caribou and other game animals, and upstream and downstream fisheries would have been impacted in a manner that was considered unacceptable at the time.

The socioeconomic analysis presented and discussed herein is designed to assess important socioeconomic impacts that could result from hydroelectric development on the Susitna River. The overall objectives of the socioeconomic analysis are to: (1) determine which socioeconomic conditions are most likely to be impacted and to what extent these conditions are likely to change; and (2) provide information that will aid in assessing the significance of potential changes in socioeconomic conditions.

Socioeconomic conditions that receive considerable attention include employment, income, population, housing, public facilities and services, and fiscal matters. These conditions are addressed at state, regional, Census Division and/or community levels for each year of construction and the first several years of operation.

The approach of this analysis is to define impact areas, describe and analyze baseline socioeconomic conditions, and to develop and compare baseline and impact forecasts. For this project, work force characteristics, residence relocation decisions and commuting modes significantly influence the geographic distribution and magnitude of changes in socioeconomic conditions. Due to the importance of these factors, and because they are difficult to predict, an accounting model is used to assist with the impact

forecasts. This makes it possible to model the effects of changes in factors such as work force characteristics, residence relocation decisions and commuting modes on the results. Here, in Phase I of the project, results were developed using the best possible estimates for these factors. Phase II will feature precise sensitivity analysis using these factors.

Substantial effort is devoted to forecasting additional facilities and services required as a result of project-induced population influxes to communities of the Mat-Su Borough. This forecast, coupled with the detailed fiscal analysis of these requirements, should substantially benefit local planning efforts.

The report is organized in eleven sections. The next section describes elements of the project, such as the work camp and work force estimates, that relate directly to the socioeconomic analysis. Impact areas are defined in the third section. Baseline conditions are described, and baseline forecasts are made in the fourth section. Next, impact forecasts are made, and outcomes of the project are predicted. In Section 6, the construction and operation impacts of the project are presented and analyzed for all areas and communities. The report concludes with sections containing: lists of literature and authorities contacted; copies of letters received; a cross reference to the Socioeconomic Feasibility Report, and a presentation of methods and assumptions.

It is believed that the organization of Sections 4-6, the body of the report, is unique to socioeconomic impact assessment reports. It is hoped that this precise, innovative and detailed presentation will be understandable, interesting, and convenient for various users.

2 - DESCRIPTION OF PROJECT

2.1 - Introduction

The proposed Susitna hydroelectric facilities project will be comprised of construction of two dams with accompanying impoundments and power plant facilities at the Watana and Devil Canyon sites on the Susitna River; a pioneer access road and gravel road; a construction camp and a family village; a permanent townsite and transmission lines leading to Fairbanks, Anchorage and Beluga.

The Watana damsite is located on the Susitna River approximately 115 air miles NNE of Anchorage and 140 miles SW of Fairbanks. The Devil Canyon damsite is located approximately 30 miles downriver. The reservoirs at the Watana and Devil Canyon sites will cover 38,000 and 7,800 acres, respectively.

Access to the sites, which are presently accessible only by air, will be in the form of a highway connected with both the Parks Highway at Hurricane and the Alaska Railroad at Gold Creek. The road will run along the south side of the Susitna River between Gold Creek and Devil Canyon, cross the river and continue along the north side to Watana.

Construction of the project will span an 18-year period. Work on the pioneer road will begin in 1983 and should be completed by 1985; the gravel road is expected to be in place by the summer of 1986. Work on the Watana site will take place between 1986 and 1993, at which point operations at Watana will begin. As Watana is completed, construction of the Devil Canyon facilities will begin. The project is scheduled for completion in 2002.

2.2 - Work Camp/Village Set-Up and Worker Commuting Patterns

The level of impact on the communities surrounding the proposed Susitna hydroelectric facility is proportional to the size of the immigrant work-

force, and more directly, to the degree to which these workers choose to live in the surrounding communities versus a contractor-provided work camp/village. Worker commuting practices are a function of many variables, which include: the extent of the work camp/village facilities offered, the mode of transportation and ease of access to the camp, the type and extent of travel allowances, work schedules and the availability of suitable housing in the surrounding communities. This section of the report focuses on the nature of the work camp/village and is intended to provide an overview of the types and installment phasing of facilities to be included in the work camp and family village. It is assumed that a majority of workers will prefer accommodations at a work camp, as opposed to bearing the burden of locating housing and incurring the additional costs for rent and commuting. The percentage of workers choosing to live at the work camp is found to be dependent upon the comprehensiveness of the camp, which is a factor that must be considered in drawing conclusions as to construction worker location preferences.

The contractor-provided facilities for the Susitna project are divided into two groups: a single-status construction camp and family-status village. The family-status village, with facilities for management and professionals, will accommodate approximately 350 families in trailer-type houses grouped around a service core containing a school, gymnasium, store, fire station, gas station and recreation area. The single-status construction camp will consist of portable wood frame dorms suitable for 3,150 single workers. Other facilities to be constructed include: Offices, dining hall, recreation hall, management club house, gymnasium, fire station, hospital store, warehouses, laundry, bank, swimming pool and a guest house. The lack of family accommodations for laborers and semi-skilled/skilled workers will be a factor in determining the number of workers in those labor categories that choose to relocate their families in the surrounding communities.

Once the facilities become operational, the operations and maintenance work force and their families will be accommodated at a permanent town to be

constructed in the vicinity of the Watana construction camp. This permanent town will provide all necessary services for approximately 170 workers and their families.

2.3 - On-Site Manpower Requirements and Payroll

Section 2.2 highlighted the need to project the degree to which the construction work force (and dependents) choose to relocate in the communities surrounding the proposed dam site. The direct input to this is the determination of the projected on-site construction and operations manpower requirements. Table 2.3-1 displays the total projected on-site construction and operations manpower requirements from 1983-2005 by occupational category (laborers; semi-skilled/skilled, and Administrative/Engineering). As displayed in the table, the peak construction period occurs in 1990 with a work force of 3,498. Section 5 discusses the direct work force characteristics in greater detail.

Based on the projected on-site manpower requirements outlined above, the total yearly project payroll, in 1981 dollars, from 1983-2000 can be derived. Table 2.3-2 displays the total projected payroll by labor category. The payroll during the peak year 1990 totals \$97.8 million (all references to dollars in this report are in 1981 dollars). Total payroll is an important consideration in that it defines the parameters of monetary impacts due to the direct work force. Payroll and payroll distribution are discussed further in Section 5.3.

2.4 - Worker Expenditure Patterns

Work force wage and salary spending will result in direct and indirect impacts on the State and on individual Census Divisions, and for this reason must be measured. The concept of measuring the flow of wages and salaries is referred to as expenditure patterns. The output provides an overview of the dollar amounts (of project wage and salary income) spent in the various Census Divisions and communities.

TABLE 2.3-1

TOTAL ON-SITE MANPOWER REQUIREMENTS, 1983-2000(a)
(IN NUMBERS OF WORKERS)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
LABORERS	23	11	170	815	2450	3459	3459	3459	3459	2627	1712	1699	1699	1952	1952	1195	397	290
SEMI-SKILLED/SKILLED	21	28	47	326	709	956	956	956	956	671	439	439	483	558	556	383	191	69
ADMINISTRATIVE/ENGINEER.	7	21	118	177	513	733	733	733	733	542	355	355	355	415	415	223	124	61
TOTAL LABOR	51	60	335	1318	3672	5148	5148	5148	5148	3840	2506	2493	2537	2925	2923	1801	712	420

(a) Supplied by Acres American, Inc.

Note: The sum of individual entries may not equal totals due to independent rounding.

TABLE 2.3-2

TOTAL PAYROLL FOR ON-SITE MANPOWER, 1983-2000
(IN THOUSANDS OF DOLLARS)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
LABORERS	956	365	7536	36215	108590	153349	153349	153349	153349	116229	75964	75745	75745	86488	86488	52775	17322	12778
SEMI-SKILLED/ SKILLED	695	1064	1754	13887	28377	37754	37754	37754	37754	25574	16523	16523	18845	22027	21963	15341	7907	2523
ADMINISTRATIVE/ ENGINEER	231	680	3647	5448	15743	22476	22476	22476	22476	16606	10888	10888	10888	12720	12720	6966	3810	2018
TOTAL PAYROLL	1882	2109	12937	55550	152710	213579	213579	213579	213579	158409	103375	103156	105478	121235	121171	75082	29039	17319

Note: The sum of individual entries may not equal totals due to independent rounding.

Each worker has a certain propensity to spend in areas of Alaska as a function of place of residence. For instance, a worker originating from out-of-state and not relocating within the State will spend his income in different geographic areas than will a worker residing in the Mat-Su Borough. The former will in all likelihood spend a lesser percentage of income in the Census Divisions surrounding the proposed project than a Mat-Su resident. The out-of-state worker will spend a percentage of income out of Alaska. Given these differences it becomes necessary to determine propensity to spend based on residence: Impact Area 3 (including individual Census Divisions); out-of-state; and Alaska non Impact Area 3.

The findings of this exercise are displayed and discussed in Section 5.3.

2.5 - Purchases of Materials, Services and Equipment

(a) Volume

Materials, services and equipment purchases for Watana will commence with pioneer road construction in 1983 and continue into the operational phase. Acquisitions are expected to increase steadily through 1990, then fall off sharply until the operational stage in 1995. Initial volumes will be concentrated in basic materials (pipe and culvert, cement, reinforcing and structural steel, rockbolts, steel mesh, etc.). Materials, services and equipment for mechanical and auxiliary systems will follow, although sophisticated machinery and equipment (turbines, generators, etc.) are longer lead time items. Consumable materials (petroleum products, etc.) can be expected to follow the basic demand curve, as can work force camp facilities.

Materials, services and equipment for the Devil's Canyon site will be utilized beginning approximately 1994, with purchases increasing steadily until 1999, then falling off sharply to the

operational stage in 2002. The expenditure curves can be expected to follow a similar pattern to those projected for Watana.

(b) Source of Supply

Almost no projected materials and equipment are available in quantity from within Alaska. Exceptions are aggregates and petroleum products. It is not possible at this time to predict with accuracy from where out-of-state major materials and equipment will come. Research indicates that existing in-state suppliers of those materials and equipment planned for the projects are concerned about their ability to compete with larger outside sources. This situation will likely be changed to some extent during construction of the Devil's Canyon dam due to natural and induced growth within in-state industry and commerce.

Research further indicates that an adequate service industry infrastructure exists within the state to support the dam projects. Essential services are poised for growth, and sufficient technical expertise exists to train additional manpower as required. Exceptions may occur but would likely be restricted to such areas as technical services for power generating equipment.

(c) Transportation

Save for a local railhead and site access roads, adequate transportation systems exist to service the dam projects. Plans call for construction of a railhead at Gold Creek and an access road system east from the Parks Highway.

All materials, equipment and services (save site-prepared aggregates) will require transshipment. The nature of the

material or equipment will determine whether motor freight only, or a combination of motor freight and rail transport are used. Research has established that all material and equipment except steel and explosives can be line hauled at a lower dollar per ton-mile by rail than by truck.

It is anticipated that bulk materials and equipment from outside the state will be transported via marine transportation. Major transport forms are container, van, flats, railcar, bulk and break-bulk by barge.

Container, van, flats, barge bulk and break-bulk will primarily utilize Anchorage port facilities. Anchorage has a port railhead as well as roll-on-roll-off capability for motor freight. Further, Anchorage is the closest port to the dam sites with railhead and motor freight depot capabilities.

A deep-water marine port with railhead exists at Seward as well. Some project-related transshipment spillover can be expected but will be limited by situational economics and the present 40 ton gantry capabilities of the facility.

For those materials and equipment which lend themselves to portal to portal rail shipment, employment of railroad barges utilizing Whittier's roll-on-roll-off capability can be anticipated.

Finally, petroleum products used during the construction process will likely be piped to Anchorage, then transshipped to site via the Gold Creek railhead and tankertruck.

3 - IDENTIFICATION OF THE SOCIOECONOMIC IMPACT AREA

Hydroelectric development in the upper Susitna basin will cause employment, population and related changes for a significant part of Alaska. Due to current and likely future "without project" population levels and distributions and to probable "with project" immigrant residence and commuting patterns, most of these changes will occur in the Railbelt corridor. These changes will be most significant where project-induced population changes are large relative to future ("without project") population levels.

3.1 - Local-Impact Areas 1-2

The Borough is designated as the "local" impact area (also referred to as Impact Area 2). It is the smallest statistical area for which relevant time-series economic and socioeconomic data are available and is large enough to contain a population sufficient in size to allow for the organization of social life for the pursuit of one or several common interests and to provide for necessary support systems. Project-induced population changes could be large relative to future ("without project") population levels in the Matanuska-Susitna (Mat-Su) Borough and in several communities within this Borough. Potential project-induced changes in the Borough's communities are addressed (although more data are available for some communities than others) to provide for an approximation of the geographic distribution of changes.

The local impact area also includes Impact Area 1: the construction sites, access road, transmission line corridor from the dam sites to the Intertie, some staging areas, impoundment areas and lands to be utilized for the construction camps and villages.

3.2 - Regional-Impact Area 3

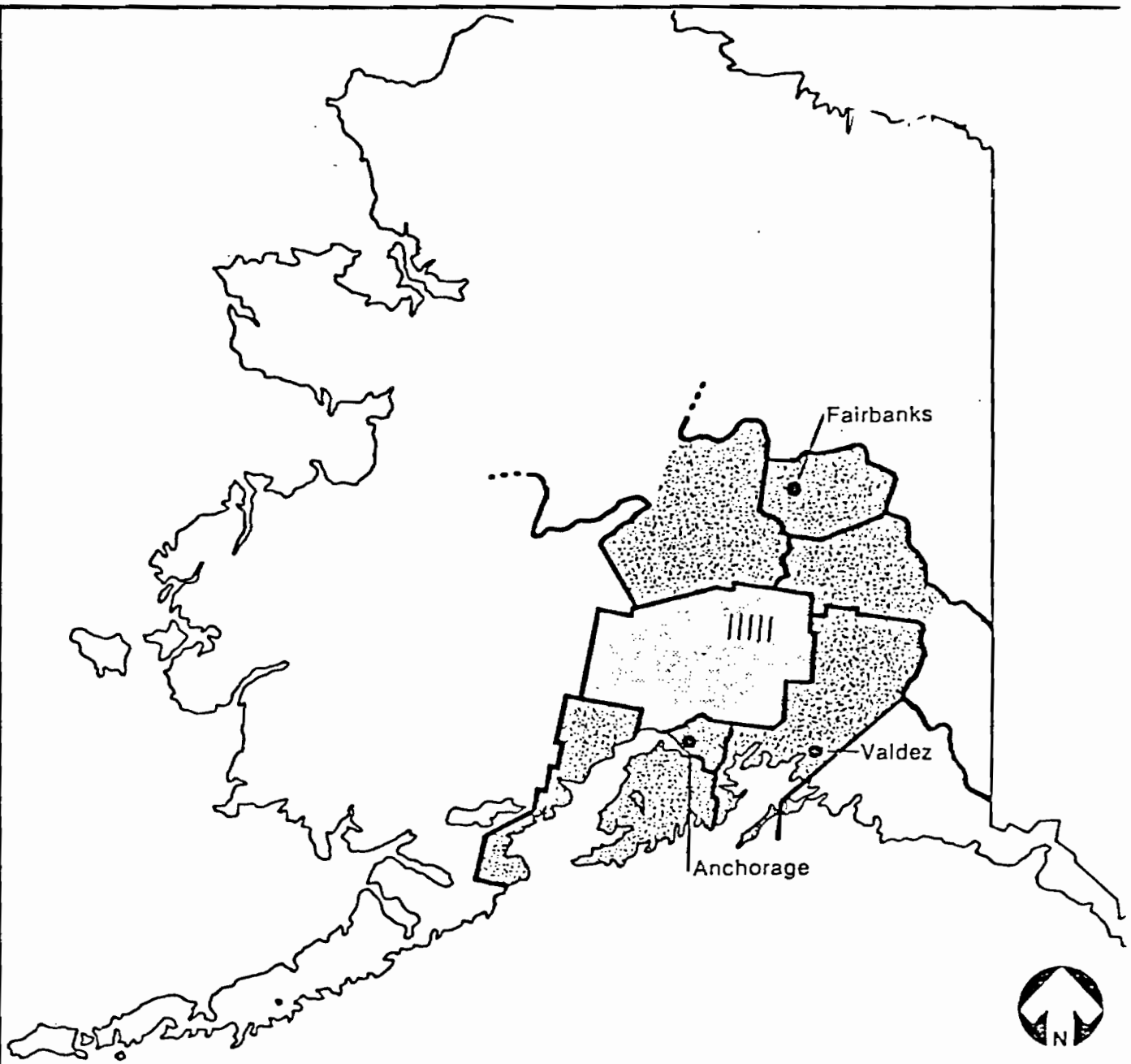
Eight Census Divisions, including the Matanuska-Susitna Borough, make up the "regional" impact area. These are the Anchorage, Kenai-Cook Inlet,

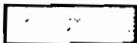
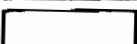
Seward, Valdez-Chitina-Whittier, Mat-Su and Southeast Fairbanks Census Divisions, and part of the Yukon-Koyukuk Census Division (see Figure 3.1-1). Population changes could be significant in the seven Census Divisions that surround the Mat-Su Borough, particularly the Anchorage Census Division and the Fairbanks North Star Borough (also a Census Division). Some of the physical inputs and many of the labor inputs for construction and operation will be drawn from Anchorage and the Fairbanks North Star Borough.

For analytical purposes, Impact Area 3 is divided into three regions: Anchorage, Fairbanks and Valdez. The Anchorage, Kenai-Cook Inlet, Seward and Matanuska-Susitna Census Divisions comprise the Anchorage region; the Fairbanks North Star Borough and Southeast Fairbanks Census Division comprise the Fairbanks region, and the Valdez-Chitina-Whittier Census Division comprises the Valdez region. The portion of the Yukon-Koyukuk Census Division that is in Impact Area 3 is considered separately from these regions.

3.3 - State-Impact Area 4

The fourth impact area is the State of Alaska. Socioeconomic changes that could occur outside of the regional impact area, combined with regional changes, provide an approximation of statewide socioeconomic change.



	Impact Area 1
	Impact Area 2 (includes 1)
	Impact Area 3 (includes 2)
	Impact Area 4 (State of Alaska)

SOCIOECONOMIC IMPACT AREAS

4 - BASELINE DESCRIPTION AND BASELINE FORECASTS, BY IMPACT AREA

4.1 - Local - Impact Areas 1 and 2

Current socioeconomic conditions in the geographic areas that could be affected by hydroelectric development in the Upper Susitna Basin and recent trends are vital factors in determining the impacts that the project will have in the Impact Areas. In addition, in the case of a construction project which will span a large number of years, it is also important to conduct a baseline forecast of the changes in socioeconomic conditions that are expected to occur over time in the absence of the project (natural growth). As the sections below indicate, dramatic changes are expected to occur in the Mat-Su Borough during the next twenty years. These baseline and baseline forecast data will provide the backdrop for the determination of impacts of the project.

The socioeconomic conditions that are described here - population, housing, fiscal conditions of government entities, public facilities and services, economic base, employment, personal income and land use - are considered to be of key importance. Further description of other socioeconomic categories can be found in the Environmental Studies Annual Report 1980, Subtask 7.05: Socioeconomic Analysis. Discussion of the baseline forecast methodology used here can be found in Section 10.

(a) Population

(i) Baseline

Population in the Mat-Su Borough has grown rapidly since 1970. According to U.S. Census Bureau data, the Borough population grew from 6,500 to 17,766 between 1970 and 1980. This increase of 175 percent was far higher than the State increase of 32 percent during that period. In addition, the Borough's own estimates of

population in 1980 of approximately 21,000 and of 22,329 in 1981 indicate an even higher rate of population growth.

The Mat-Su Borough, like the rest of the State, was affected greatly by the trans-Alaska pipeline construction of the mid-1970's. It was a supplier of labor and services and a place of residence for workers. However, it felt an equal, if not greater, effect. The increasing size and importance of the Municipality of Anchorage had an effect on the Borough in two distinct ways: 1) the Borough became an easily accessible recreational area for Anchorage residents; and 2) Anchorage became a supplier of jobs and economic opportunities for Borough residents. Indicative of the latter is the fact that 37 percent of the Mat-Su Borough residents commute to or through Anchorage on a daily basis, averaging 100 miles per day (Overall Economic Development Program, Inc., 1980; p. XV). The Mat-Su Borough is now a bedroom community to Anchorage.

The Census Bureau (1980) estimate of the population in the Matanuska-Susitna Borough is 17,766, of which approximately 51 percent are male; 49 percent female; 81 percent married; 12 percent single; and 7 percent divorced. In 1970, 97 percent of the adult population were Caucasian; 2 percent were American Native; and 1 percent were black. The average educational level for adults is 13 years with 20 percent having 16 or more years of education. (Matanuska Electric Association, Inc., September 1980; p.4). The mean household income for the Matanuska-Susitna Borough is \$30,627, despite one of the highest unemployment rates in the state.

A better understanding of the Borough and its individual communities is obtained through examination of the transiency of its residents. The rapid increase in population of 175 percent in the last ten years gives empirical evidence of the growing attraction of the Borough as a place to reside. The 1980 housing study conducted by Policy Analysts, Limited, confronted this issue and provides comprehensive detail of the demographics and tenure of the Borough residents.

The most obvious indicator of the transiency and recent growth in the Borough is the fact that 56 percent of the residents surveyed have lived in the Borough for five years or less, and only 27 percent have lived in the area over 10 years. The average length of residence in the Mat-Su Valley is 9.3 years while the median is only 5.0 years. While 45.9 percent of the residents have moved in the past three years, 26.4 percent have moved two or more times. The mean number of moves per household during the past three years is 1.07.

Palmer and Butte have the most stable populations with average lengths of residence of 13.0 and 12.4 years respectively. Wasilla, with an average of 7.0 years, has the newest population. Only 3 percent of the residents were born in the Borough, with the majority, 44 percent, having moved from Anchorage, and an additional 15 percent coming from other areas of the state (Policy Analysts, 1980).

The Matanuska-Susitna Borough is the second largest organized Borough in the State of Alaska, covering a total of 23,000 square miles. This amounts to approximately four percent of the total area of the state. Yet

despite this large geographic area, only about one quarter of the Borough is currently inhabited. The remainder of the Borough is more suitable for recreation, mining and other forms of mineral development. The Mat-Su Borough presently contains three incorporated communities within its boundaries: Palmer, Wasilla and Houston. Of the inhabited area, approximately 90 percent of the population lives within a 25 mile radius of Wasilla (Matanuska-Susitna Borough Planning Department. April 1978; p. 46). The remainder of the population is distributed along the Parks Highway and Railroad corridor. Several hundred inhabitants are scattered throughout wilderness regions accessible only by water or air.

The growth and current populations of selected communities in the Borough are shown in Table 4.1-1. Palmer and Wasilla stand out as the largest communities, with 1981 populations of approximately 2,567 and 2,168, respectively. Wasilla experienced an extraordinary growth rate of 510 percent during the past decade. Other population centers in the Borough are Big Lake, Butte, Houston, Eska-Sutton, Talkeetna and Trapper Creek (Matanuska-Susitna Borough population survey data, 1981).

(ii) Baseline Forecast

The Mat-Su Borough, like other areas of the State, will experience rapid growth in the mid 1980's, growth which is tied to projects such as the natural gas pipeline construction (105 percent increase in the Borough's population between 1980 and 1990). Because its growth is tied to Anchorage, Mat-Su is projected to continue to

TABLE 4.1-1
COMMUNITY POPULATION IN THE
MATANUSKA-SUSITNA BOROUGH
1939, 1950, 1960, 1970, 1976, 1980, 1981

<u>Community</u>	<u>1939(a)</u>	<u>1950(a)</u>	<u>1960(a)</u>	<u>1970(a)</u>	<u>1976(b)</u>	<u>1980(c)</u>	<u>1981(b)</u>
Talkeetna	136	106	76	182	328	265	534
Willow	N.A.	N.A.	78	38	384	134	N.A.
Wasilla	96	97	112	300	1566	1548	2168
Palmer	150	890	1181	1140	1643	2143	2567
Montana	N.A.	N.A.	39	33	76	40	N.A.
Big Lake	N.A.	N.A.	74	36	721	412	2408
Butte	N.A.	N.A.	559	448	2207	N.A.	N.A.
Chickaloon	11	N.A.	43	22	62	20	N.A.
Eska Sutton	14	54	215	89	496	N.A.	N.A.
Houston	N.A.	N.A.	N.A.	69	375	325	600

Sources :

- (a) U.S. Census data from Matanuska-Susitna Borough Planning Department. April 1978. Phase I: Comprehensive Development Plan. Palmer, AK; p. 50.
- (b) Mat-Su Borough Survey. The methodology for these surveys differs from U.S. Census data and hence the 1976 and 1981 figures are not comparable to Census data.
- (c) Alaska Department of Labor, Administrative Services Division. January 1, 1981. Alaska 1980 Population: A Preliminary Overview. Juneau, AK; pp. 14-24.

grow rapidly in the 1990's. The Mat-Su Borough population is expected to grow at an annual average rate of six percent in the 1990's, compared to about 2 percent for the Anchorage region as a whole.

Table 4.1-2 displays population projections for selected communities in the Mat-Su Borough. The incorporated cities of Palmer, Wasilla and Houston are expected to grow many times over their present levels to populations in 2005 of 7,581, 12,053 and 5,909, respectively. Palmer's percent share of Borough population will drop from 11.5 percent to 8.6 percent. Wasilla and Houston will increase their shares to 13.7 percent and 6.7 percent of Borough population. While Palmer is expected to experience a decline in its population growth rate as the gas pipeline is completed, Houston and Wasilla will experience continued high growth rates after 1990 as the completion of the Knik Arm crossing brings these communities within a half-hour's drive of Anchorage. The Big Lake area, which is currently a large recreational area and is included in the category of Other in Table 4.1-2, is also expected to receive a large increase of year-round residents after 1990.

Trapper Creek will double in population size by the year 2000 to approximately 474 people, growing at a four percent average annual rate. Its population is expected to reach 577 by 2005. Growth in Trapper Creek will be constrained by the amount of private land available and, more importantly, by the lack of employment opportunities. The Talkeetna area, growing at an annual rate of five percent a year, will reach population levels of around 1,000 in 1990, 1,642 in 2000, and 2,106 in 2005.

TABLE 4.1-2

BASELINE FORECAST OF POPULATION IN THE MAT-SU BOROUGH AND
SELECTED COMMUNITIES, 1981-2005

YEAR	PALMER	WASILLA	HOUSTON	TRAPPER CREEK	TALKEETNA	OTHER	TOTAL MAT-SU BOROUGH
1981	2567	2168	600	225	640	16085	22285
1982	2734	2331	660	234	672	17351	23982
1983	2912	2505	726	243	707	18989	25982
1984	3101	2693	799	253	743	20486	28075
1985	3302	2895	878	263	780	23084	31202
1986	3517	3112	966	274	820	25261	33950
1987	3746	3346	1063	285	862	27592	36894
1988	3989	3597	1169	296	906	29366	39323
1989	4248	3867	1286	308	952	30882	41543
1990	4525	4157	1415	320	1000	31547	42964
1991	4683	4468	1556	333	1051	33172	45263
1992	4847	4803	1712	346	1104	34300	47112
1993	5017	5164	1883	360	1160	36150	49734
1994	5193	5551	2071	375	1219	37579	51988
1995	5374	5967	2278	390	1281	39317	54607
1996	5562	6415	2506	406	1347	40955	57191
1997	5757	6896	2757	422	1415	43025	60272
1998	5959	7413	3032	439	1487	44670	63000
1999	6167	7969	3335	456	1563	46848	66338
2000	6383	8474	3669	474	1642	48692	69334
2001	6606	9093	4036	493	1726	50777	72731
2002	6838	9756	4439	513	1814	52935	76295
2003	7077	10469	4883	533	1906	55166	80034
2004	7325	11233	5372	555	2003	57467	83955
2005	7581	12053	5909	577	2106	59843	88069
PROJECTED SHARE, 2005	8.6%	13.7%	6.7%	0.7%	2.4%	70.0%	100.0%
CURRENT SHARE (1981)	11.5%	9.7%	2.7%	1.0%	2.9%	72.2%	100.0%

NOTE: POPULATION PROJECTIONS WERE MADE ON THE BASIS OF THE FOLLOWING GROWTH RATES:

PALMER	- 1981-1990: 6.5%; 1991-2000: 3.5%
WASILLA	- 7.5%
HOUSTON	- 10.0%
TRAPPER CREEK	- 4.0%
TALKEETNA	- 5.0%

Most other growth in the Borough will occur in the southern parts: in the suburban area surrounding Palmer and Wasilla, and in the Big Lake area. In 2000, about 68 percent of the population will be living outside of the three cities, Trapper Creek and Talkeetna, compared to 71 percent in 1981.

(b) Housing

(i) Baseline

The most recent available sets of data on housing in the Mat-Su Borough are a 1979-80 survey prepared by Policy Analysts, Limited, the 1980 U.S. Census and a 1981 survey conducted by the Borough. There are substantial differences in the various studies. The Policy Analysts study was the most detailed; the Census was the most extensive in terms of including all units in the Borough, and the Borough study in 1981 is the most current. Together, they provide a view of the housing conditions in the Borough in the last 3 years.

The most recent survey indicated a total housing stock in the Borough of 8,582 units, of which 6,810 (79.4 percent) were occupied. As displayed in Table 4.1-3 the majority of units were located in the southern communities of the Borough. In 1981, 5,391 units, or 62.8 percent of the total, were located in the Palmer-Wasilla area; 73.4 percent of the occupied residences were in this area. This survey did not yield a comprehensive indication of the housing stock by type of housing.

The Policy Analysts study indicated that the majority of housing units in the Borough are single family units (83

TABLE 4.1-3
1981 HOUSING STOCK ESTIMATES AND VACANCY RATES, BY AREAS
OF THE MATANUSKA-SUSITNA BOROUGH

<u>Area</u>	<u>Number of Units</u>	<u>Percent of Total</u>	<u>Vacancy Rate</u>
Talkeetna	196	2.3	1.0%
Houston	229	2.7	9.6
Big Lake Special Area	1,750	20.4	49.9
Wasilla	718	8.4	6.7
Suburban(a)	3,801	44.3	6.8
Palmer	872	10.2	10.2
Other Areas	<u>1,016</u>	<u>11.8</u>	<u>52.8</u>
Total Borough	8,582	100.0	20.6%

(a) Includes an area that is outside of Palmer and Wasilla's city limits and extends west to Houston and east to Sutton.

Source: Mat-Su Borough Planning Department

percent). Mobile homes and multi-family units accounted for 11 percent and 5 percent of the total, respectively.

There are only a small number of mobile home and trailer parks in the Borough, most of which are in the Palmer area. The majority of mobile homes are scattered throughout the Borough on individually-owned lots. Multi-family housing units are concentrated in Palmer and Wasilla, which contained 57 and 37 percent of the stock respectively in 1979. The multifamily units are primarily duplexes, but there are some larger apartment buildings with up to 18 units as well.

Vacancy rates in the Borough fluctuate considerably. The overall vacancy rate in December 1979 was estimated at 5.1 percent. The Borough's 1981 survey indicated a vacancy rate of approximately 12.4 percent, but this was based on a measure of housing stock that included some recreational units. The vacancy rates in the incorporated cities ranged from 6.7 to 10.0 percent in 1981. In addition, changes in vacancy rates can occur rapidly. By the autumn of 1981 the housing market had tightened considerably, and vacancy rates were probably far lower than the summer's survey indicated. Conversations with local officials indicate that an average vacancy rate of five percent is considered to be a healthy condition which will encourage growth.

Predictably, vacancy rates vary by housing type. In December 1979, the vacancy rates of single family houses equalled 4.7 percent, compared to 9 percent for multi-family units and 6 percent for mobile homes (Policy Analysts, 1980).

Table 4.1-4 contains a listing of the 1980 Census population per household ratios for selected communities in the Mat-Su Borough. For the Borough as a whole, there was an average population per household ratio of 3.07.

There is an additional aspect of the Mat-Su housing stock that is important to note. The Borough has a significant amount of recreational units which are not used all year round. A number of these are located in the Big Lake and Willow areas. In addition, there are a number of vacant cabins and other structures scattered throughout the remote areas of the Borough which are not usually considered to be year-round housing. The 1980 Census, and to a lesser extent the Borough's 1981 survey, included a large number of these in their housing count. Consequently, the Census had a housing count of over 10,400 units and a vacancy rate of 42 percent.

As shown in Table 4.1-5 the dominant pattern is to own the residence one resides in; in December 1979, 83.5 percent of the households in the Borough owned their own homes. The study also indicated a high percentage of single-family house owners owned their homes outright and thus did not need to make any house payments (40.6 percent of house owners).

(ii) Baseline Forecast

Tables 4.1-6 and 4.1-7 contain projections of households and housing stock in the Mat-Su Borough and selected communities. The overall number of households will rise from 6,810 in 1981 to 26,095 in 2000, while the number of dwelling units will rise from 8,582 to 29,198. In 2005, the number of households and housing units are

TABLE 4.1-4
1980 POPULATION, HOUSEHOLDS AND POPULATION
PER HOUSEHOLD RATIOS FOR SELECTED COMMUNITIES
IN THE MATANUSKA-SUSITNA BOROUGH

<u>Community</u>	<u>Population In Households</u>	<u>Households</u>	<u>Population Per Household Ratio</u>
Big Lake	381	152	2.51
Butte	967	299	3.23
Houston	370	129	2.87
Palmer	2,043	725	2.82
Talkeetna	261	95	2.75
Wasilla	1,559	507	3.07
Willow	108	42	2.57

Source: U.S. Census Bureau. 1980 Census.

TABLE 4.1-5
MATANUSKA-SUSITNA BOROUGH
OWNER-RENTER DISTRIBUTION BY HOUSING TYPE

<u>Mode of Ownership</u>	<u>Total</u>	<u>Single Family</u>	<u>Multi- Family</u>	<u>Mobile Home</u>
Rental	13.6	9.7	63.2	15.5
Rent free, not owning	2.9	2.5	2.6	4.8
Total Own	83.5	87.8	34.2	79.7
Purchasing	(49.5)	(54.2)	(23.7)	(32.1)
Own Outright	(33.9)	(33.6)	(10.5)	(47.6)

Source: Overall Economic Development Program, Inc. July 1980. Volume II:
Economic Conditions Development Options and Projections; p. 79.

TABLE 4.1-6

BASELINE FORECAST OF HOUSEHOLDS IN THE MAT-SU BOROUGH (A)
AND SELECTED COMMUNITIES, 1981-2005

YEAR	PALMER	NASILLA	HOUSTON	TRAPPER CREEK	TALKEETNA	OTHER	TOTAL MAT-SU BOROUGH
1981	783	670	207	68	194	4865	6810
1982	874	727	229	72	206	5294	7402
1983	939	789	253	75	219	5824	8099
1984	1008	857	279	79	232	6387	8843
1985	1083	930	308	83	246	7277	9927
1986	1163	1009	341	87	262	8054	10916
1987	1250	1096	377	92	278	8893	11986
1988	1343	1190	416	97	296	9568	12910
1989	1443	1292	460	102	314	10177	13788
1990	1551	1404	508	107	334	10514	14417
1991	1619	1524	561	112	355	11182	15354
1992	1691	1656	621	118	377	11694	16156
1993	1767	1799	686	124	401	12468	17245
1994	1845	1955	757	131	426	13120	18235
1995	1928	2124	837	138	453	13891	19371
1996	2014	2308	925	145	482	14653	20528
1997	2105	2509	1023	153	513	15583	21885
1998	2200	2727	1130	161	546	16380	23145
1999	2299	2965	1249	169	581	17408	24670
2000	2402	3189	1381	178	618	18326	26095
2001	2486	3422	1519	186	650	19111	27373
2002	2573	3672	1671	193	683	19923	28715
2003	2664	3940	1838	201	717	20762	30122
2004	2757	4228	2022	209	754	21629	31598
2005	2853	4536	2224	217	792	22523	33146

(A) CALCULATED BY APPLYING POPULATION PER HOUSEHOLD (PPH) FIGURES TO THE POPULATION FORECASTS IN TABLE 4.1-2. THE PPH MEASURES WERE CALCULATED TO GRADUALLY DECLINE FROM THE LEVELS OF 1980 AS MEASURED BY THE CENSUS BUREAU, TO A PROJECTED NATIONAL AVERAGE OF 2.657 IN THE YEAR 2000.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT ROUNDING.

TABLE 4.1-7

BASLINE FORECAST OF HOUSING STOCK IN THE MAT-SU BOROUGH, 1981-2005 (A)
(NUMBER OF DWELLING UNITS)

YEAR	PALMER	WASILLA	HOUSTON	TRAPPER CREEK	TALKEETNA	OTHER	TOTAL MAT-SU BOROUGH
1981	872	718	229	69	196	6475	8582
1982	918	764	240	72	210	6586	8790
1983	986	829	265	76	223	7216	9595
1984	1059	899	293	80	237	7894	10462
1985	1137	976	324	84	251	8958	11730
1986	1222	1060	358	88	267	9874	12868
1987	1313	1151	395	93	284	10859	14094
1988	1410	1250	437	98	302	11625	15121
1989	1515	1357	483	103	320	12314	16092
1990	1628	1474	533	108	340	12669	16754
1991	1700	1601	589	114	362	13362	17728
1992	1776	1738	652	119	385	13904	18574
1993	1855	1889	720	126	409	14762	19761
1994	1938	2052	795	132	435	15469	20821
1995	2024	2230	879	139	462	16308	22043
1996	2114	2424	972	147	492	17129	23278
1997	2210	2634	1074	155	523	18123	24719
1998	2310	2864	1187	163	557	18968	26048
1999	2413	3113	1312	171	592	20071	27672
2000	2522	3349	1450	180	630	21075	29207
2001	2611	3593	1595	187	662	21978	30626
2002	2702	3856	1754	195	696	22911	32115
2003	2797	4137	1930	203	732	23877	33675
2004	2895	4439	2123	211	769	24873	35310
2005	2996	4763	2335	219	808	25902	37023

(A) CALCULATED BY APPLYING THE FOLLOWING VACANCY RATES TO THE FORECASTS OF HOUSEHOLDS IN TABLE 4.1-6:

PALMER, WASILLA, HOUSTON: FIVE PERCENT;

TRAPPER CREEK: ONE PERCENT;

TALKEETNA: TWO PERCENT;

OTHER: TWENTY-FIVE PERCENT IN 1981, DECLINING TO FIFTEEN PERCENT IN 2000.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT ROUNDING.

TABLE 4.1-8

BASELINE FORECAST OF VACANT HOUSING UNITS
IN THE MAT-SU BOROUGH, 1981-2005 (A)

YEAR	PALMER	WASILLA	HOUSTON	TRAPPER CREEK	TALKEETNA	OTHER	TOTAL MAT-SU BOROUGH
1981	89	48	22	1	2	1610	1772
1982	44	36	11	1	4	1292	1388
1983	47	39	13	1	4	1392	1496
1984	50	43	14	1	5	1507	1620
1985	54	46	15	1	5	1681	1803
1986	58	50	17	1	5	1820	1952
1987	63	55	19	1	6	1965	2108
1988	67	60	21	1	6	2057	2211
1989	72	65	23	1	6	2137	2304
1990	78	70	25	1	7	2155	2336
1991	91	76	28	1	7	2180	2374
1992	95	83	31	1	8	2210	2417
1993	88	90	34	1	8	2294	2516
1994	92	98	38	1	9	2349	2586
1995	96	106	42	1	9	2417	2672
1996	101	115	46	1	10	2476	2750
1997	105	125	51	2	10	2540	2834
1998	110	136	57	2	11	2588	2903
1999	115	148	62	2	12	2663	3002
2000	120	159	69	2	12	2749	3112
2001	124	171	76	2	13	2867	3253
2002	129	184	84	2	14	2988	3400
2003	133	197	92	2	14	3114	3553
2004	138	211	101	2	15	3244	3712
2005	143	227	111	2	16	3378	3877

(A) CALCULATED FROM DATA ON HOUSEHOLDS AND HOUSING STOCK IN TABLES 4.1-6 AND 4.1-7.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT ROUNDING.

expected to reach 33,146 and 37,023, respectively. These projections are based upon declining estimates of population per household measures and an average five percent vacancy rate. These assumptions are discussed more fully in Section 10.2(d).

A comparison of these figures reveals that in 1990 the Borough will contain an estimated 2,336 vacant housing units (see Table 4.1-8). Of this total, 2,163 will be located outside of the incorporated communities; it should be recalled that this figure includes a large number of recreational units. An estimated 183 housing units will be vacant in the cities of Palmer, Wasilla and Houston in 1990.

(c) Government Organization and Fiscal Characteristics

(i) Government Structure

State statutes under Title 29 provide for the establishment of boroughs within the State of Alaska. The steps to becoming an organized borough include: first, the recognition and desire of the constituents of an area to organize; the submittal of a petition to the Department of Community and Regional Affairs signed by 15 percent of the voters; review of the petition by the Department of Community and Regional Affairs; a public hearing, and finally an election. Even if an election meets with success, the area must conform to certain requirements relating to population, economy, transportation, and communication. Once the above steps are met and the area is deemed capable of functioning as an organized government, it then becomes an organized borough. As such, it automatically assumes certain mandatory obliga-

tions and has the power to assume others. The powers vested unto a borough and the ability to assume other responsibilities vary depending on whether a borough is classified as a first, second, or third class borough. The steps to becoming an incorporated city are similar to those of a borough except that the primary criterion is population. Formation of home rule municipalities is also provided for in the Municipal Code. A home rule municipality is a municipal corporation and political subdivision and is a borough of the first class, or a city of the first class, which has adopted a home rule charter. It has all legislative powers not prohibited by law or charter. The available powers and composition of governing bodies are explained below in greater detail for Anchorage, the Mat-Su Borough, and individual communities.

(ii) Matanuska-Susitna Borough

The Matanuska-Susitna Borough was incorporated as a second class borough on January 1, 1964. As such, at the time of incorporation, the Borough automatically assumed three areawide powers; taxation, education, and planning, platting and zoning. In 1966 the citizens of the Borough voted to add parks and recreation as an areawide power.

In addition to the areawide powers listed above, each borough in Alaska has certain "non-areawide" powers that it can exercise outside of incorporated cities. As a second class Borough, the non-areawide powers are limited to those powers which are granted by law to first class cities and specifically approved by citizens residing outside of incorporated cities and with the

formation of service areas. The Borough has non-area-wide powers of solid waste disposal and libraries.

Areawide powers:

Administration

- Taxation
- Planning and zoning
- Education
- Parks and Recreation

Non-areawide powers:

- Solid waste disposal
- Libraries

Service areas were created and are exercised primarily in the delivery of road maintenance and fire protection. There are presently six fire service areas and sixteen road service areas as follows (Matanuska-Susitna Borough 1981-82 Annual Budget.)

Fire Service Areas

Wasilla
Lakes
Greater Palmer
Butte
Sutton
Talkeetna

Other Service Areas

Talkeetna Water and Flood Control
Garden Terrace Service Area

Road Service Areas

Midway
Fairview
Caswell Lakes

North Colony
Bogard
Greater Butte

South Colony	Meadow Lakes
Knik	Gold Trail(a)
Lazy Mountain	Greater Talkeetna
Greater Willow	Trapper Creek
Big Lake	Alpine Road

(a) Consolidated with Woodside Estates and Wilderness Valley Road Service Areas.

- Organization

The Borough Government has a Mayor-Manager Assembly form of government, with the executive function performed by the Mayor, the legislative function by the Assembly, and the administrative direction by a full-time Manager. The five members of the Assembly are elected by district, with the Mayor elected at large.

The Borough administration, working under the direction of the Manager, is currently organized under the following departments:

- Finance
- Public Works
- Assessment
- Planning
- Engineering

The areawide school system is operated under the direction of the school district administration, which is distinct from the general government administration, but subserviant to the Borough Assembly.

- Borough Administration Facilities

The City of Palmer serves as the seat of the Borough Government. Borough General Government administrative offices and school district administrative offices are housed in separate structures in the heart of the City. The Borough also operates a maintenance facility on the edge of town, which serves as the motor pool and major repair facility.

- Incorporated Places

There are three incorporated communities within the Matanuska-Susitna Borough:

- Palmer - a first-class, home-rule city
- Wasilla - a second-class city
- Houston - a second-class city

. Palmer

The City of Palmer is administratively under a Mayor-Manager-City Council form of government, with a part-time Mayor and a full-time City Manager. Administrative facilities are housed in the City Hall, which shares a location with the library and fire station. The City also operates a maintenance facility.

. Wasilla

The City of Wasilla has a part-time Mayor and a City Council with a full-time City Clerk. City offices are located in the City Administration building.

. Houston

The City of Houston has a part-time Mayor-City Council form of government, with a part-time City Clerk. The City Hall and fire department share a facility in the core area of the community. A meeting room is also included in the structure.

- Unincorporated Area

Within the 23,000 square miles of the Borough, several unincorporated communities are recognized in addition to the three incorporated places mentioned above. These include the communities of Talkeetna, Trapper Creek, Big Lake and Willow Butte. Most of these communities are located within areas serviced by roads; however, the bush community of Skwentna is located on the Skwentna River approximately 40 miles from the nearest road. Much of the Borough is mountainous and very sparsely inhabited, and thus does not lend itself to the development of community organizations.

(iii) Taxation

The power to tax is not inherent in the organization of the boroughs and cities, but rather a power granted by the Alaska State Constitution and Statutes. Contained in the Alaska State Constitution is the provision that "no tax shall be levied . . . except for a public purpose" (Article IX, Section 6). The following is a summary of the guidelines governing taxation in the State of Alaska (Alaska Department of Community and

Regional Affairs, Division of Local Government Assistance, January 1980. Alaska Taxable 1980: Municipal Property Assessments and Equalized Full Value Determination).

- Summary of Property Tax Provisions of the Alaska Statutes

. Power of Levy

(AS 29.53.010, AS 29.53.400, AS 29.53.410, AS 29.43.020)

Home rule and general law municipalities may levy tax on all real and personal property located throughout the municipality to support services provided throughout the municipality, with the exception of second class cities (which have a tax levy limitation of one-half of one percent or five mills). The maximum rate of taxation is three percent (thirty mills) of the full and true value of the taxable property.

(AS 29.53.405)

Cities may levy a higher or lower rate of tax on the value of real and personal property located within "differential tax zones" that receive a higher or lower level of service than other areas of the city.

(AS 29.53.450)

If a city is located within an organized borough, the borough remains responsible for assessment of property and collection of taxes levied by the city. Cities located in an unorganized borough

are responsible for assessment and collection of local property taxes.

(AS 29.53 415-460)

Subject to voter appraisal, Alaska municipalities may levy and collect a sales tax not exceeding six percent of the volume of sales, rents, and other services provided within the municipality. The sales tax may apply to any or all of these sources. Exemptions may be granted by ordinance. Cities exercising this power within an organized borough also exercising the power must tax and/or exempt the same sales, units and other services that the borough does. There is no such limitation on a city in an unorganized borough or a city located within a borough which does not exercise the sales tax power.

Second Class City

(AS 29.53.410)

A majority vote is required before a second class city may exercise the power of taxation.

Borough

(AS 29.53.010)

Boroughs may levy a tax on the value of real and personal property located outside cities (non-area wide) to support services provided to that area only.

(AS 29.63.090)

Boroughs may levy a tax on the value of real

and personal property located within special service areas to support a special service or a higher or lower level of service than that provided on an area wide or non-area wide basis.

- Tax Limitations

. Municipalities

(AS 29.53.050)

There is a general tax levy of 30 mills (three percent) for municipalities. This includes the combined mill levy of a municipality and a borough. However, in light of the Supreme Court decision numbered 1750, October 20, 1978, municipalities may exceed the 30 mills (three percent) ceiling if necessary to pay bonded debt. This interpretation does not require that bonds be in default or in a situation threatening default.

The combined mill levy of a city and a borough may not generate an amount of revenue greater than an amount equal to \$1,000 multiplied by the number of residents of the municipalities; nor may a city and/or borough levy a tax upon that proportion of the municipal tax base that exceeds an amount equal to 225 percent of the average state assessed per capita valuation multiplied by the number of residents of the municipality. (The state average does not include oil and gas property).

A general ceiling of three percent applies to municipal sales taxes. Home rule municipalities may, however, exceed this limitation. However, in

a second opinion by the Supreme Court, number 1735, September 29, 1978, it became possible for a municipality to levy a general sales tax on selected sales activities as opposed to having to tax all sales activities.

Second Class Cities

(AS 29.53.410)

Second class cities have a tax ceiling of 5 mills (one-half of one percent), however, they may exceed this limit if it is necessary to do so to avoid default on bonded or other indebtedness.

- Exemptions

The Alaska Statutes provide for a number of tax exemptions, some of which are listed below:

Title 29: Required Exemptions

Municipal, State, or Federally-owned property, except that private leaseholds, contracts, or other interest in the property is taxable.

Property used exclusively for non-profit, religious, charitable, cemetery, hospital, or educational purposes.

Household furniture of the head of a family or a householder not exceeding \$500 in value.

Some non-business activities of veterans.

Money or deposit.

Real property owned by residents over 64 years of age in which they permanently reside.

Title 43: Required Exemptions
Oil and gas-related properties.

Title 10: Corporations and Associations: Required Exemptions

Title 29: Optional Exemptions and Exclusions

. Home Rule

Home Rule or First or Second Class Boroughs: A home rule or first or second class borough may adopt an ordinance to bring its property tax structure into entire or partial accordance with the property tax structure of a city within it, including--though not limited to--the exclusion of personal property from taxation, the establishment of exemptions, and the extension of the redemption period.

Home Rule or First Class Cities: A home rule or first class city has the same power of exempting or excluding property from borough taxes that already exist as city exemptions. However, the city exercising this power must return to the borough a sum equal to the revenues the borough would have received had the exclusions or exemptions not been adopted. The borough assembly will determine that amount annually.

Home Rule or General Law Cities: A home rule or general law city within an organized borough may adopt an ordinance to assimilate its property tax structure entirely or partially to that of the borough, including partial or total exemptions.

Alaska Native Claims Settlement Act:

The constitution provides that "real property interests conveyed pursuant to this Act, to a native individual, native group, or village, or regional corporation which are not developed or leased to third parties, shall be exempt from State and local real property taxes for a period of twenty years after the date of enactment of this Act." (Public Law 92-203, 92nd Congress, First Session, Section 21).

Table 4.1-9 lists the property and sales taxes for Anchorage, Fairbanks, and municipalities and some service areas in the organized Borough of Matanuska Susitna. Communities along the Richardson Highway that are unincorporated and unorganized do not levy taxes. Of the communities in the Matanuska-Susitna Borough, Palmer is the only municipality that levies a sales tax. Table 4.1-10 provides data on total assessed valuation for real and personal property, population and General Obligation Bonded Indebtedness.

TABLE 4.1-9
MUNICIPAL PROPERTY AND SALES TAX RATES

BOROUGH AND SERVICE AREA (CLASS)	TCA	PROPERTY TAX			SALES TAX		
		1978	1979	1980	1978	1979	1980
MUNICIPALITY OF ANCHORAGE (Unified Home Rule)							
Anchorage (SA)	01	.10					
Administration		3.00	2.65	2.35			
Schools		5.87	4.64	3.93			
Sewer		.53	.46	.41			
Roads		1.65	1.76	1.30			
Police		2.60	2.00	1.90			
Fire		1.79	1.59	1.42			
Parks and Recreation		.68	.50	.56			
Solid Waste		.23	.19	.19			
Area Bonds							
TOTAL		16.45	13.79	12.06			
FAIRBANKS NORTH STAR BOROUGH (Second Class)							
Fairbanks (HR)	01	8.50	8.50	7.50	3.0	3.0	3.0
Administration		1.70	1.44	1.10	2.0	2.0	2.0
Schools		5.50	5.74	5.10			
TOTAL		15.70	15.68	13.70	5.0	5.0	5.0
North Pole (HR)	02	5.80	4.50	4.00	3.0	3.0	3.0
Administration		1.70	1.44	1.10	2.0	2.0	2.0
Schools		5.50	5.74	5.10			
TOTAL		13.00	11.68	10.20			
Other Areas (HR)	03						
Administration		1.70	1.44	1.10	2.0	2.0	2.0
Schools		5.50	5.74	5.10			
TOTAL		7.20	7.18	6.20			

TABLE 4.1-9
MUNICIPAL PROPERTY AND SALES TAX RATES
(continued)

BOROUGH AND SERVICE AREA (CLASS)	TCA	PROPERTY TAX			SALES TAX		
		1978	1979	1980	1978	1979	1980
MATANUSKA-SUSITNA BOROUGH (Second Class)							
Palmer (HR)	05		5.0	5.0	2.0	2.0	2.0
Administration		1.15	1.35	2.58			
Schools		6.05	5.85	5.82			
Land Fill		.10					
TOTAL		<u>7.30</u>	<u>12.20</u>	<u>13.40</u>			
Wasilla (2nd)	13	.50	1.00	1.20			
Administration		1.15	1.35	2.58			
Schools		6.05	5.85	5.82			
Land Fill		.10					
Fire			.60	.60			
TOTAL		<u>7.30</u>	<u>8.80</u>	<u>10.20</u>			
Houston (2nd)	12						
Administration		1.15	1.35	2.58			
Schools		6.05	5.85	5.82			
Land Fill		.10 ^(a)					
TOTAL		<u>7.30</u>	<u>7.20</u>	<u>8.40</u>			
MATANUSKA-SUSITNA BOROUGH (Second Class)							
Greater Palmer (SA)			.50	.50			
Administration	03	1.15	1.35	2.58			
Schools		6.05	5.85	5.82			
Land Fill & Library		.10*	.20	.55			
TOTAL		<u>7.30</u>	<u>7.90</u>	<u>9.45</u>			

TABLE 4.1-9
MUNICIPAL PROPERTY AND SALES TAX RATES
(continued)

BOROUGH AND SERVICE AREA (CLASS)	TCA	PROPERTY TAX			SALES TAX		
		1978	1979	1980	1978	1979	1980
<u>Wasilla Fires (SA)</u>	01	.50	.60	.60			
Administration		1.15	1.35	2.58			
Schools		6.05	5.85	5.82			
Land Fills & Library		.10	.20	.55			
TOTAL		<u>7.80</u>	<u>8.00</u>	<u>9.55</u>			
<u>Trapper Creek Road (SA)</u>	18						
Administration			1.35	2.58			
Schools			5.85	5.82			
Land Fill & Library			.20	.55			
TOTAL			<u>7.40</u>	<u>8.95</u>			
<u>Greater Willow Road (SA)</u>	20						
Administration			1.35	2.58			
Schools			5.85	5.82			
Land Fill & Library			.20	.55			
TOTAL			<u>7.40</u>	<u>8.95</u>			
<u>Talkeetna Fire (SA)</u>							
<u>Service</u>	24						
Administration			1.35	2.58			
Schools			5.85	5.82			
Land Fill & Library			.20	.55			
Fire			.60	.60			
TOTAL			<u>8.00</u>	<u>9.55</u>			

(a) Land fill only.

Source: Alaska Department of Community and Regional Affairs, Division of Local Government Assistance. January 1981. Alaska Taxable 1980. Juneau, AK; p. 47.

TABLE 4.1-10

VALUATION, POPULATION AND G. O. BONDED DEBT

BOROUGH	FULL VALUE DETERMINATION 1-1-80	POPULATION 7-1-80	G.O. BONDED DEBT 7-1-80	PER CAPITA DEBT	PER CAPITA VALUATION	DEBT % TO VALUATION
Anchorage, Municipality of Total	7,495,203,650	204,328	259,003,000	12,676	36,682	3.46
Fairbanks North Star Fairbanks City	1,444,688,030	60,227	33,935,000	563	23,987	2.35
North Pole	795,151,200	36,457	20,591,251	565	21,811	2.60
Total	71,632,900	823	350,000	425	87,039	.48
Matanuska-Susitna Palmer City	2,311,472,130	60,277	54,876,251	911	38,379	2.37
Total	965,423,500	23,177	50,455,000	2,177	41,657	5.23
Palmer City	20,735,400	2,095	2,292,022	2,094	9,898	11.05
Total	986,158,430	23,177	52,747,022	2,276	42,549	5.35

Source: Alaska Department of Community and Regional Affairs, Division of Local Government Assistance. January 1981.
Alaska Taxable 1980. Juneau, AK; p 31.

(iv) Fiscal Revenues and Expenditures

- Baseline: Matanuska-Susitna Borough Budget FY81/82

. Revenues

The current composition of revenue is as follows:

General Fund	36% of total revenues
Service Areas Fund	3% of total revenues
Land Management Fund	3% of total revenues
Education Operating Fund	58% of total revenues

General Fund

Property taxes currently provide approximately 37 percent of total General Fund Revenue. The current mill rate for fiscal 1982 is 6.7 per \$1,000 assessed valuation, broken down as follows:

General Government	0.06
Parks and Recreation	0.08
Ambulance Service	0.24
Community College	<u>0.07</u>
Subtotal	.45
Education	<u>6.25</u>
Total	6.70

State School Debt Service Reimbursement monies currently contribute 23 percent of total General Fund revenues. The State reimburses 80 percent of school bonded indebtedness for organized boroughs and 100 percent for non-organized boroughs. There is a two-year lag in state reimbursements. House

Bill #279 would provide for 100 percent state funding for school debt service payments. The 1982 session of the Alaska legislature is expected to pass this Bill.

Municipal Assistance funds for FY81/82 are \$2.9 million (Approximately 20 percent of total General Fund revenues). These are derived from corporate income tax revenues and are used for the provision of several services. The intent of Municipal Assistance monies is to reduce local property tax levies in proportion to the amount of increased State aid. State Shared Revenue for FY81/82 is \$2.4 million (16 percent of General Fund revenues) with allocations for land use planning and parks and recreation, as well as a general areawide allocation. Revenue Sharing fund allocations are determined in part by an area's ability to raise taxes. This is in conflict with the intent of Municipal Assistance monies and currently there is a legislative proposal from Governor Jay Hammond to combine these two funding sources.

Federal Revenue Sharing represents \$24 per capita revenue and currently provides 3.5 percent of total General Fund revenues. Miscellaneous sources, including interest on earnings, recovery of wages and fringe benefits and transfers from fund balances account for approximately seven percent of total General Fund revenues.

Currently no taxes are raised for capital projects due to abundant State funding from petroleum revenues. The current ratio of bonded indebtedness to

total assessed valuation is 0.075, based on a total assessed property value of \$893,591,412 as of January 1, 1981.

Service Areas Fund

State Shared Revenue funds and Municipal Assistance monies are provided to local governments for fire service, libraries and road maintenance and improvements. These account for 70 percent of total Service Area Fund revenues. Revenues from property taxes account for the other 30 percent of total revenues for areawide services. In FY 81/82 there were approximately \$360,000 in property tax revenues from non-areawide assessed valuations of \$715 million.

Land Management Fund

Revenue sources include State grants, recording and land management fees, interest on earnings from sale of Borough lands and income from the sale and lease of Borough lands. The fund provides for an analysis of all Borough real property to be categorized for assessment purposes and for general management of all the land to be received by the Borough from the Municipal Land Entitlement Act passed by the State Legislature in 1978. The division handles all applications for lease or purchase of Borough lands, Borough resources (timber, gravel) and for rights-of-way.

. Expenditures

Current per capita expenditures for FY81/82 in the Mat-Su Borough Budget are as follows: (these figures are based upon a total areawide population of 22,285).

Areawide General Fund per capita cost	\$750
Ambulance average per capita cost	\$30
Sanitation-landfill average per capita cost	\$16
Library per capita cost when computed on a community basis	\$32
Fire Service average per capita cost	\$35
Parks and Recreation per capita cost	\$50
Land Management Program Administration	\$50
Road Maintenance and Repair (per mile)	\$2,500
Education - average per pupil expenditure including both capital project costs and administrative costs	\$5,650

Table 4.1-11 provides a comparison of average per capita costs for selected social services provided by cities in Impact Areas 2 and 3.

- Baseline Forecast: Matanuska-Susitna Borough Budget

Revenue projections include only major sources of revenue and should be viewed as trend indicators of future revenue schedules and not as predictions of actual future receipts. In general, revenues increase almost 100 percent between 1981 and 1990, and the rate of increase drops to approximately 50 percent between 1991-2000. Projections for the major

TABLE 4.1-11

COMPARISON OF AVERAGE PER CAPITA EXPENDITURES FOR SELECTED SOCIAL SERVICES.

	LOCAL GOVT ADMIN	POLICE	FIRE	AMBLNC	PARKS & RECR	LIBRARY	HEALTH CARE	TRANS	SEWAGE SERVICE	SOLID WASTE DISPOSAL	WATER SUPPLY	PUBLIC WORKS	ELECTRIC UTILS	ROAD MAINT
ANCHORAGE	N/A	\$153	\$100	\$19	\$56	\$21	\$25	\$84	\$91	\$21	\$124	N/A	N/A	N/A
FAIRBANKS	N/A	\$135	\$142	N/A	\$35	N/A	\$32	N/A	\$110	N/A	\$83	\$102	\$360	N/A
MAT-SU BR	\$750	N/A	\$35	\$30	\$50	\$32	N/A	N/A	N/A	\$16	N/A	N/A	N/A	\$33
PALMER	\$190	\$190	\$50	\$19	\$23	\$33	\$31	N/A	\$40	N/A	\$80	\$250	N/A	N/A
WASILLA	\$122	N/A	\$34	N/A	\$22	\$47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	\$88
HOUSTON	\$54	N/A	\$17	N/A	\$9	N/A	N/A	N/A	N/A	\$1.50	N/A	N/A	N/A	\$33

Compiled from data contained in tables providing individual city expenditure data.

Note: The sum of individual entries may not equal totals due to independent rounding.

sources of revenue for the General Fund are provided in Table 4.1-12. There are two major sources of revenue for this fund: local property taxes and school debt service reimbursement monies which together comprise approximately 60 percent of total revenue. State funds for school debt service reimbursement increase from 22 percent of current revenues to approximately 27 percent of total revenues by 1986, when 100 percent of local school capital project debt is anticipated to be reimbursed by the State, after passage of HB#279. Local property tax revenues will double by 1995. Municipal Assistance and State Shared Revenue funds are projected as separate revenue categories based upon current legislation. Municipal Assistance is assumed to remain \$85.26 per capita in real dollars while State Shared Revenues are assumed to be \$107 per capita in real 1981 dollars.

Table 4.1-13 provides property tax projections for the Mat-Su Borough. These projections are based on a 4 percent real rate of increase in property values and a mill levy of 6.5 mills per \$1000 assessed valuation for 1981-1989, and a levy of 6.75 mills for 1990-2005. The per capita share of property taxes declines from \$256 in 1981 to \$187 in 1995 when total property tax revenues actually double.

Table 4.1-14 provides revenue projections for the Service Area Fund and the Land Management Fund. The portion of total property tax revenues contributed to this fund are based upon a mill levy of 0.5 mills per \$1000 assessed valuation until 1990 when this is projected to increase to 0.75 mills per \$1000 assessed

TABLE 4.1-12

MAT-SU BOROUGH BUDGET: BASELINE FORECAST OF GENERAL FUND REVENUES.

YEAR	A TOTAL PROPERTY TAXES \$	B SCHOOL DBT SRV REIMBSMT \$	C STATE SHARED REVENUE \$	D MUNICIPAL ASSIST \$	E FEDERAL REVENUE SHARING \$	MISC REVENUE \$	TOTAL REVENUE \$
1981	5719325	3485006	2384495	1900019	534840	1219451	15243136
1982	5948098	3624407	2566074	2044705	575568	1283378	16042230
1983	6186021	3769383	2780074	2215225	623568	1354285	16928556
1984	6433462	3920158	3004025	2393675	673800	1428271	17853391
1985	6690801	4076965	3338614	2660283	748848	1523088	19038598
1986	6958433	6237756	3632650	2894577	814800	1785932	22324148
1987	7236770	6487266	3947658	3145582	885456	1887194	23589927
1988	7526241	6746757	4207561	3352679	943752	1980608	24757598
1989	7827291	7016627	4445101	3541956	997032	2072001	25900007
1990	8394996	7297292	4597148	3663111	1031136	2172494	27156177
1991	8730795	7589184	4843141	3859123	1086312	2270309	28378865
1992	9080027	7892751	5040984	4016769	1130688	2361845	29523065
1993	9443228	8208461	5321538	4240321	1193616	2470188	30877353
1994	9820958	8536800	5562716	4432497	1247712	2573972	32174654
1995	10213796	8878272	5842949	4655793	1310568	2687076	33588454
1996	10622348	9233403	6119437	4876105	1372584	2802076	35025952
1997	11047242	9602739	6449104	5138791	1446528	2929079	36613481
1998	11489131	9986848	6741000	5371380	1512000	3052205	38152565
1999	11948696	10386322	7098166	5655978	1592112	3189676	39870951
2000	12426644	10801775	7418738	5911417	1664016	3323703	41546294
2001	12923710	11233841	7782217	6201045	1745544	3468379	43354736
2002	13440658	11683197	8163565	6504912	1831080	3619427	45242838
2003	13978284	12150528	8563638	6823699	1920816	3777127	47214092
2004	14537416	12636545	8983185	7158003	2014920	3941745	49271815
2005	15118912	13142008	9423383	7508763	2113656	4113628	51420350

ASSUMPTIONS:

(A) AREAWIDE MILL LEVY 6.0 MILLS PER \$1000 ASSESSED VALUATION, 1981-2005.

NON-AREAWIDE LEVY 0.5 MILLS, 1981-1989; 0.75 MILLS, 1990-2005.

(B) 0.52 % TOTAL BONDED INDEBTEDNESS, 1981-1985.

0.0765% TOTAL BONDED INDEBTEDNESS, 1986-2005.

(C) \$107.00 PER CAPITA.

(D) \$85.26 PER CAPITA.

(E) \$24.00 PER CAPITA.

INCLUDES ONLY MAJOR SOURCES OF REVENUE FOR THE MAT-SU BOROUGH BUDGET.

TABLE 4.1-13

PROPERTY TAX BASELINE PROJECTIONS FOR MAT-SU BOROUGH.

YEAR	NON-A-WIDE ASSESSED VALUATION (\$000)	NON-A-WIDE PROPERTY TAX \$	AREAWIDE ASSESSED VALUATION (\$000)	AREAWIDE PROPERTY TAX \$	TOTAL PROPERTY TAXES \$	PER CAPITA ASSESSED VALUATION \$	PER CAPITA PROPERTY TAX \$
1981	715552.16	357776	893591.41	5361548	5719324.54	40098	256.64
1982	744174.25	372087	929335.07	5576010	5948097.52	38751	248.02
1983	773941.22	386971	966508.47	5799051	6186021.42	37199	238.09
1984	804898.86	402449	1005168.81	6031013	6433462.28	35803	229.15
1985	837094.82	418547	1045375.56	6272253	6690800.77	33503	214.43
1986	870578.61	435289	1087190.58	6523143	6958432.80	32023	204.96
1987	905401.76	452701	1130678.21	6784069	7236770.11	30647	196.15
1988	941617.83	470809	1175905.33	7055432	7526240.92	29904	191.40
1989	979282.54	489641	1222941.55	7337649	7827290.55	29438	188.41
1990	1018453.84	763840	1271859.21	7631155	8394995.64	29603	195.40
1991	1059192.00	794394	1322733.58	7936401	8730795.46	29223	192.89
1992	1101559.68	826170	1375642.92	8253858	9080027.28	29199	192.73
1993	1145622.06	859217	1430668.64	8584012	9443228.37	28766	189.87
1994	1191446.94	893585	1487895.38	8927372	9820957.50	28620	188.91
1995	1239104.82	929329	1547411.20	9284467	10213795.80	28337	187.04
1996	1288669.02	966502	1609307.65	9655846	10622347.64	28139	185.73
1997	1340215.78	1005162	1673679.95	10042080	11047241.54	27769	183.29
1998	1393824.41	1045368	1740627.15	10443763	11489131.20	27629	182.37
1999	1449577.38	1087183	1810252.24	10861513	11948696.45	27288	180.12
2000	1507560.48	1130670	1882662.32	11295974	12426644.31	27154	179.23
2001	1567862.90	1175897	1957968.82	11747813	12923710.08	26921	177.69
2002	1630577.41	1222933	2036287.57	12217725	13440658.48	26690	176.17
2003	1695800.51	1271850	2117739.07	12706434	13978284.82	26460	174.65
2004	1763632.53	1322724	2202448.64	13214692	14537416.21	26234	173.16
2005	1834177.83	1375633	2290546.58	13743279	15118912.86	26009	171.67

ASSUMPTIONS:

REAL VALUE OF REAL AND PERSONAL PROPERTY IS ASSUMED TO INCREASE 4% PER YEAR.

AREAWIDE MILL LEVY=6.0 MILLS PER \$1000 ASSESSED VALUATION.

NON-AREAWIDE MILL LEVY= 0.5 MILLS (1981-1989)

0.75 MILLS (1990-2005)

THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT ROUNDING.

(9)01

TABLE 4.1-14

MAT-SU BOROUGH BUDGET: BASELINE FORECAST OF REVENUES FOR THE SERVICE AREA
FUND; LAND MANAGEMENT FUND; AND MAXIMUM TOTAL BONDED INDEBTEDNESS.

YEAR	A SERV. AREA NON A-WIDE FUND PROP TAX TOT. REV SHARE		STATE SHARED REVENUE	B LAND MANAGEMENT FUND		C TOTAL BONDED INDEBTEDNESS
	\$	\$	\$	(\$)	(\$000)	
1981	1192587	357776	834811	944438	67019.36	
1982	1240290	372087	868203	1016357	69700.13	
1983	1289902	386971	902931	1101117	72488.14	
1984	1341498	402449	939049	1189819	75387.66	
1985	1395158	418547	976611	1322341	78403.17	
1986	1450964	435289	1015675	1438801	81539.29	
1987	1509003	452701	1056302	1563568	84800.87	
1988	1569363	470809	1098554	1666509	88192.90	
1989	1632138	489641	1142496	1760592	91720.62	
1990	2546135	763840	1782294	1820814	95389.44	
1991	2647980	794394	1853586	1918246	99205.02	
1992	2753899	826170	1927729	1996607	103173.22	
1993	2864055	859217	2004839	2107727	107300.15	
1994	2978617	893585	2085032	2203251	111592.15	
1995	3097762	929329	2168433	2314245	116055.84	
1996	3221673	966502	2255171	2423755	120698.07	
1997	3350539	1005162	2345378	2554327	125526.00	
1998	3484561	1045368	2439193	2669940	130547.04	
1999	3623943	1087183	2536760	2811404	135768.92	
2000	3768901	1130670	2638231	2938375	141199.67	
2001	3919657	1175897	2743760	3082340	146847.60	
2002	4076443	1222933	2853510	3233382	152721.53	
2003	4239500	1271850	2967650	3391841	158830.43	
2004	4409080	1322724	3086356	3558013	165183.60	
2005	4585443	1375633	3209810	3732364	171790.95	

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED UPON THE FOLLOWING:

(A) MILL LEVY FOR SERVICE AREAS, 0.5 PER \$1000 ASSESSED VALUATION, 1981-1989.
MILL LEVY FOR SERVICE AREAS, 0.75 PER \$1000 ASSESSED VALUATION, 1990-2005.

(B) \$42.38 PER CAPITA.

(C) RATIO OF TOTAL BONDED INDEBTEDNESS TO TOTAL ASSESSED VALUATION IS 0.075.

valuation. This property tax share accounts for approximately 30 percent of total Service Area Fund revenues, increasing from \$357,776 in 1981 to \$1,375,633 in 2005.

The Land Management Fund revenues are based upon \$42.38 per capita revenue. Maximum total bonded indebtedness for capital projects is not anticipated to exceed 7.5 percent of total assessed valuation. By 1990 total bonded indebtedness for the Mat-Su Borough could reach \$95 million, and \$171 million by the year 2005.

Projections for selected expenditures are displayed in table 4.1-15. These projections are based upon average per capita expenditures found in the FY 81/82 budget. The costs of services that are relatively capital intensive and utilize expensive machinery are assumed to increase in real terms. The increases will be a result of high interest rates in the early 1980s which cause the cost of borrowing money to rise dramatically. These additional costs are built into the cost of capital equipment and thereby drive up the costs of service delivery (see assumptions below table 4.1-15). The cost of delivering services doubles nearly every 10 years for most types of local government service.

- Baseline: Matanuska-Susitna Borough School District
Budget FY81/82

The school district budget for FY81/82 is the single largest category of revenues and expenditures across all services provided within the Borough and within the incorporated communities.

TABLE 4.1-15

MAT-SU BOROUGH: GENERAL FUND; SERVICE AREA FUND; LAND MANAGEMENT FUND EXPENDITURE BASELINE FORECAST.

YEAR	MAT-SU BOROUGH POP	AREAWIDE GEN.FUND ADMIN	A AMBULANCE	B SANITARY LANDFILL.	C LIBRARY	D FIRE SERVICE	E PARKS LAND & RECR	F MNMST PROGRAM ADMIN	G ROAD MAINT & REPAIR	H TOTAL EXPENDS
1981	22285	16713750	668550	356560	713120	779975	1114250	1114250	797500	22257955
1982	23982	17986500	719460	383712	767424	839370	1199100	1199100	877250	23971916
1983	25982	19486500	779460	415712	831424	909370	1299100	1299100	964975	25985641
1984	28075	21056250	842250	449200	898400	982625	1403750	1403750	1061473	28097698
1985	31202	23401500	936060	499232	998464	1092070	1560100	1560100	1167620	31215146
1986	33950	25462500	1069425	570360	1086400	1247663	1697500	1697500	1284382	34115729
1987	36894	27670500	1162161	619819	1180608	1355855	1844700	1844700	1412820	37091163
1988	39323	29492250	1238675	660626	1258336	1445120	1966150	1966150	1554102	39581409
1989	41543	31157250	1308605	697922	1329376	1526705	2077150	2077150	1709512	41883670
1990	42964	32223000	1353366	721795	1374848	1578927	2148200	2148200	1880463	43428799
1991	45263	33947250	1440269	760418	1448416	1663415	2263150	2263150	2068510	45854578
1992	47112	35334000	1499104	791482	1507584	1731366	2355600	2355600	2275361	47850096
1993	49734	37300500	1582536	835531	1591488	1827725	2486700	2486700	2502897	50614076
1994	51988	38991000	1654258	873398	1663616	1910559	2599400	2599400	2753186	53044818
1995	54607	40955250	1737595	917398	1747424	2006807	2730350	2730350	3028505	55853679
1996	57191	42893250	1819818	960809	1830112	2122930	2859550	2859550	3331355	58677374
1997	60272	45204000	1917855	1012570	1928704	2237297	3013600	3013600	3664491	61992116
1998	63000	47250000	2004660	1058400	2016000	2338560	3150000	3150000	4030940	64998560
1999	66338	49753500	2110875	1114478	2122816	2462467	3316900	3316900	4434034	68631970
2000	69334	52000500	2206208	1164811	2218688	2573678	3466700	3466700	4877437	71974723
2001	72731	54548250	2314300	1221881	2327392	2699775	3636550	3636550	5365181	75749879
2002	76295	57221250	2427707	1281756	2441440	2832070	3814750	3814750	5901699	79735423
2003	80034	60025500	2546682	1344571	2561088	2970862	4001700	4001700	6491869	83943972
2004	83955	62966250	2671448	1410444	2686560	3116410	4197750	4197750	7141056	88387668
2005	88069	66051750	2802356	1479559	2818208	3269121	4403450	4403450	7855162	93083056

ASSUMPTIONS:

EXPENDITURE PROJECTIONS WERE BASED ON THE FOLLOWING PER CAPITA MULTIPLIERS.

(A) \$30 1981-1985; +5% 1986-1990; +1% 1991-2005.

(B) \$16 1981-1985; +5% 1986-2005.

(C) \$32

(D) \$35 1981-1985; +5% 1986-1995; +1% 1996-2005.

(E) \$50

(F) \$50

(G) \$2500.00 PER MILE; +10% PER YEAR.

PROJECTIONS DO NOT INCLUDE ALL CATEGORIES OF EXPENDITURES

. Revenues

The composition of revenues for the School District budget for FY81/82 is:

State Sources	68%
Local Property Taxes	26%
Federal Sources	6%

State Sources

The Foundation Program is the primary source of State Funds for education. This is based upon school population with a unit cost adjusted for differences in costs of educational service delivery by geographic location.

The instructional unit cost is \$38,600 for FY81/82. The cost differential for the Mat-Su Borough is 1.04. The # of units for FY81/82 is 358. Therefore, total State Foundation Program funding for the Mat-Su Borough School District will be approximately \$14.372 million.

An additional component of State revenues comes from pupil transportation revenues, which are \$450 per pupil for FY81/82.

Local Property Taxes

The mill rate for education was 6.25 mills per \$1000 assessed valuation for FY81-82. This generated \$5,026,883 or approximately 25 percent of the total school budget.

Federal Sources

Federal sources currently provide \$300 per pupil. These funds are used to provide special programs that would not otherwise be available if the funds were not appropriated.

. Expenditures

The distribution of school budget dollars by function is as follows:

Regular Instruction	33%
Vocational Education	4%
Special Education	6%
Support Services	18%
Operations and Maintenance	19%
Pupil Transportation	8%
Other	12%

Public Law 94142 requires that a school district provide whatever special educational services may be required by a pupil in that school district. Passage of this bill has resulted in tremendous increases in expenditures for special education programs.

The current average costs for pupils, excluding capital project costs, are as follows:

\$3,900 for high school students
\$3,250 for junior high school students
\$2,850 for elementary school students

. Capital Improvements Program

The 1980 Six-Year Capital Construction Plan calls for the following schedule of total funding required to complete the following projects:

	<u>Total Project Cost</u>
Iditarod Elementary Roof	\$ 449,500
Wasilla High Athletic Field	316,035
Palmer High Athletic Field	316,035
Susitna Valley High Addition	850,000
Sutton Elementary Development	106,200
Wholesale Maintenance Facility	2,182,700
Willow Elementary Addition	4,129,900
East Wasilla Elementary	4,193,400
Trappers Creek C1/Multipurpose	2,909,200
Palmer High Addition and Swimming Pool	10,479,700
West Palmer Elementary	4,639,900
Northeast Wasilla Elementary	4,461,300
Houston-Willow Senior/Junior High	5,095,400
Funding Required FY82	\$1,588,270
FY83	964,600
FY84	2,463,700
FY85	7,846,700
FY86	18,766,000
FY87	8,500,000

Anticipated State Funding \$1,588,270 (19%)

Areawide Borough Funding \$28,984,300 (81%)

The Matanuska-Susitna Borough School District's highest priorities were set forth in the bond issue

election of October 6, 1981, which issues passed as follows: .

Palmer Junior High Sprinkling System	\$276,808
Wasilla High Sprinkling System	271,000
Swanson Elementary Sprinkling System	180,300
Trapper Creek Elementary School	2,081,900
Palmer High Athletic Complex	491,900
Wasilla High Athletic Complex	456,000
Su-Valley Band and Shop	1,193,000
Wasilla Area Elementary School	<u>6,694,500</u>
Total	11,645,408

SB 279 Payment of School Bond Principal and Interest

With the passage of \$11,645,408 school bond issue and \$3,228,300 swimming pool issue, the passage of SB 279 obviously becomes the highest priority for the 1981-82 Legislative Session. SB 279 would pick up the Borough's liability for principal and interest on the existing school bonded indebtedness. (Correspondence from Monty Hotchkiss, Business Manager, Mat-Su Borough School District, December 23, 1981).

- Baseline Forecast: Matanuska-Susitna Borough School District Budget

Table 4.1-16 provides projections of major revenue sources for the School District Budget. Total revenues increase from \$23.9 million in 1981 to \$48.8 million in 1990 (104 percent increase) and to \$104.4 million in 2005 (a 114 percent increase). The rate of increase in total revenues is slower than the rate of increase in

TABLE 4.1-16

MAT-SU SCHOOL DISTRICT BUDGET: BASELINE REVENUE FORECASTS

YEAR	SCH POP MAT-SU BOROUGH	A ST FNDN PROG REV (\$000)	B ST TRANS REVENUE (\$000)	TOTAL ST REV (\$000)	C LOC PROP TAXES (\$000)	D FEDERAL REVENUES (\$000)	TOTAL REVENUES (\$000)
1981	4680	15030	2106	17136	5362	1404	23902
1982	5468	17561	2461	20021	5576	1640	27238
1983	5924	19025	2666	21691	5799	1777	29267
1984	6401	20557	2880	23437	6031	1920	31389
1985	7114	22847	3201	26048	6272	2134	34454
1986	7741	24860	3483	28344	6523	2322	37189
1987	8412	27015	3785	30801	6784	2524	40108
1988	9044	29045	4070	33115	7055	2713	42883
1989	9596	30818	4318	35136	7337	2879	45352
1990	10011	33758	4505	38263	7631	3003	48897
1991	10637	35869	4787	40656	7936	3191	51783
1992	11166	37653	5025	42678	8253	3350	54280
1993	11837	39916	5327	45242	8584	3551	57377
1994	12477	42074	5615	47688	8927	3743	60358
1995	13215	44562	5947	50509	9284	3965	63757
1996	13897	46862	6254	53116	9655	4169	66940
1997	14767	49796	6645	56441	10042	4430	70913
1998	15561	52473	7002	59476	10443	4668	74587
1999	16452	55478	7403	62881	10861	4936	78678
2000	17334	58452	7800	66252	11295	5200	82747
2001	18183	61315	8182	69497	11748	5455	86700
2002	19074	64319	8583	72903	12218	5722	90843
2003	20008	67469	9004	76472	12706	6002	95181
2004	20989	70777	9445	80222	13215	6297	99734
2005	22017	74243	9908	84151	13743	6605	104499

ASSUMPTIONS:

- (A) # OF INSTRUCTIONAL UNITS * 1.04 * \$38,600 (1981-1989) +5% 1990-2005
- (B) \$450 PER PUPIL
- (C) BASED ON 6.0 MILLS PER \$1000 ASSESSED VALUATION.
- (D) \$300 PER PUPIL

PROJECTIONS INCLUDE ONLY MAJOR SOURCES OF REVENUE FOR THE SCHOOL BUDGET

school-age population (116 percent by 1990, 119 percent by 2005). State revenues comprise approximately three-fourths of total revenues with State Foundation Program revenues accounting for 88 percent of total State funding.

Local property taxes for school revenues are based upon a mill levy of 6 mills per \$1000 assessed valuation. (Total property tax mill levy assumed to be 6.5 mills per \$1000 assessed valuation for the Mat-Su Borough.) Local taxes comprise approximately 22 percent of total school revenues in 1981 and continue to decline in proportion to total revenues (13 percent in 2005). This occurs due to a proportional increase in State funding which is based upon school age population. Federal Revenues continue to represent a very small portion of total school revenues.

Table 4.1-17 provides school budget expenditure projections by function. These are based upon the following relative shares.

	<u>1980-1984</u>	<u>1985-2000</u>
Regular instruction	33%	30%
Vocational education	4%	2%
Special education	6%	10%
Support services	18%	18%
Operations and Maintenance	19%	18%
Pupil transportation	8%	10%
Other	12%	12%

Special education is anticipated to increase substantially due to the passage of PL 94142, while expen-

TABLE 4.1-17

MAT-SU BOROUGH SCHOOL DISTRICT BUDGET:BASELINE EXPENDITURE FORECAST.

SCH AGE POP.M-S BOROUGH		A REGULAR INSTRN (\$000)	B VOCATNL EDUCTN (\$000)	C SPECIAL EDUCTN (\$000)	D SUPPORT SERVICES (\$000)	E OPERTNS &MAINTN (\$000)	F PUPIL TRANSPTN (\$000)	G OTHER (\$000)	H TOTAL EXPENDS (\$000)
	YEAR								
4680	1981	8726	1058	1587	4760	5024	2115	3173	26442
5468	1982	10195	1236	1854	5561	5870	2472	3707	30894
5924	1983	11045	1339	2008	6025	6359	2678	4016	33471
6401	1984	11935	1447	2170	6510	6871	2893	4340	36166
7114	1985	12058	804	4019	7235	7235	4019	4823	40194
7741	1986	13121	875	4374	7873	7873	4374	5248	43737
8412	1987	14258	951	4753	8555	8555	4753	5703	47528
9044	1988	15330	1022	5110	9198	9198	5110	6132	51099
9596	1989	16265	1084	5422	9759	9759	5422	6506	54217
10011	1990	16969	1131	5656	10181	10181	5656	6787	59395
10637	1991	18030	1202	6010	10818	10818	6010	7212	63109
11166	1992	18926	1262	6309	11356	11356	6309	7571	66248
11837	1993	20064	1338	6688	12038	12038	6688	8025	70229
12477	1994	21149	1410	7050	12689	12689	7050	8459	74026
13215	1995	22399	1493	7466	13440	13440	7466	8960	78405
13897	1996	23555	1570	7852	14133	14133	7852	9422	82451
14767	1997	25030	1669	8343	15018	15018	8343	10012	87613
15561	1998	26376	1758	8792	15826	15826	8792	10550	92323
16452	1999	27886	1859	9295	16732	16732	9295	11154	97610
17334	2000	29381	1959	9794	17629	17629	9794	11752	102843
18183	2001	32364	2158	10788	19418	19418	10788	12946	107880
19074	2002	33950	2263	11317	20370	20370	11317	13580	113166
20008	2003	35612	2374	11871	21367	21367	11871	14245	118707
20989	2004	37358	2491	12453	22415	22415	12453	14943	124528
22017	2005	39188	2613	13063	23513	23513	13063	15675	130627

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED UPON THE FOLLOWING:

- (A) 33% OF TOTAL EXPENDITURES, 1981-1984; 30% 1985-2005.
- (B) 4% 1981-1984; 2% 1985-2005.
- (C) 6% 1981-1984; 10% 1985-2005.
- (D) 18% 1981-2005.
- (E) 19% 1981-1984; 18% 1985-2005.
- (F) 8% 1981-1984; 10% 1985-2005.
- (G) 12% 1981-2005. THIS INCLUDES

SOME CAPITAL IMPROVEMENTS.

- (H) TOTAL EXPENDITURES PER PUPIL \$5650 1981-1989;
\$5933 1990-2005.

ditures for vocational education are expected to decrease.

Table 4.1-18 provides projections for school budget expenditures for operations and maintenance only. This Table specifically excludes capital improvement expenditures. Average per pupil cost is \$2,850 for elementary education and \$3,550 for secondary education until 1989 when each category is anticipated to increase five percent in real dollars. Expenditures for both categories increase 100 percent by 1988, when the school age population in each category also doubles. Education expenditures for operations and maintenance only increase 126 percent between 1981-1990, and increase at a slower rate of 63 percent between 1991 and 2000. However, by 2005, education expenditures will have increased 12.0 percent over 1990 levels.

- Baseline: City of Palmer: Annual Budget FY82

The new fiscal year for the City of Palmer will correspond to the calendar year.

. Revenues

The current composition of revenues is as follows:

General Fund

Taxes	35%
(property tax 14%, sales tax 21%)	
Intergovernmental Revenue	25%
Service Charges	30%
Miscellaneous	10%

TABLE 4.1-18

MAT-SU BOROUGH SCHOOL DISTRICT BUDGET:BASELINE
EXPENDITURE FORECAST, OPERATIONS & MAINTENANCE.

YEAR	PRIMARY	TOTAL	SECDRY	TOTAL	TOTAL
	POPLTN	EXPENDS	POPLTN	EXPENDS	SCHOOL
		PRIMARY		SECDRY	EXPENDS
		(\$000)		(\$000)	(\$000)
1981	2527	7202	2153	7643	14845
1982	2953	8416	2515	8928	17344
1983	3199	9117	2725	9674	18791
1984	3457	9852	2945	10455	20307
1985	3842	10950	3272	11616	22565
1986	4180	11913	3561	12642	24555
1987	4542	12945	3869	13735	26680
1988	4884	13919	4160	14768	28687
1989	5182	14769	4414	15670	30438
1990	5406	16234	4605	17167	33402
1991	5744	17249	4893	18241	35490
1992	6029	18105	5136	19147	37252
1993	6392	19195	5445	20299	39494
1994	6738	20234	5739	21395	41629
1995	7136	21429	6079	22663	44092
1996	7505	22538	6393	23833	46371
1997	7974	23946	6793	25324	49270
1998	8403	25234	7158	26685	51919
1999	8884	26679	7568	28214	54892
2000	9360	28108	7973	29723	57831
2001	9819	29486	8364	31181	60667
2002	10300	30931	8774	32709	63640
2003	10805	32447	9204	34313	66760
2004	11334	34036	9655	35994	70030
2005	11889	35703	10128	37757	73460

ASSUMPTIONS:

PROJECTIONS WERE BASED UPON THE FOLLOWING:

AVERAGE PER PUPIL EXPENDITURE FOR O&M,
ELEMENTARY \$2850 1981-1989; \$3003 1990-2005

SECONDARY \$3550 1981-1989; \$3728 1990-2005

The local property tax rate is 4.0 mills per \$1000 assessed valuation. The current per capita assessed valuation is \$25,000 based upon a population of 2,567 persons, and a total assessed valuation of \$64,710,668.

The sales tax rate is two percent, and per capita retail expenditures average approximately \$4,674 per annum.

Intergovernmental Revenue comes from State grants and State Shared Revenue.

Average per capita service charges include:

Fire	\$ 20
Police	28
Ambulance	19
Transportation	8
Sanitation	23
Culture and Recreation	33

Water Fund

Charges for service	35%
Rents	9%
Transfers from General Fund and State Grants	56%

User charges are \$34 per person on average.

Sewer Fund

Charges for Service	76%
Interest and Miscellaneous	24%

User charges are \$32 per person on average.

Capital Project Fund

State Shared Grants 100%

\$2,260,174 total or \$880 per capita. Projects for 1982 Budget include:

Hospital	\$1,200,000
Public Works Building	300,000
Senior Citizens Center	308,000
Municipal Aid Public Works Building	110,000
Street Construction	258,000
Storm Drain	<u>84,174</u>
	\$2,260,174

. Expenditures

General Fund per capita expenditures for FY82 are \$786, broken down as follows:

Administrative	\$190
Police	190
Ambulance	19
Parks and Recreation	23
Health	31
Library	33
Public Works	250
Fire	50

Public works include: waste collection, airport, roads, street lights, engineering and administration.

Water Fund \$80 per capita or \$280 per household.
Sewer Fund \$40 per capita or \$145 per household.

Table 4.1-11 provides a comparison of average per capita costs of selected services provided by cities in Impact Areas 2 and 3.

Bonded Indebtedness

The City of Palmer assumes the ratio of bonded indebtedness to total assessed valuation will not rise above 0.04. Current bonded indebtedness for the new water and sewer system required a bond issue of \$1.9 million at eight percent interest rate. The \$1.9 million represents the local share (50 percent) of total costs for the system.

- Baseline Forecast: City of Palmer Budget

Revenue projections include only major sources of revenue and do not attempt to identify all possible sources of future receipts. Table 4.1-19 provides revenue projections for the General Fund. Local taxes comprise approximately 35 percent of total revenues, increasing 79 percent by 1990 and 40 percent between 1990-2000. Sales tax revenues are derived from a 2 percent tax on gross retail sales.

Revenues from service charges account for approximately 25 percent of total revenues. Service charges are levied for fire, police, ambulance, transportation, sanitation, and culture and recreation, totalling \$131 per capita. Total General Fund revenues increase from \$1.4 million in 1981 to \$4.2 million in 2005.

TABLE 4.1-19

CITY OF PALMER BUDGET: GENERAL FUND REVENUE BASELINE FORECAST.

YEAR	PALMER POP	A PROPERTY TAX REVENUE	B SALES TAX REVENUE	TOTAL LOCAL TAX REV	C INTER GOVT REVENUE	D SERVICE CHARGES	MISCL REVENUE	TOTAL GENERAL REVENUE
1981	2567	256700	239963	496663	354759	336277	231338	1419038
1982	2734	273400	255574	528974	377839	358154	246388	1511355
1983	2912	291200	272214	563414	402438	381472	262429	1609754
1984	3101	310100	289881	599981	428558	406231	279462	1714233
1985	3302	330200	308671	638871	456336	432562	297576	1825346
1986	3517	351700	328769	680469	486049	474795	302884	1944198
1987	3746	374600	350176	724776	517697	505710	322606	2070789
1988	3989	398900	372892	771792	551280	538515	343533	2205119
1989	4248	424800	397103	821903	587074	573480	365838	2348294
1990	4525	452500	422997	875497	625355	610875	389693	2501420
1991	4683	468300	437767	906067	647191	632205	403300	2588762
1992	4847	484700	453098	937798	669855	654345	417424	2679422
1993	5017	501700	468989	970689	693349	677295	432064	2773398
1994	5193	519300	485442	1004742	717673	701055	447221	2870690
1995	5374	537400	502362	1039762	742687	725490	462809	2970747
1996	5562	556200	519936	1076136	768668	750870	478999	3074674
1997	5757	575700	538164	1113864	795617	777195	495793	3182470
1998	5959	595900	557047	1152947	823534	804465	513189	3294135
1999	6167	616700	576491	1193191	852279	832545	531102	3409118
2000	6383	638300	596683	1234983	882131	861705	549704	3528522
2001	6606	660600	617529	1278129	912949	891810	568909	3651797
2002	6838	683800	639216	1323016	945012	923130	589889	3780046
2003	7077	707700	661558	1369258	978041	955395	609471	3912166
2004	7325	732500	684741	1417241	1012315	988875	630829	4049260
2005	7581	758100	708672	1466772	1047694	1023435	652876	4190777

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING:

(A) MILL LEVY OF 4.0 MILLS PER \$1000 ASSESSED VALUATION; AVERAGE PER CAPITA ASSESSED VALUATION \$25000.00.

(B) SALES TAX=2% OF GROSS RETAIL SALES, PER CAPITA ESTIMATED RETAIL SALES \$4674.00.

(C) 25% OF TOTAL GENERAL REVENUE.

(D) \$131.00 1981-1985; \$135.00 1986-2005.

PROJECTIONS INCLUDE ONLY MAJOR SOURCES OF REVENUE.

Table 4.1-20 provides revenue projections for special funds including the Water Fund, Sewer Fund, and Capital Projects Fund. In general, revenues increase more than twice as fast between 1981-1990 (76 percent), as they do between 1990 and 1999 (36 percent), consistent with changes in total population for the City of Palmer. The total revenues for each fund increase 100 percent by 1993. These projections are based upon average per capita revenues received in FY81.

Expenditure projections for the City of Palmer are displayed in Table 4.1-21. In general, expenditures increase 76 percent between 1981-1990, and increase more slowly (36 percent) between 1990-2000. These are based upon average per capita costs for delivery of services in FY81. Most of the costs for service delivery double by 1993 or 1994 when the population of the city also doubles. Total expenditures increase from \$2.3 million in 1981 to \$4.2 million in 1990 and \$5.9 million in 2000. The expenditure forecasts implicitly include an increase in real costs for categories of services that are relatively capital intensive (see assumptions accompanying Table 4.1-21).

Projections of maximum total bonded indebtedness for the City of Palmer are displayed in Table 4.1-21. The value of real and personal property is assumed to increase at a rate of 4 percent per annum in current dollars. Total bonded indebtedness is assumed not to exceed 4 percent of total assessed valuation. By 2005 a maximum of \$6.9 million in total bonded debt may be incurred at these rates.

TABLE 4.1-20

CITY OF PALMER BUDGET: SPECIAL FUNDS-REVENUE BASELINE FORECAST.

WATER FUND REVENUES

SEWER FUND REVENUES

YEAR	A CHARGES FOR SERVICE	RENTS	B TRANSFERS FROM FUNDS	TOTAL WATER FUND REVENUE	C CHARGES FOR SERVICE	INTEREST & MISC	TOTAL SEWER FUND REVENUE	CAPIT/ PROJEL: FUND REVENUE
1981	87278	22443	139645	249366	82144	25940	108084	2258960
1982	92956	23903	148730	265589	87488	27628	115116	240597
1983	99008	25459	158413	282880	93184	29427	122611	256256
1984	105434	27112	168694	301240	99232	31336	130568	2728880
1985	112268	28869	179629	320766	105664	33368	139032	2905740
1986	119578	30749	191325	341651	112544	35540	148084	309491
1987	127364	32751	203782	363897	119872	37854	157726	329646
1988	135626	34875	217002	387503	127648	40310	167958	3510320
1989	144432	37140	231091	412663	135936	42927	178863	37382
1990	153850	39561	246160	439571	144800	45726	190526	398201
1991	159222	40943	254755	454920	149856	47323	197179	4121040
1992	164798	42377	263677	470851	155104	48980	204084	4265360
1993	170578	43863	272925	487366	160544	50698	211242	441491
1994	176562	45402	282499	504463	166176	52477	218653	4569840
1995	182716	46984	292346	522046	171968	54306	226274	4729120
1996	189108	48628	302573	540309	177984	56205	234189	48945
1997	195738	50333	313181	559251	184224	58176	242400	506611
1998	202606	52099	324170	579874	190688	60217	250905	5243920
1999	209678	53917	335485	599080	197344	62319	259663	54269
2000	217022	55806	347235	620063	204256	64502	268758	56170
2001	224604	57755	359366	641726	211392	66755	278147	5813280
2002	232492	59784	371987	664263	218816	69100	287916	6017440
2003	240618	61873	384989	687480	226464	71515	297979	62277
2004	249050	64041	398480	711571	234400	74021	308421	64460
2005	257754	66280	412406	736440	242592	76608	319200	6671280

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING:

- (A) AVERAGE PER CAPITA CHARGE \$34.00.
- (B) 76% OF TOTAL WATER FUND REVENUE.
- (C) AVERAGE PER CAPITA CHARGE \$32.00.
- (D) AVERAGE PER CAPITA REVENUE = \$890.00.

TABLE 4.1-21

CITY OF PALMER BUDGET: BASELINE EXPENDITURE FORECAST.

		A	B	C	D	E	F	G	H	I	J		K	L
	PALMER POP	ADMIN	POLICE	FIRE	AMBULANCE	PARKS & RECRIN	HEALTH	LIBRARY	PUBLIC WORKS	WATER SUPPLY	SEWER	TOTAL EXPENDS	TOTAL ASSESSED VALUATION (\$000)	TOTAL BONDED INDEBTIONS (\$000)
YEAR														
1981	2567	487730	487730	128350	48773	59041	79577	84711	641750	205360	102680	2325702	67299	2692
1982	2734	519460	519460	136700	51946	62882	84754	90222	683500	218720	109360	2477004	69991	2800
1983	2912	553280	553280	145600	55328	66976	90272	96096	728000	232960	116480	2638272	72791	2912
1984	3101	589190	589190	155050	58919	71323	96131	102333	775250	248080	124040	2809506	75702	3028
1985	3302	627380	627380	165100	62738	75946	102362	108966	825500	264160	132080	2991612	78730	3149
1986	3517	668230	688277	184643	70164	80891	109027	116061	923213	281360	140680	3262545	81880	3275
1987	3746	711740	733092	196665	74733	86158	116126	123618	983325	299680	149840	3474977	85155	3406
1988	3989	757910	780647	209423	79581	91747	123659	131637	1047113	319120	159560	3700396	88561	3542
1989	4248	807120	831334	223020	84748	97704	131688	140184	1115100	339840	169920	3940657	92103	3684
1990	4525	859750	885543	237563	90274	104075	140275	149325	1187813	362000	181000	4197616	95788	3832
1991	4683	889770	916463	245858	94362	107709	145173	154539	1229288	374640	187320	4345122	99619	3985
1992	4847	920930	948558	254468	97667	111481	150257	159951	1272338	387760	193880	4497289	103604	4144
1993	5017	953230	981827	263393	101093	115391	155527	165561	1316963	401360	200680	4655023	107748	4310
1994	5193	986670	1016270	272633	104639	119439	160983	171369	1363163	415440	207720	4818325	112058	4482
1995	5374	1021060	1051692	282135	108286	123602	166594	177342	1410675	429920	214960	4986266	116540	4662
1996	5562	1056780	1088483	294953	112074	127926	172422	183546	1460025	444960	222480	5163650	121202	4848
1997	5757	1093830	1126645	305294	116004	132411	178467	189981	1511213	460560	230280	5344684	126050	5042
1998	5959	1132210	1166176	316006	120074	137057	184729	196647	1564238	476720	238360	5532216	131092	5244
1999	6167	1171730	1206882	327036	124265	141841	191177	203511	1618838	493360	246680	5725319	136336	5453
2000	6383	1212770	1249153	338490	128617	146809	197873	210639	1675538	510640	255320	5925850	141789	5672
2001	6606	1255140	1292794	350316	133111	151938	204786	217998	1734075	528480	264240	6132878	147461	5898
2002	6838	1299220	1338197	362619	137786	157274	211978	225654	1794975	547040	273520	6348262	153359	6134
2003	7077	1344630	1384969	375293	142602	162771	219387	233541	1857713	566160	283080	6570145	159493	6380
2004	7325	1391750	1433503	388445	147599	168475	227075	241725	1922813	586000	293000	6800384	165873	6635
2005	7581	1440390	1483602	402020	152757	174363	235011	250173	1990013	606480	303240	7038049	172508	6900

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING:

- (A) \$190.00 (1981-2005)
- (B) \$190.00 (1981-1985) +3% 1986-2005.
- (C) \$ 50.00 (1981-1985) +5% 1986-1995; +1% 1996-2005.
- (D) \$ 19.00 (1981-1985) +5% 1986-1990; +1% 1991-2005.
- (E) \$ 23.00 (1981-2005)
- (F) \$ 31.00 (1981-2005)
- (G) \$ 33.00 (1981-2005)
- (H) \$250.00 (1981-1985) +5% 1986-2005.
- (I) \$ 80.00 (1981-2005)
- (J) \$ 40.00 (1981-2005)
- (K) INCREASES AT 4% PER YEAR IN 1981 DOLLARS.
- (L) ASSUMED NOT TO EXCEED 4% OF TOTAL ASSESSED VALUATION.

- Baseline: City of Wasilla: Annual Budget FY81/82

. Revenues

The current composition of revenues is as follows:

General Fund

		<u>Per Capita Revenue</u>
Intergovernmental Transfer	5%	\$ 12
State Shared Taxes (Primarily Municipal Assistance)	56%	145
Federal and State Revenue Sharing	35%	90
Licenses, Fines, Misc.	4%	10

Capital Project Fund

State Grants	100%	\$1,750

Library Fund

\$47

Mat-Su Borough Funds	70% of Library Fund		
General Fund Transfers	24%	"	"
Other	6%	"	"

. Expenditures

The following are average per capita expenditures for FY81/82:

Administration	\$122
Fire Service - Wasilla Fire Service Area	34
Library	47

Parks and Recreation	22
Road Maintenance (in addition to \$2,500 per mile provided by the State)	88
Capital Projects	\$1,750
See also Table 4.1-11	

Capital Projects: Water Supply System

Currently no bonds have been issued. However, the construction of a new centralized water supply system will require a \$1.6 million bonding issue to be paid over a 40 year period at an interest rate of 5 to 5.5% percent per annum. The bonds will be issued in 1982 and the first payment will be due in 1983. Funding for this project requires a 50 percent local share to which the City Council appropriated a total of \$235,000 based on a per capita amount. The remaining local share will be derived from an assessment only on lots that will benefit from the improvements. Estimated assessment will be 18¢ per square foot. Hookup will not be mandatory but will cost \$10-12 per sq. ft. \$64,000 has been appropriated for the city's own connection grant program. The city will be paying the individual lot owner + or - \$800 to hook up the system out of an estimated \$1000 total hook up cost. User charges will cover the operation and maintenance costs for the water supply system. Estimated average household cost will be \$15.00 per month.

Other capital improvement projects for FY81-82 include a Senior Citizen Center, road maintenance

and repair including paving, storm drainage and bike trails; several parks projects; a Senior Citizen housing project; Old Elementary School; water assessments, and improvements for the library.

- Baseline Forecast: City of Wasilla Budget

Projections of major sources of revenues for the City of Wasilla are provided in Table 4.1-22. These are derived from average per capita revenues received in FY 81/82. The majority of total revenues comprise State shared taxes and State Revenue Sharing. Locally derived revenues account for only 4 percent of total revenues, which increase approximately 100 percent every 10 years, until 2000: this is consistent with anticipated increases in population in Wasilla which is also expected to double every 10 years. Revenue forecasts based upon average per capita receipts should be viewed as indicators of future revenue trends and not as predictions of actual future receipts, as these are subject to change when policy decisions regarding budget appropriations are altered under different administrations.

Expenditure projections for local government services are provided in Table 4.1-23. These are based upon costs of service delivery for FY81/82. Costs of service delivery, excluding inflation, double approximately every 10 years. Each service accounts for the following share of total expenditures, excluding capital project costs.

TABLE 4.1-22

CITY OF WASILLA BUDGET: BASELINE REVENUE FORECAST.

							E	
			B	C	D	TOTAL	CAPITAL	F
A			STATE	FEDERAL	LISC	GENERAL	PROJECT	LIBRARY
WASILLA			SHARED	& STATE	FINES	FUND	FUND	FUND
YEAR	POP	INTGOVT	TAXES	REVENUE	MISC	REVENUES	STATE	REVENUES
		TRANSFR		SHARING	REVENUE		GRANTS	
1981	2168	26016	314360	195120	21680	557176	3533840	101896
1982	2331	27972	337995	209790	23310	599067	3799530	109557
1983	2505	30060	363225	225450	25050	643785	4083150	117735
1984	2693	32316	390485	242370	26930	692101	4389590	126571
1985	2895	34740	419775	260550	28950	744015	4718850	136065
1986	3112	37344	451240	280080	31120	799784	5072560	146264
1987	3346	40152	485170	301140	33460	859922	5453980	157262
1988	3597	43164	521565	323730	35970	924429	5863110	169059
1989	3867	46404	560715	348030	38670	993819	6303210	181749
1990	4157	49884	602765	374130	41570	1068349	6775910	195379
1991	4468	53616	647860	402120	44680	1148276	7282840	209996
1992	4803	57636	696435	432270	48030	1234371	7828890	225741
1993	5164	61968	748780	464760	51640	1327148	8417320	242708
1994	5551	66612	804895	499590	55510	1426607	9048130	260897
1995	5967	71604	865215	537030	59670	1533519	9726210	280449
1996	6415	76980	930175	577350	64150	1648655	10456450	301505
1997	6896	82752	999920	620640	68960	1772272	11240480	324112
1998	7413	88956	1074885	667170	74130	1905141	12083190	348411
1999	7969	95628	1155505	717210	79690	2048033	12989470	374543
2000	8474	101688	1228730	762660	84740	2177818	13812620	398278
2001	9093	109116	1318485	818370	90930	2336901	14821590	427371
2002	9756	117072	1414620	878040	97560	2507292	15902280	458532
2003	10469	125628	1518005	942210	104690	2690533	17064470	492043
2004	11233	134796	1628785	1010970	112330	2886881	18309790	527951
2005	12053	144636	1747685	1084770	120530	3097621	19646390	566491

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED UPON THE FOLLOWING AVERAGE PER CAPITA REVENUES
FOR F/Y 1981-1982.

(A) \$12 (E) \$10
(B) \$145 (F) \$1,630
(C) \$90 (G) \$47
(D) \$10

PROJECTIONS INCLUDE ONLY MAJOR SOURCES OF REVENUE .

TABLE 4.1-23

CITY OF WASILLA BUDGET:BASELINE EXPENDITURE FORECAST.

YEAR	WASILLA POP	A PARKS & RECR	B LIBRARY	C FIRE SERVICE	D LOCAL GOVT ADMIN &	E ROAD MAINT & REPAIR	F TOTAL OPERS & MAINT	CAPITAL PROJECTS EXPENDS
1981	2168	47696	101896	73712	264496	190784	678584	3794000
1982	2331	51282	109557	79254	284382	205128	729603	4079250
1983	2505	55110	117735	85170	305610	220440	784065	4383750
1984	2693	59246	126571	91562	328546	236984	842909	4712750
1985	2895	63690	136065	98430	353190	254760	906135	5066250
1986	3112	68464	146264	111098	379664	273856	979346	5446000
1987	3346	73612	157262	119452	408212	294448	1052986	5855500
1988	3597	79134	169059	128413	438834	316536	1131976	6294750
1989	3867	85074	181749	138052	471774	340296	1216945	6767250
1990	4157	91454	195379	148405	507154	365816	1308208	7274750
1991	4468	98296	209996	159508	545096	393184	1406080	7819000
1992	4803	105666	225741	171467	585966	422664	1511504	8405250
1993	5164	113608	242708	184355	630008	454432	1625111	9037000
1994	5551	122122	260897	198171	677222	488488	1746900	9714250
1995	5967	131274	280449	213022	727974	525096	1877815	10442250
1996	6415	141130	301505	231261	782630	564520	2021046	11226250
1997	6896	151712	324112	248601	841312	606848	2172585	12068000
1998	7413	163086	348411	267239	904386	652344	2335466	12972750
1999	7969	175318	374543	287282	972218	701272	2510633	13945750
2000	8474	186428	398278	305488	1033828	745712	2669734	14829500
2001	9093	200046	427371	327803	1109346	800184	2864750	15912750
2002	9756	214632	458532	351704	1190232	858528	3073628	17073000
2003	10469	230318	492043	377407	1277218	921272	3298258	18320750
2004	11233	247126	527951	404950	1370426	988504	3538957	19657750
2005	12053	265166	566491	434511	1470466	1060664	3797298	21092750

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING AVERAGE PER CAPITA COSTS :

(A)\$22

(B)\$47

(C)\$34; +5% 1986-1995; +1% 1996-2005.

(D)\$122

(E)\$88

(F)\$1,750

Parks and recreation	7%
Library	15%
Fire service	11%
Local government administration	39%
Road maintenance and repair	28%

- Baseline: City of Houston: Annual Budget FY81-82

. Revenues

The current composition of revenues is as follows:

Grants

		<u>Per Capita Dollars</u>
Roads, Mat-Su Borough	2,675	\$ 4
Roads, Legislature	4,955	8
Roads, Local Service Roads		
Roads and Trails	102,000	170
Parks and Recreation, Borough	2,196	4
Parks and Recreation, Lawcon	94,154	157
Jobs Legislature	11,246	19
State Revenue Sharing	79,700	133
State Supplement	11,800	20
Municipal Assistance	44,500	74
Federal Revenue Sharing	2,544	4
Grant for septage disposal		
study	\$100,000	167
Fire Hall capital grant	350,000	583
SP 168 - per capita grant*	194,620	270

* \$1000 per person based on 1980 census population of 325. Grant for 2 year period.)

Each grant must be used for the purpose specified at approval and monies cannot be transferred or assigned. Twenty percent of the Revenue Sharing must be used to maintain roads; the remainder can be used at the council's discretion. The Municipal Assistance monies may be used at the Council's discretion.

. Expenditures

The composition of current expenditures is as follows:

Administration per capita costs	\$54.00	
Fire service per capita costs	17.00	
Parks and Recreation per capita costs (informally administered by the City of Houston)	9.00	
Road - grading per mile	\$160.00	31 miles
- snow plowing per mile	68.00	23 miles
- Culverts and gravel per mile	420.00	31 miles
Total roads per mile	\$630.00	(per capita \$33)
- see Table 4.1-11.		

Solid waste disposal per capita cost \$1.50 paid to Mat-Su Borough to use their landfill at Big Lake. (Correspondence from Elsie O'Bryan, City Clerk, December 21, 1981).

The City of Houston anticipates obtaining a State Grant for a post office; residents are pressing for this for reasons of convenience and civic pride.

Current funding for roads is adequate for maintenance only of roads within the city limits; current funds are not adequate for making road improvements.

The existing camper park is an important source of additional retail sales in the Houston area. The space in this park is to be doubled by summer of 1982. There are no local funds for parks and recreation. Funds are derived from the Borough, State Shared Revenues and State Grants, but these funds are administered by the City.

The City of Houston is trying to find an alternative to the current practice of hauling all septic tank pumpage from the the Mat-Su Borough to Anchorage. The City has authorized an engineering team to evaluate alternatives for a Pumper Dumper Sewage Facility to serve the Mat-Su Borough. A questionnaire has been sent out to obtain data on current usage patterns and attitudes towards on-site septic systems. Any capital project expenditures for a septage facility will most likely be funded by State grants.

- Baseline Forecast: City of Houston Budget

Table 4.1-24 provides estimates of future grant funding for the City of Houston based upon major categories of current per capita receipts for FY81/82. Revenues increase at a steady rate of 136 percent every 10 years. Total revenues are projected to double every eight years (1988, 1995, 2003) consistent with increases in population.

TABLE 4.1-24

CITY OF HOUSTON BUDGET: ESTIMATES OF FUTURE GRANT FUNDING-BASELINE.

YEAR	HOUSTON POP	A ROAD MAINT	C JOBS PROG PARKS & RECR	D STATE REVENUE SHARING	E STATE SUPPLMT REVEUE	F MUNICPL ASSIST REVENUE	G FEDERAL REVENUE SHARING	H SPI68 PER CAPITA GRANT	TOTAL ESTIMTD GRANT FUNDING
		REPAIR	& RECR	LEGISL	REVEUE	REVENUE	SHARING	GRANT	FUNDING
1981	600	109200	96600	11400	79800	12000	44400	2400	81000 436800
1982	660	120120	106260	12540	87780	13200	48840	2640	89100 480480
1983	726	132132	116886	13794	96558	14520	53724	2904	98010 528528
1984	799	145418	128639	15181	106267	15980	59126	3196	107865 581672
1985	878	159796	141358	16682	116774	17560	64972	3512	118530 639184
1986	966	175812	155526	18354	128478	19320	71484	3864	130410 703248
1987	1063	193466	171143	20197	141379	21260	78662	4252	143505 773864
1988	1169	212758	188209	22211	155477	23380	86506	4676	157815 851032
1989	1286	234052	207046	24434	171038	25720	95164	5144	173610 936208
1990	1415	257530	227815	26885	188195	28300	104710	5660	191025 1030120
1991	1556	283192	250516	29564	206948	31120	115144	6224	210060 1132768
1992	1712	311584	275632	32528	227696	34240	126688	6848	231120 1246336
1993	1883	342706	303163	35777	250439	37660	139342	7532	254205 1370824
1994	2071	376922	333431	39349	275443	41420	153254	8284	279585 1507688
1995	2278	414596	366758	43282	302974	45560	168572	9112	307530 1658384
1996	2506	456092	403466	47614	333298	50120	185444	10024	338310 1824368
1997	2757	501774	443877	52383	366681	55140	204018	11028	372195 2007096
1998	3032	551824	488152	57608	403256	60640	224368	12128	409320 2207296
1999	3335	606970	536935	63365	443555	66700	246790	13340	450225 2427880
2000	3669	667758	590709	69711	487977	73380	271506	14676	495315 2671032
2001	4036	734552	649796	76684	536788	80720	298664	16144	544860 2938208
2002	4439	807898	714679	84341	590387	88780	328486	17756	599265 3231592
2003	4883	888706	786163	92777	649439	97660	361342	19532	659205 3554824
2004	5372	977704	864892	102068	714476	107440	397528	21488	725220 3910816
2005	5909	1075438	951349	112271	785897	118180	437266	23636	797715 4301752

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING
AVERAGE PER CAPITA REVENUES FOR DIFFERENT
GRANT PROGRAMS.

(A)\$182	(E)\$20
(B)\$161	(F)\$74
(C)\$19	(G)\$4
(D)\$133	(H)\$135

GRANTS WERE COMBINED INTO CATEGORIES WHERE APPLICABLE.

The relative shares of each source of funding are as follows:

Road Maintenance - Borough and State	25%
Parks and Recreation - Borough and State	22%
Jobs Program - State	3%
State Revenue Sharing	18%
State Supplemental Revenue	3%
Municipal Assistance Revenue	10%
Federal Revenue Sharing	0.5%
SP 168 Per Capita Grant	18.5%

The revenue projection estimates should be viewed as general indicators of future funding patterns and not as predictions of actual future receipts.

Table 4.1-25 provides expenditure projections for specific local services. Total expenditures increase at approximately the same rate as do revenues until 1995 when expenditure increases begin to exceed revenue increases. This is accounted for by the anticipated increases in the real cost of road maintenance: + five percent between 1986-1990; + three percent 1991-2005 in real current dollars. Local government administration accounts for the majority of local costs, 47 percent of total expenditures. Other services account for the following proportions of total expenditures:

Fire Service	15%
Parks and Recreation	8%
Road Maintenance	29%
Solid Waste	1%

TABLE 4.1-25

CITY OF HOUSTON BUDGET:BASELINE EXPENDITURE FORECAST.

YEAR	HOUSTON POP	A LOCAL GOVT ADMIN	B FIRE SERVICE	C PARKS & RECR	D ROAD MAINT	E SOLID WASTE	TOTAL EXPENDS
1981	600	32400	10200	5400	19800	900	68700
1982	660	35640	11220	5940	21780	990	75570
1983	726	39204	12342	6534	23958	1089	83127
1984	799	43146	13583	7191	26367	1199	91486
1985	878	47412	14926	7902	28974	1317	100531
1986	966	52164	17243	8694	33472	1449	113022
1987	1063	57402	18975	9567	36833	1595	124371
1988	1169	63126	20867	10521	40506	1754	136773
1989	1286	69444	22955	11574	44560	1929	150462
1990	1415	76410	25258	12735	49030	2123	165555
1991	1556	84024	27775	14004	55518	2334	183655
1992	1712	92448	30559	15408	61084	2568	202067
1993	1883	101682	33612	16947	67185	2825	222250
1994	2071	111834	36967	18639	73893	3107	244440
1995	2278	123012	40662	20502	81279	3417	268872
1996	2506	135324	45183	22554	89414	3759	296234
1997	2757	148878	49709	24813	98370	4136	325905
1998	3032	163728	54667	27288	108182	4548	358413
1999	3335	180090	60130	30015	118993	5003	394230
2000	3669	198126	66152	33021	130910	5504	433712
2001	4036	217944	72769	36324	144004	6054	477096
2002	4439	239706	80035	39951	158384	6659	524734
2003	4883	263682	88040	43947	174225	7325	577219
2004	5372	290088	96857	48348	191673	8058	635024
2005	5909	319086	106539	53181	210833	8864	698503

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING PER CAPITA
COSTS:

(A) \$54

(B) \$17 1981-1985; +5% 1986-1995; +1% 1996-2005

(C) \$9

(D) \$33 1981-1985; +5% 1986-1990; +3% 1991-2005.

(E) \$1.50

Expenditures for capital projects were not projected as these will vary considerably over time depending upon the needs of the Houston community.

- Baseline: Talkeetna Service Areas

Currently the community of Talkeetna is not an incorporated city and therefore does not have any form of local government. The Matanuska-Susitna Borough provides existing services, which include ambulance, fire protection, solid waste disposal, and road maintenance and repair. Police protection is provided by State troopers. Currently services are administered by Borough officials and are paid for by the Borough government out of funds derived both locally and from the State. Service areas are geographic units that form the boundary for the provision of certain services. Property located within the service boundary is liable for taxes levied to cover the costs of service delivery. The following explanation will serve as an illustration of the concept of service areas that exist throughout the Borough.

There are three separate service areas for Talkeetna, each with its own composition of revenues and expenditures as follows:

Talkeetna Fire Service Area	Talkeetna Flood Control Area	Talkeetna Greater Road Ser- vice Area

Revenues

Total	\$ 26,142	1,106	45,820
Inter-fund Revenues	3,600	0	0
State General Revenues	4,910*	0	45,820**
Local Property Taxes	17,632	1,106	-
Mill rate	1.0	0.5	-
Total Assessed	\$20,742,927	\$2,602,620	-
Valuation			

<u>Expenditures</u>	\$ 20,176	576	45,820

* State Shared Revenue: \$7.50 per capita x
655 estimated population.

** State Shared Revenue: 22.91 miles at
\$2,000 per mile.

These service areas may have overlapping boundaries,
in which case a resident living simultaneously in
both service areas would pay a 1.5 mill levy for
these Borough services in his area, in addition to
the non-areawide tax of 0.52 mills for libraries and
sanitary land fills, and the areawide tax of 6.7
mills for education.

- Baseline Forecast: Talkeetna Service Areas

A Baseline forecast for revenues is provided in Table 4.1-26. Total revenues are projected to increase steadily through 2005: 130 percent from 1981-1990; 117 percent from 1991-2000 and 43 percent from 2000-2005. Talkeetna will therefore experience constant rapid growth even in the absence of the Susitna Hydroelectric project. Local property taxes represent approximately 30 percent of total revenues between 1981 and 1990 when their relative share begins to decline to 24 percent in 2000 and 21 percent in 2005. The mill levy per \$1,000 assessed valuation is anticipated to rise steadily as follows: 1.00 - 1981-1985; 1.25 - 1986 - 1989; 1.50 - 1990 - 1995; 1.75 - 1996 - 2005. This is to cover the rising costs of delivering services to increasing populations of the various service areas.

Total property taxes are anticipated to increase 134 percent between 1981-1990, and increase more slowly between 1990 and 2000 (82 percent). The rate of increase for property taxes is significantly higher than the rate of increase for population. This is due to the fact that land values will be rising rapidly as they adjust to increased demand by the population influx.

Due to anticipated growth, it is assumed that roads will experience dramatic increased use; therefore projections assume substantial increases in revenues for road maintenance and repair. These will increase approximately 135 percent every ten years. This analysis has assumed that Talkeetna will not incorporate

TABLE 4.1-26

TALKEETNA: BASELINE REVENUE FORECAST*

YEAR	TALKEETNA POP	TOTAL ASSESSED VALTN (\$000)	FIRE SERVICE AREA		ROAD SERV AREA		TOTAL REVENUES MS BOR
			PROPTY TAXES	ST GEN REVENUES	ST SHARE REVENUES	TO MS BOR	
			\$	\$	\$	\$	
1981	640	20742	20742	4800	45820		71362
1982	672	21780	21780	5040	50402		77222
1983	707	22914	22914	5303	55442		83659
1984	743	24081	24081	5573	60986		90640
1985	780	25280	25280	5850	67085		98215
1986	820	26576	33220	6150	73794		113164
1987	862	27937	34922	6465	81173		122560
1988	906	29363	36704	6795	89290		132790
1989	952	30854	38568	7140	98219		143927
1990	1000	32410	48615	7500	108041		164156
1991	1051	34063	51094	7883	118845		177822
1992	1104	35781	53671	8280	130730		192681
1993	1160	37596	56393	8700	143803		208896
1994	1219	39508	59262	9143	158183		226587
1995	1281	41517	62276	9608	174001		245885
1996	1347	43656	76398	10103	191402		277902
1997	1415	45860	80255	10613	210542		301409
1998	1487	48194	84339	11153	231596		327087
1999	1563	50657	88649	11723	254755		355127
2000	1642	53217	93130	12315	280231		385676
2001	1726	55940	97894	12945	308254		419093
2002	1814	58792	102886	13605	339079		455570
2003	1906	61773	108104	14295	372987		495386
2004	2003	64917	113605	15023	410286		538914
2005	2106	68255	119447	15795	414389		549631

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE
FOLLOWING:

(A) PER CAPITA ASSESSED VALUATION
\$32410.00

(B) MILL LEVY PER \$1000 ASSESSED
VALUATION: 1.00 1981-1985
1.25 1986-1989
1.50 1990-1995
1.75 1996-2005

(C) \$7.50 PER CAPITA FY81/82.

(D) \$2000.00 PER MILE, +10% PER YEAR
22.91 MILES.

* REVENUES GO TO MAT-SU BOR BUDGET;
EXCLUDES TALKEETNA FLOOD CONTROL.

by 2005. Assuming the community does incorporate at some future date, then it will have the power to levy local taxes to cover the costs of service delivery. The formation of a city council and the election of a city mayor--both either full- or part-time--will necessitate raising sufficient funds to cover the costs of city administration, in addition to service delivery costs. It is presumed that any form of local city government would provide some services, but would initially continue to rely on the Mat-Su Borough administration for other services. The pace of new service provision would be a function of citizen demand, the availability of public monies, and the community's preference for raising local taxes.

- Trapper Creek and other Small Communities within the Matanuska-Susitna Borough
- Baseline

Any discussion of fiscal expenditures and revenues for these communities would have to fall under the Mat-Su Borough budget as revenues and expenditures are collected and administered by the Borough. Changes in revenue receipts would affect the Borough government directly, and the delivery of services to communities indirectly. The Borough has the power to levy property taxes on service areas to cover the costs of service delivery which over time could be offset by increases in the tax base. In FY81/82, the areawide mill levy was 6.7 per \$1000 assessed valuation and the non-areawide (service areas only) mill levy was 0.52 per \$1000 assessed valuation.

- Baseline Forecast

It is assumed that neither Trapper Creek nor other small communities will be incorporating before 2000. Although population increases will be substantial, the actual size of the total community is assumed not to be sufficiently large to warrant incorporation. Therefore, the Mat-Su Borough government will remain responsible for the provision of services and facilities to the extent necessary.

The Borough is assumed to levy a total property tax of 6.5 mills per \$1000 assessed valuation until 1989 and 6.75 mills from 1990-2000. This will include a mill levy of 0.5 for 1981-89 and 0.75 for 1990-2000, for non-areawide services such as fire and road service. Ambulance service is assumed to continue operating on a user fee basis. Projections of estimated local taxes to cover the costs of capital projects can not be made as this will depend upon the size of the project, the availability of State and Federal grant monies, local preferences, and the Mat-Su Borough's bonding capabilities. (For further detail concerning the Mat-Su Borough's fiscal impacts, see Section 4.1 (c) (iv).

(d) Public Facilities and Services

The ability of a community to respond adequately to increased demands is a function of the ability of its institutions to continue providing services to a larger constituency. The important considerations are therefore current usage and capacity. This section describes the existing public services at the regional and local level, as appropriate to the degree of pro-

bable impact of the Susitna Project. The services addressed include: water supply, sewage, solid waste, transportation, communication, police, fire, health care services, education and recreational facilities. Table 4.1-27 summarizes the facilities that are available by community. Much of the information for this section was obtained from: Matanuska -Susitna Planning documents; Overall Economic Development Program, Inc., July 1980: Development Options and Projections; and personal contacts.

Almost all public facilities and services in the Mat-Su Borough will need to expand considerably to provide current per capita levels of service for a rapidly growing population; education, health care, transportation, and police and fire protection will be affected to the greatest degree. In several of these areas, expansion is already being planned to accommodate this anticipated growth. Public facility and service requirements for the future have been projected based upon standards related to population and housing levels. Detailed explanation of the methodology used can be found in Section 10.2(e). To the extent possible, this analysis will indicate the service categories in which threshold levels will be reached by 2000 that could result in an increase in the demand for public services. Threshold levels occur as communities experience population growth and are willing and able to pay for increased levels of services.

(i) Water Supply

- Baseline

The City of Palmer has a water supply and chlorination treatment system which has a capacity of 1,368,000 gallons per day (gpd) and an emergency supply of 18,000 gpd. In addition, the City plans to

TABLE 4.1-27

COMMUNITY FACILITIES SUMMARY

	Schools			Water	Sewer	Solid Waste Disposal	State Trooper Post	Local Police	Court System	Fire Hall	Health Center	Long Term Care Fac.	Mental Health Facility	General Hospital	Roads	Railroad	Public Transportation	Airstrip	Library	Community Building	Post Office	Park System	Power	Telephone Service	Communication/Media	Home Rule	First Class	Second Class	Unincorporated	Unified Home Rule	Government
	Elementary	Secondary	Higher	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Nenana																									*		*			*	
Cantwell																									*		*			*	
Trapper Creek																									*		*			*	
Talkeetna	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Willow	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Houston	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Palmer	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Wasilla	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Paxson																									*		*			*	
Glennallen	*	*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Copper Center	*		*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Gakona						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Healy	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Gulkana				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Valdez	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Anchorage	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Fairbanks	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

add 216,000 gpd more to its capacity in the near future. Present water consumption peak usage is not known, but it is believed that fluctuations are not large. Present storage capacity is 1,250,000 gallons. The system is capable of pumping more than 1,000 gallons per minute (conversation with David Soulak, October 1981.)

Wasilla is currently completing a new water supply system that includes a pump capacity of 864,000 gpd, chlorination, approximately four miles of pipe and a one million gallon storage capacity. The system extends throughout the downtown area, which is approximately half residential and half businesses. The remainder of the city does not have a sufficiently high population density to make an extended water system cost effective. Average and peak usage are not known at this time, but it is estimated that nearly twice the present population could be served (conversation with Earling Nelson, October 1981.)

Outside of these areas, water is provided either on an individual basis, i.e. a well, or by a community water system. There are 215 other public water systems within the Borough; 43 Class "A" public water systems (mainly serving subdivisions and trailer parks) of which 21 are designated as community systems; 77 Class "B" public water systems (primarily serving schools and businesses); and 95 Class "C" public water systems, serving mainly duplexes and triplexes (overall Economic Development Program, Inc., July 1980. Volume III: Appendices).

- Baseline Forecast

Palmer's projected water supply requirements for the years 1981-2005 are displayed in Table 4.1-28. This projection assumes that per capita water consumption in the city will gradually rise to reach average national per capita water requirements for a city of its size. By the year 2000, average daily water usage will equal about 957,450 gallons, a three-fold increase from the 1981 level. Peak daily water requirements will reach 1,468,090 gallons. By 2005, average daily water requirements will reach an estimated 1,137,000 gpd. The projected increase in housing stock in Palmer implies the need for an additional 100,000 linear feet of water distribution pipe by the year 2000.

(ii) Sewage Treatment

Palmer is the only municipality in the Borough that has a city-wide sewage facility. All other residents in the Borough provide for themselves with septic tanks. Currently, the waste from septic tanks is trucked to Anchorage for disposal by private companies, but voters have recently elected to build a treatment plant in the Borough.

The Palmer sewage system is in the form of a two-cell lagoon which uses the Hinde aeration system, and is located four miles from town. It currently processes 300,000 gallons per day, with an average 30-day detention time. The system's capacity could be expanded significantly by adding a third cell (conversation with David Soulak, October 1981).

TABLE 4.1-28

BASELINE FORECAST OF WATER SUPPLY SYSTEM
REQUIREMENTS FOR PALMER AND WASILLA, 1981-2005
(IN GALLONS PER DAY)

YEAR	PALMER		WASILLA	
	AVERAGE (A) DAILY WATER REQUIREMENTS	PEAK (B) DAILY WATER REQUIREMENTS	AVERAGE (A) DAILY WATER REQUIREMENTS	PEAK (B) DAILY WATER REQUIREMENTS
1981	308040	513400	260160	433600
1982	332454	551174	283450	469930
1983	358758	591718	308616	509016
1984	387005	635085	336086	551526
1985	417373	688137	365928	603318
1986	450176	735053	398336	650408
1987	485482	785162	433642	701322
1988	523357	842477	471926	759686
1989	564134	903974	513538	822898
1990	608160	970160	558701	891261
1991	636888	1011528	607648	965088
1992	666947	1054707	660893	1045133
1993	698366	1099726	718829	1131949
1994	731174	1146614	781581	1225661
1995	765258	1195178	849701	1327061
1996	800928	1245888	923760	1436960
1997	838219	1298779	1004058	1555738
1998	877165	1353885	1091194	1684234
1999	917650	1411010	1185787	1823307
2000	957450	1468090	1271100	1949020
2001	990961	1519473	1363890	2091298
2002	1025644	1572655	1463454	2243963
2003	1061542	1627698	1570286	2407773
2004	1098696	1684667	1684917	2583540
2005	1137150	1743630	1807916	2772138

(A) BASED UPON AN AVERAGE STANDARD OF 120 GALLONS PER DAY PER CAPITA IN 1981 RISING TO 150 IN 2000.

(B) BASED UPON A PEAK STANDARD OF 200 GALLONS PER DAY PER CAPITA IN 1981 RISING TO 230 IN 2000.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO

There are a number of smaller public sewage systems in the Borough. These are rated by the Alaska Department of Environmental Conservation and classified according to the number of people served. There are 43 Class "A" public sewage systems (located primarily in subdivisions and trailer parks) of which ten are also designated as community systems; 77 Class "B" public sewage systems (mostly located at schools and businesses); and 95 Class "C" public sewage systems (mainly serving duplex and triplex structures).

- Baseline Forecast

The City of Palmer's sewage treatment capacity has begun to reach its limits and will need to be expanded to serve additional population. Currently, the average requirements of 300,000 gallons per day result in a 30-day detention time; however, city officials estimate that the present facilities can handle up to 500,000 gallons per day. As Table 4.1-29 shows, this level will be reached around 1989. At this point, the system's capacity will need to be expanded by adding at least a third cell.

Table 4.1-29 also contains projections of sewage treatment requirements for Wasilla. As with water supply, population density will need to rise substantially to make a city-wide sewage system feasible.

Sewage facilities are also needed in the Mat-Su Borough to service the discharge from private septic tanks, which need to be pumped every one to three years. The City of Houston is currently looking into the economic feasibility of building such a facility.

TABLE 4.1-29

BASELINE FORECAST OF SEWAGE
TREATMENT REQUIREMENTS FOR
PALMER AND WASILLA, 1981-2005 (A)
(IN GALLONS PER DAY)

YEAR	SEWAGE PALMER	SEWAGE WASILLA
1981	308040	260160
1982	328080	279720
1983	349440	300600
1984	372120	323160
1985	396240	347400
1986	422040	373440
1987	449520	401520
1988	478680	431640
1989	509760	464040
1990	543000	498840
1991	561960	536160
1992	581640	576360
1993	602040	619680
1994	623160	666120
1995	644880	716040
1996	667440	769800
1997	690840	827520
1998	715080	889560
1999	740040	956280
2000	765960	1016880
2001	792769	1091112
2002	820516	1170763
2003	849234	1256229
2004	878957	1347934
2005	909720	1446333

(A) CALCULATED BASED UPON A
STANDARD OF 120 GALLONS PER
DAY.

In most parts of the Borough, residents will continue to live on plots of one acre or more, and thus will continue to rely on individual septic tanks.

(iii) Solid Waste

- Baseline

The Borough has non-area-wide solid waste management authority and currently operates a system of nine landfills. Table 4.1-30 shows the acreage and life expectancy of each landfill. There is no collection system operated by the Borough, therefore it is the responsibility of individuals to transport their solid waste to the various landfill locations. Palmer operates a collection and disposal system for city residents. The City has a contract with the Borough and State for use of the landfills. Houston has recently had to close its city landfill and will be using Borough facilities until a new site is located.

The Borough hopes to make its solid waste disposal system more economical by eventually closing most of the landfills, setting up transfer stations and then bringing the waste to the 80-acre Central site, near Palmer, for final disposal (Matanuska-Susitna Borough Planning Department).

- Baseline Forecast

The Borough's 217 acres of landfill are expected to be about sufficient to handle the projected population through the end of the century, provided that

TABLE 4.1-30
LOCATION, ACREAGE AND LIFE EXPECTANCY OF
LANDFILLS IN THE MAT-SU BOROUGH

<u>Location</u>	<u>Acres</u>	<u>Life Expectancy</u>
Central	80	Indefinite
Big Lake	80	100 years
Willow	40 (10 usable)	5 years
Sunshine	40	
Talkeetna	5	10 years
Sutton	2 usable	2 years
Butte	400	40 years
Lake Louise		1 year

Source: Mat-Su Borough Engineering Department

the central landfill near Palmer is operated correctly as a sanitary landfill. The Mat-Su Borough's present system of solid waste disposal is undergoing a transition which will make it better capable of providing for the needs of a rapidly growing population, at a time when compliance with existing and upcoming government regulations is becoming more costly. The move toward a system of a central landfill and dispersed transfer stations will also solve the problem of wind-blown litter which has been associated with some of the unattended sites.

Table 4.1-31 contains information on the projected annual and cumulative acreage requirements of the Mat-Su Borough during the years 1981-2005. These figures are calculated on the assumption of an average landfill depth of 13 feet. By the year 2000, the Borough will require over 14 acres a year for solid waste disposal. The 80-acre central landfill, alone, should be capable of handling much of this land requirement (through 1994). In addition, there are 137 acres in eight landfills around the Borough which will continue to be in operation for some time to come.

It is expected that in most areas of the Borough residents will continue to be responsible for transporting trash to the landfills or transfer stations. The hauling of the transfer boxes to the central landfill will be done by contractors, until such time as a Mat-Su Borough Public Works Department is created.

TABLE 4.1-31

BASELINE FORECAST OF SOLID WASTE DISPOSAL
IN THE MAT-SU BOROUGH, 1981-2005

YEAR	ANNUAL ACREAGE REQUIRED FOR SOLID WASTE DISPOSAL	CUMULATIVE ACREAGE REQUIRED FOR SOLID WASTE DISPOSAL
1981	2.45	2.45
1982	2.76	5.21
1983	3.14	8.35
1984	3.54	11.89
1985	4.09	15.98
1986	4.62	20.60
1987	5.24	25.83
1988	5.78	31.61
1989	6.31	37.93
1990	6.75	44.67
1991	7.38	52.05
1992	7.91	59.97
1993	8.60	68.57
1994	9.25	77.83
1995	10.05	87.87
1996	10.81	98.68
1997	11.69	110.37
1998	12.54	122.91
1999	13.60	136.51
2000	14.56	151.07
2001	15.27	166.34
2002	16.02	182.37
2003	16.81	199.17
2004	17.63	216.80
2005	18.49	235.30

(3)02

(A) CALCULATED ON THE BASIS OF A 1981
STANDARD OF .11 ACRES PER THOUSAND
POPULATION, INCREASING TO .21 ACRES
PER THOUSAND POPULATION IN 2000.

NOTE: THE SUM OF INDIVIDUAL ENTRIES
MAY NOT EQUAL TOTALS DUE TO
INDEPENDENT ROUNDING.

(iv) Transportation

- Baseline

The Parks Highway is the principal surface transport route within the Matanuska-Susitna Borough, connecting what were previously remote sites with both Fairbanks and Anchorage. Of the highways in this region, the Parks is the newest and most heavily used. A wide variety of commodities are transported annually along the Parks Highway, including about 75,000 tons for local delivery and approximately 150,000 tons of items bound for Fairbanks and other interior points (Institute of Social and Economic Research. June 1980. p. 19) The Borough is also connected with Valdez and the Al-Can Highway via the Glenn and Richardson Highways. During the summer months, the Denali Highway, a 160-mile dirt road, connects the Parks Highway with the Richardson Highway. The Denali Highway is not plowed in the winter and therefore closed to traffic.

Construction and maintenance of roads in the Matanuska-Susitna Borough are performed under the auspices of a number of federal, state and local agencies. There are federally assisted state projects; State bonded projects; state assisted borough projects (including the Local Service Roads and Trails Program, and the State Revenue Sharing Programs for roads administered through road service areas at the rate of \$2,500 per mile of dedicated public road); and privately developed public roads (the Borough requires local roads and collectors to be built to minimum standards in accordance with its

subdivision regulations) (Overall Economic Development Program, Inc. July 1980).

The Alaska Railroad connects many of the major communities in the Borough, as well as a number of very small communities in the northern part which do not have road access. In addition, many communities have active airstrips. The largest airport in the Matanuska-Susitna Borough is the Palmer Municipal Airport, with a 5,000-foot runway. As displayed in Table 4.1-26, community airstrips are abundant in Impact Area 2.

- Baseline Forecast

As the Borough population grows, the skeletal framework of the transport system (especially the railroad system) will need to be filled in and built up extensively to meet the increased demands. Incrementally, as new subdivisions are created, additional roads will need to be put in place. In addition, three major improvements in the Borough's transportation framework will become necessary.

The current road system in the Mat-Su Borough can be described as a series of spokes that join at Wasilla. By 1985-1986, as the population exceeds 30,000, it will be necessary to build a collector road ring with a radius of four or five miles from Wasilla. This road would allow traffic to go to and from the surrounding communities without first passing through Wasilla. Such an interconnector system would require the construction of 30 to 35 miles of road.

As the Borough population approaches 45,000 around 1991, a second elliptical ring of roads that passes through Palmer to the east and Willow and Big Lake to the west will be needed. The road system would require about 150 miles. In addition, roads in the Matanuska Valley may need to be widened to service the increased traffic.

Between 1990 and 2000, Borough officials indicate that 150 to 200 miles of road (one-third of the present road system) would need to be upgraded to an arterial standard. This would require redraining, widening and resurfacing. Additional road work will be needed in the Big Lake-Houston area, as the Knik Arm causeway's completion begins to stimulate population growth there.

Road construction in the Borough is currently done on a contractual basis. As the population of the Borough grows, it is possible that a Public Works Department will become economically feasible, but it is difficult to predict when this point would be reached. In 1981 dollars, the Borough currently estimates the cost of new roads at \$100,000 a mile. In addition, one person can administer up to 300 miles of local roads. It is estimated that by 2000, two additional administrative personnel will be needed.

As the Mat-Su Borough population grows, there will also be an increasing need for mass transportation to serve the commuters who work in Anchorage. The Borough is presently considering increasing its support of rush hour commuter buses. Continued growth

and construction of the Knik Arm Crossing may make a commuter train feasible in the 1990's as well (conversation with Robert Vroman, Mat-Su Borough Service Area Coordinator, December 1981).

The Alaska Department of Transportation, as part of its Upper Cook Inlet Airport System Plan, has forecast the demand for airport facilities for the major public airports in the Mat-Su Borough for the years 1985, 1990 and 2000. These data are displayed in Tables 4.1-32 and 4.1-33. It is expected that most of these facilities will be sufficient in their present or planned capacity to accommodate the additional needs.

There is, however, need for a new air facility to serve the Wasilla community. The existing facility is not expected to be able to adequately serve future demands, and expansion is limited due to the terrain and a lack of available land. (Peat, Marwick, Mitchell & Co., 1981).

(v) Police

- Baseline

Police protection in the Matanuska-Susitna Borough is provided by the Alaska State Troopers, of whom there are a total of 20 in the Borough; 17 are stationed in Palmer and three are stationed in Trapper Creek. Four additional troopers have the responsibility of fish and wildlife protection and enforcement. The Borough force, which is part of a larger Southcentral detachment, has two snowmachines and one plane. Each

TABLE 4.1-32

ESTIMATED GEOGRAPHIC DISTRIBUTION OF
GENERAL AVIATION BASING DEMAND
Upper Cook Inlet Region
1979-2000

	1979 ^a			1985			1990			2000		
	Wheeled aircraft	Float plane	Percent of area's general aviation aircraft	Wheeled aircraft	Float plane	Percent of basing demand	Wheeled aircraft	Float plane	Percent of basing demand	Wheeled aircraft	Float plane	Percent of basing demand
Municipality of Anchorage												
Anchorage Bowl	1,541	470	87.4%	1,615	615	85.0%	1,860	680	83.3%	2,000	990	81.5%
Eagle River-Eklutna	250	32	12.3	300	50	13.5	395	80	15.6	650	150	17.2
Turnagain Arm	0	0	0.4	15	5	0.7	25	10	1.1	50	10	1.3
Total	1,799	502	100.0%	1,930	670	100.0%	2,280	770	100.0%	3,500	1,150	100.0%
Hatanuska-Susitna Borough												
Palmer/Sutton	95	(13)	30.0%	165	30	27.9%	255	50	25.4%	400	85	20.7%
Wasilla	95		31.3	165	40	29.2	255	65	26.7	400	110	21.7
Big Lake	30	2	9.7	50	15	9.3	80	20	8.3	130	40	7.2
Willow (new capital)	18	6	7.3	45	25	10.0	165	65	19.2	600	180	33.2
Talkeetna	23	3	7.8	40	10	7.1	60	20	6.7	100	35	5.7
Broad Pass/Cantwell	7	5	3.6	15	20	5.0	20	25	3.8	30	45	3.3
Skwentna	3	0	0.9	6	2	1.1	9	3	1.0	15	5	0.8
Tyonek	0	0	0.0	4	0	0.6	6	0	0.5	10	0	0.4
Other (primarily private facility basing)	30	-- ^b	9.1	50	18	9.0	70	32	8.4	115	50	7.0
Total	301	29 ^b	100.0%	540	160	100.0%	920	280	100.0%	1,800	550	100.0%

a. Data from aircraft inventory

b. It was estimated that several float planes at private facilities were not observed during field inventories conducted for this study.

Source: Peat, Marwick, Mitchell & Co.

Source: Alaska Department of Transportation and Public Facilities. 1981 Draft Upper Cook Inlet Airport System Plan, p. 9.

TABLE 4.1-33

ESTIMATED GEOGRAPHIC DISTRIBUTION OF
GENERAL AVIATION OPERATIONS^a
Upper Cook Inlet Region
1985-2000
(Thousands of aircraft operations)

	1985				1990				2000			
	Wheeled aircraft			Float plane	Wheeled aircraft			Float plane	Wheeled aircraft			Float plane
	Itinerant	Local	Total		Itinerant	Local	Total		Itinerant	Local	Total	
Municipality of												
Anchorage												
Anchorage Bowl	250	290	540	115	285	300	585	110	440	325	765	195
Eagle River-Eklutna	30	33	63	11	47	40	87	18	103	56	159	30
Turnagain Arm	2	2	4	1	3	2	5	2	7	4	11	2
Subtotal			607	127			677	150			935	227
Matanuska-Susitna												
Borough												
Palmer/Sutton	29	33	62	7	45	42	87	11	72	50	120	18
Wasilla	29	16	45	9	45	23	68	13	72	30	102	22
Big Lake	6	6	12	4	12	8	20	6	20	10	30	10
Willow (new capital)	9	6	15	6	28	17	45	14	100	45	145	35
Talkeetna	16	6	22	3	20	8	28	4	26	10	36	8
Broad Pass/Cantwell	3	3	6	5	4	4	8	6	5	5	10	9
Skwentna	1	1	2	--	2	1	3	--	3	1	4	1
Tyonek	8	1	9	--	10	1	11	--	12	1	13	--
Other (primarily private facilities)	7	3	10	4	9	4	13	6	20	5	25	10
Subtotal			183	38			203	60			495	113
Total			790	165			960	210			1,430	340

a. Estimate based on current aircraft operations counts for the Region and estimated general aviation basing demand

Source: Peat, Marwick, Mitchell & Co.

Source: Alaska Department of Transportation and Public Facilities. 1981 Draft Upper Cook Inlet Airport System Plan, p.9.

Trooper has a patrol car (conversation with Lt. Rhodes).

The City of Palmer is the only first class, home rule city in the Borough and therefore has police powers. It has eight officers and several civilian support personnel. The police force has four vehicles. The most common crime is vandalism in an otherwise low crime rate district.

There are three detention and correctional facilities in the Borough: a temporary detention facility in Palmer maintained by the Palmer Police Department; McLaughlin Youth Center in Wasilla providing long and short term correctional facilities for juveniles, and the Adult Correctional Facility located near Sutton providing long and short term correctional facilities for adults. Additional facilities near Sutton are being considered. Correctional facilities in the Borough serve the whole Anchorage region.

The Hilstrom Building in Palmer houses the one court in the Borough (Overall Economic Development Program, Inc. July 1980).

- Baseline Forecast

The present State Trooper police force in the Mat-Su Borough meets rural area requirements, based upon a standard for rural areas of one policeman per thousand population, but the force will need to expand significantly to meet the projected growth of the Borough. Table 4.1-34 contains data on the population of the Mat-Su Borough exclusive of Palmer,

TABLE 4.1-34

BASELINE FORECAST OF REQUIREMENTS FOR STATE TROOPERS
IN THE MAT-SU BOROUGH, 1981-2005

YEAR	MAT-SU BOROUGH POPULATION EXCLUSIVE OF PALMER	REQUIRED NUMBER OF STATE TROOPERS	
		I (A)	II (B)
1981	19718	19.72	29.58
1982	21248	21.25	31.87
1983	23070	23.07	34.61
1984	24974	24.97	37.46
1985	27900	27.90	41.85
1986	30433	30.43	45.65
1987	33148	33.15	49.72
1988	35334	35.33	53.00
1989	37295	37.30	55.94
1990	38439	38.44	57.66
1991	40580	40.58	60.87
1992	42265	42.27	63.40
1993	44717	44.72	67.08
1994	46795	46.80	70.19
1995	49233	49.23	73.85
1996	51629	51.63	77.44
1997	54515	54.52	81.77
1998	57041	57.04	85.56
1999	60171	60.17	90.26
2000	62951	62.95	94.43
2001	66125	66.12	99.19
2002	69458	69.46	104.19
2003	72957	72.96	109.44
2004	76631	76.63	114.95
2005	80488	80.49	120.73

(A) CALCULATED BASED UPON A STANDARD OF 1.0 OFFICER PER THOUSAND POPULATION.

(B) CALCULATED BASED UPON A STANDARD OF 1.5 OFFICERS PER THOUSAND POPULATION.

which has its own police force, and the corresponding requirements of police. As the Table shows, by 1990 the force will need to grow to 38 (from 20 in 1981) to maintain current standards of police protection. By 2000, an additional 25 will be required (for a total of 63). In addition, the increased population density in the Borough may necessitate an increase in police protection per capita. As Table 4.1-34 displays, if a standard of 1.5 officers per thousand population is used, in 2000 the Mat-Su Borough will require 94 Troopers to protect its growing population.

As the police force increases, there will be a need for additional support facilities. Based on present practices, each new Trooper will need a police car. Additional stations will be needed as well, to provide the force with a better distribution within the Borough. Police officials indicate that a substation for three or four Troopers will be incorporated into the new Houston fire station near Big Lake; it will be in operation by 1984. In addition, a second major station will be needed, possibly in the Willow area.

The City of Palmer's police force of six appears to be more than adequate for a community of its size; this is partially due to the services which Palmer police provide for the State Troopers. Based upon a standard of 1.5 policemen per thousand population, in the year 2000 the City will need an additional six policemen (see Table 4.1-35).

It is not possible to predict at what point any of the other growing communities in the Mat-Su Borough

TABLE 4.1-35

BASELINE FORECAST OF REQUIREMENTS FOR
POLICE IN PALMER, WASILLA AND HOUSTON
1981-2005 (A)

YEAR	PALMER	WASILLA	HOUSTON
1981	3.85	3.25	.9
1982	4.10	3.50	0.99
1983	4.37	3.76	1.09
1984	4.65	4.04	1.20
1985	4.95	4.34	1.32
1986	5.28	4.67	1.45
1987	5.62	5.02	1.59
1988	5.98	5.40	1.75
1989	6.37	5.80	1.93
1990	6.79	6.24	2.12
1991	7.02	6.70	2.33
1992	7.27	7.20	2.57
1993	7.53	7.75	2.82
1994	7.79	8.33	3.11
1995	8.06	8.95	3.42
1996	8.34	9.62	3.76
1997	8.64	10.34	4.14
1998	8.94	11.12	4.55
1999	9.25	11.95	5.00
2000	9.57	12.71	5.50
2001	9.91	13.64	6.05
2002	10.26	14.63	6.66
2003	10.62	15.70	7.33
2004	10.99	16.85	8.06
2005	11.37	18.08	8.86

(A) CALCULATED BASED UPON A STANDARD OF 1.5
OFFICERS PER THOUSAND POPULATION.

(B) REQUIREMENTS FOR POLICE IF THESE CITIES
ACQUIRE FIRST CLASS HOME RULE STATUS.

will become home-rule cities and provide their own police services, as this is a combination of population levels, density and cohesiveness. However, it is possible to indicate guidelines for the size of police force that a community would need if its residents decided to approve home-rule status. As Table 4.1-35 shows, in the year 2000 city police forces in Wasilla and Houston would need to have thirteen and six officers, respectively.

(vi) Fire Protection

- Baseline

There are currently nine operating fire service areas in the Matanuska-Susitna Borough: the City of Palmer and Greater Palmer (both housed in one building), Wasilla, Houston, Butte, Sutton, Talkeetna, Lakes and Fishhook. In addition, a new station is being planned at Shoreline and two substations in Greater Palmer will be built in 1982. The cost of fire protection in these areas is funded by a special millage rate on the assessed valuation within the service areas. Information on paid employees, equipment, water capacity and the fire rating of the area surrounding each station is displayed in Table 4.1-36.

Fire protection planning in the Borough has been based on the objective of achieving a maximum Insurance Service Organization (ISO) rating of eight for all areas with a population density of more than 50 per square mile. The ISO is a national organization which rates fire protection on a scale from one

TABLE 4.1-36

FIRE STATIONS IN THE MATANUSKA-SUSITNA BOROUGH

<u>Station</u>	<u>Number of Paid Employees</u>	<u>Equipment</u>	<u>Total Water Capacity on on Wheels (gallons)</u>	<u>Water System Pumping Capacity (gpm)</u>	<u>I.S.O. Fire Rating</u>
Palmer	2	4	3,000	4,000-downtown 1,000-resi- dential	6 - City
Wasilla	1	4	6,200	Not determined	8
Houston	0	3(a)	1,510(a)	-	9
Butte	0	4	5,200	-	8
Sutton	-	3	3,200	-	9
Talkeetna	-	3	800	-	9
Lakes	-	5	4,500	-	8
Shoreline ^(b)	-	-	-	-	-
Fishhook		Used fire equipment	1,500	-	9
Trapper Creek		-----inactive-----			

(a) Houston will be adding a 3000-gallon tanker to its equipment by 1/82

(b) To be built in 1982.

(best) to ten (worst); fire insurance rates closely reflect these ratings. Class eight is the best rating possible for an area without a community water system. The requirements for a rating of eight are a water capacity of 4,000 gallons on wheels and a service radius of five road miles.

A study by Mission Research Corporation Inc. (MRC) was commissioned in 1978 to outline a fire plan that would meet the stated objective. The recommendations of MRC included a redefinition of service areas and the addition of several fire stations to the six in existence at that time. MRC based its proposed boundaries on response time, road conditions, and the need for a balance between area and population (Mission Research Corporation, 1980). In July 1981, the Mat-Su Fire Chiefs Association submitted a revised fire protection plan which built upon the data compiled by MRC, but which altered the recommendations somewhat in order to more closely meet the guidelines for an ISO Class 8. This plan puts more emphasis on road distance from fire stations in place of response times. A total of 12 additional stations were proposed, including 5 suggested by MRC.

The expansion of the boundaries, in addition to providing more comprehensive service in the Palmer and Wasilla area, includes the addition of service in the vicinity of Willow and Big Lake. Population is perceived to increase in Willow whether or not the capital move materializes. There are a few other fire protection facilities in the Borough, namely the Talkeetna Fire Hall with three pieces of equipment and the inactive Trapper Creek facility. There are

no changes recommended in the boundaries of these areas. Residents of areas of the Borough not within the boundaries of a fire service area must rely on their own resources and volunteer assistance of their neighbors.

By the end of 1982, several trucks should be added to the water bearing capacity of the fire stations with ratings greater than eight. These include a 3,000 gallon tanker each for Houston and Talkeetna. In addition, money has been appropriated for the construction of two fire station houses, one at Fishhook which is currently operating out of an old garage and one for a new fire district at Shoreline (conversation with Dan Contini, October 1981).

The fire stations in Palmer, Wasilla and Houston are the only city-maintained stations in the Borough. There are two paid employees in Palmer and one in Wasilla. All other fire stations are maintained by the Borough and rely on volunteer service.

- Baseline Forecast

Rapid growth of the Mat-Su Borough population between 1981 and 2005 is expected to result in an increase in the number of areas requesting fire protection. Additional stations will need to be built to put these areas within the maximum five mile service area radius (1.5 miles within Palmer's city limits) that the Insurance Service Organization (ISO) fire rating of eight (six in Palmer) requires. Currently, the Borough's Fire Protection Plan calls for the construction of 12 new fire stations; five of these

will be in operation by the end of 1982. Each of these stations, in order to comply with fire insurance standards of ISO rating eight, will need fire equipment capable of transporting 4,000 gallons of water.

It is likely that fire protection personnel will remain, for the most part, composed of volunteer firemen, though a small number of paid staff may be added to some of the fire districts.

(vii) Health Care

- Baseline

Data on medical facilities and services available to people in Impact Areas 2 and 3 are shown in Table 4.1-37. The Valley Hospital in Palmer currently provides acute and some long-term care with a total of 23 beds; 19 for acute and four for long-term care. There are a total of eight doctors: a pediatrician, a surgeon, an OB/GYN specialist, and five family practitioners.

The total of 11,965 outpatients served in 1980 is a combination of emergency care and X-ray/lab patients in both the Valley Hospital and the Wasilla satellite X-ray lab facility.

The Valley Hospital, which was built in 1954, was once more than adequate to serve the residents of the Matanuska-Susitna Borough. However, it is now beginning to reach its limits. An independent consultant recently completed a cost study of several

TABLE 4.1-37

MEDICAL FACILITIES/SERVICES AND INPATIENT UTILIZATION DATA

-1980-

<u>Hospital</u>	<u>FAITH</u> (a)	<u>VALDEZ COMMUNITY</u> (a)	<u>VALLEY</u> (a)	<u>ALASKA</u> (a)	<u>PROVIDENCE</u> (b)	<u>ALASKA NATIVE MEDICAL CENTER</u> (b)
Location	Glennallen	Valdez	Palmer	Anchorage	Anchorage	Anchorage
Type	Emergency and short-term facility	Emergency and minor surgery	Acute and long-term cure	Acute	Acute	Acute
Service Area	Approx. Paxson to Gulkana on Richardson Highway & 100 miles west on Glenn Highway.	Valdez	Matanuska-Susitna Borough	Anchorage and vicinity	Anchorage and vicinity	Anchorage & vicinity
No. of Beds	5 adult 1 pediatric	15	23	199	268	170
No. of Doctors	2 hospital-based	3	8	214	N/A	N/A
Cost per day	\$100/day semi-private \$200/day CCU or ICU	\$210/day semi-private \$230/day private	\$185/day semi-private \$190/day private	\$220/day semi-private \$225/day private	N/A	N/A
Occupancy Rate	30%	13.4%	49%	56%	82.4%	72.3%
Admissions	271	301	1,289	7,926	11,356	4,629
Average Day/ Patient	2.43	2.45	3.8	4.6	5.7	9.7
Patient Days Per Year	661	737	4,962	36,459	69,729	44,901
Outpatients Served	9,900	3,725	11,965	N/A	N/A	N/A
No. of Ambulances	2	2	EMT out of Palmer Fire Hall	N/A	N/A	N/A
Patients Evacuated To	Anchorage	Anchorage	Anchorage	Seattle	Seattle	N/A

(a) Source: Conversations with personnel at hospital.

(b) Source: Ender, Richard L., et al. January 1980. Volume I: Gulf of Alaska and Lower Cook Inlet Petroleum Development Scenarios. Anchorage Socioeconomic and Physical Baseline. Anchorage, AK. (1978 data)

alternatives for expanding hospital services in the Borough. The recommendation was that a new hospital be built in Palmer rather than Wasilla due to the extra costs of sewage, road access, wells and power extension associated with the Wasilla site that was evaluated. The recommendation was unanimously accepted by the Board of Directors of the Valley Hospital Association, and \$9 million out of the estimated requirements of \$10.5 million in funding has, as of this writing, been secured for the project.

An additional 32,300 gross square feet (gsf) will be added to the existing 13,040 gsf, and seven beds - three acute, three obstetric and one intensive care - will be added. This is considered to be sufficient for a Borough population of up to 30,000, and it is estimated that the hospital could serve a population of up to 45,000 with an addition of 30 beds at a later date. Hospital planning has been based on a desired occupancy rate of 55 percent, a state guideline for rural hospitals.

The additional space is expected to allow additional physicians to join the hospital staff. Up to this time, this has been precluded by the crowded conditions. Initially, it is expected that an orthopedic surgeon, an internist, another OB/GYN and an additional surgeon will be added. Use of the hospital by Mat-Su residents who presently use facilities in Anchorage is expected to increase in response to the new building and the addition of the specialists (conversation with Rae-Ann Hickling, Consultant, October 1981).

The Palmer Pioneer Home provides long-term nursing and non-nursing care for the elderly.

Ambulance service in the Borough is dispatched through the Palmer Fire Center on a 24-hour basis. There are presently 10 ambulances located throughout the Borough with one back-up at the Borough office in Palmer. Ambulances are distributed as follows: one ambulance in Sutton; two in Palmer; two in Wasilla; one in Houston; one in Willow; one in Trapper Creek; one in Talkeetna; and one at Matanuska Glacier.

The 911 emergency service number is connected directly to the ambulance dispatch center at the Palmer Fire Station and the Valley Hospital.

Three public health centers are located in the Borough: Palmer Health Care Center; Wasilla Health Care Center; and Cook Inlet Native Association Health Care Center (Wasilla).

These centers provide the following services: well child assessment, immunizations, pap screening, pregnancy tests, glaucoma screening, TB skin tests, VD tests and treatment, and educational material on health.

There are two mental health facilities located in the Borough: Langdon (Wasilla) and the Mat-Su Mental Health Center (Wasilla). Both facilities provide: individual and group therapy, family and marital counseling, and alcohol and drug consultation.

- Baseline Forecast

The present hospital facilities in the Mat-Su Borough have been sufficient for acute care bed needs, per se, but the hospital has reached its limits in terms of adequate space to house new equipment, additional doctors, files and administration, and other support facilities. Plans are currently underway for construction of new facilities to remedy the problem. It appears, however, that the Borough's growing population will require an additional hospital by the 1990's.

Table 4.1-38 contains information on projected needs of acute care hospital beds in the Mat-Su Borough's Valley Hospital. Bed requirements will rise from 20 in 1981 to 116 in the year 2000 and 149 in 2005. This set of projections is based upon an assumption that the usage of Valley Hospital as a percent of total Alaskan hospital use by Mat-Su Borough residents will rise from 38 percent in 1980 to 75 percent in 2000.

The new 30-bed hospital is planned to be sufficient for a population of up to 30,000. Under these guidelines, however, there will be a need for additional expansion within the first year of the new hospital's opening (1984). An addition of room for 30 acute care beds would provide for the Mat-Su Borough's hospital needs through 1990. An increase of about 50 staff members would be required.

By 1990-1991, a new hospital will be needed. There has in the past been strong public support in Wasilla

TABLE 4.1-38

PROJECTION OF ACUTE CARE HOSPITAL BED NEED
IN THE MAT-SU BOROUGH, 1981-2000

	<u>Population</u>	<u>Per Capita Use Rate^(a) Based Upon 1980 Figures</u>	<u>Projected Average Daily Census^(a)</u>	<u>Percent of Bed Need Met By Valley Hospital</u>	<u>Valley Hospital Bed Need^(a)</u>
1981	22,285	.450	27	41	20
1982	23,982	.450	30	45	24
1983	25,982	.450	32	48	28
1984	28,075	.450	35	52	33
1985	31,202	.450	38	55	38
1986	33,950	.450	42	56	43
1987	36,894	.450	45	58	48
1988	39,323	.450	48	59	52
1989	41,543	.450	51	60	56
1990	42,964	.450	53	62	60
1991	45,263	.450	56	63	64
1992	47,112	.450	58	64	68
1993	49,734	.450	61	65	72
1994	51,988	.450	64	67	78
1995	54,607	.450	67	68	83
1996	57,191	.450	71	69	88
1997	60,272	.450	74	71	96
1998	63,000	.450	78	72	102
1999	66,338	.450	82	73	109
2000	69,334	.450	85	75	117
2001	72,731	.450	90	75	122
2002	76,295	.450	94	75	128
2003	80,034	.450	99	75	135
2004	83,955	.450	104	75	141
2005	88,069	.450	109	75	148

(a) Per Capita Use Rate, Projected Average Daily Census and the Valley Hospital Bed Need were calculated using the formulas in Section 11.2(e).

for a hospital, and assuming that the supportive infrastructure is in place at that time, there is a good likelihood that a second hospital will be built in Wasilla after 1990.

The Palmer Pioneer Home's long-term health care facilities for the elderly are currently being operated at capacity. As the population in the areas grows, substantial expansion in long-term health care facilities will be needed.

Ambulance service will also need to expand as population in the Borough grows. Presently, plans for the Valley Hospital include funding for 2 additional ambulances. As the center of Mat-Su Borough population moves west of Wasilla, after 1990, it is likely that additional ambulance service will be needed in that area as well.

(viii) Education

- Baseline

The Matanuska-Susitna Borough presently operates 17 schools: 12 elementary schools, two junior high schools, and three high schools.

<u>Communities</u>	<u>High School</u>	<u>Junior High School</u>	<u>Elementary School</u>
Trapper Creek			X
Talkeetna			X
Montana Creek	X		X
Willow			X

Wasilla	X	X	X
Big Lake			X
Palmer	X	X	X
Glacier View			X
Skwentna			X
Butte			X

At the beginning of the 1981-82 school year there were approximately 4,529 students enrolled in the school system, 440 more than planned for. The capacities and 1981 enrollments for the schools are displayed in Table 4.1-39. Also illustrated are plans for the expansion of existing facilities. In addition, there are plans for two new schools: an elementary school in the Wasilla area with a capacity of more than 400, and a secondary school in the Houston area with an initial capacity of 300. The Borough schools are equipped to provide education and training for mentally retarded and physically handicapped children (conversation with Kenneth Kramer, Mat-Su Borough School District Superintendent, October 1981).

Vocational training in the Borough school system includes programs such as auto mechanics, welding, electronics, surveying, home economics, office accounting, small engines, and carpentry. The vocational training facilities are tied directly into the regular school facilities and are, at present, able to keep pace with the demand. Besides serving the needs of the immediate community, the schools also provide education by correspondence to any resident in the State of Alaska (238 correspondence students during the 1979-1980 school year).

TABLE 4.1-39

CHARACTERISTICS OF PUBLIC SCHOOLS:
MATANUSKA-SUSITNA SCHOOL DISTRICT
1981

School	School		Capacity	Enrollment	Condition/ Plans for Expansion
	Type	Grade			
Big Lake	E	1-6	350	177	No plans.
Butte	E	1-6	500	300	No plans.
Glacier View	E/J	1-8	60	50	Currently consists of portables. Plan to build two classrooms.
Iditarod	E	Pre-6	550	460	Recently burned down. Plan to have back in operation by 1/82.
Sherrod	E	Pre, 3-6	450	454	No plans.
Skwentna	E/J/S	4-12	15	16	No plans.
Snowshoe	E	1-6	500	409	New facility.
Swanson	E	1,2	350	231	No plans.
Talkeetna	E	1-6	120	65	No plans.
Trappers Creek	E	1-6	30	40	Presently four portable facilities. Have submitted a grant proposal for facility consisting of 4 classrooms and a gym/multipurpose room.

TABLE 4.1-39
(cont.)

School	School		Capacity	Enrollment	Condition/ Plans for Expansion
	Type	Grade			
Wasilla Elem.	E	1	120	90	Very old facility with half of building condemned. Have plans for a new facility in 1984.
Willow Elem.	E	1-6	91	96	Expansion considered in the five year building plan.
Palmer	J	7-8	500	332	No plans.
Wasilla	J	7-8	600	353	Recently completed addition to facility.
Palmer	S	9-12	900	619	No plans.
Susitna Valley	J/S	7-12	180	122	Plans for additions for the band and vocational studies.
Wasilla	S	9-12	1,200	715	Recently completed addition to the facility.
Matanuska-Susitan Community College	CC	N/A	N/A	1,500	N/A

E = Elementary; J = Junior; S = Senior; CC = Community College

Source: Matanuska-Susitna Borough School District.

Situated between Wasilla and Palmer is the Matanuska-Susitna Community College, a branch of the University of Alaska, which provides academic and vocational courses to residents in the region. The college has shown steady and healthy growth increasing from an enrollment of 512 in 1969 to 1,500 full and part-time students in 1980-1981.

- Baseline Forecast

Table 4.1-40 displays the projected need for primary and secondary school teachers and classrooms, between 1981 and 2005, due to natural growth. These projections are based on planning ratios of school-age children as a percent of total population that were suggested by the Matanuska-Susitna Borough in 1978; 22.8 percent for the short-term through 1987 and a long-term ratio of 25 percent. This set of projections also assumes that primary school children will continue to represent about 54 percent of the public school population. Junior high and senior high students have been aggregated in one group; however, it should be recognized that in general the school district prefers to have junior and senior high facilities separate where this is feasible. Tables 4.1-41 and 4.1-42 contain projections of the number of school-age children in selected communities.

Between 1981 and 2000, it is expected that an additional 6,834 primary school children will be added to the school district's rolls. A portion of this increase can be accommodated by the excess capacity that exists at some schools. However, many schools are currently operating near or at full capacity, and

TABLE 4.1-40

PROJECTION OF ENROLLMENT AND TEACHERS IN THE MATANUSKA-SUSITNA BOROUGH SCHOOL DISTRICT

	<u>PRIMARY SCHOOL</u>			<u>SECONDARY SCHOOL</u>		
	<u>Enrollment</u>	<u>Number of Students in Excess of 1981 Capacity</u>	<u>Number of Classrooms & Teachers (a)</u>	<u>Enrollment</u>	<u>Number of Students in Excess of 1981 Capacity</u>	<u>Number of Classrooms & Teachers (a)</u>
1981	2,526	--	101	2,153	--	108
1982	2,953	--	118	2,515	--	126
1983	3,203	73	128	2,726	--	136
1984	3,455	325	138	2,945	--	147
1985	3,841	711	154	3,273	--	164
1986	4,180	1,050	167	3,560	174	178
1987	4,542	1,412	182	3,870	484	194
1988	4,884	1,754	195	4,161	775	208
1989	5,182	2,052	207	4,417	1,031	221
1990	5,406	2,276	216	4,605	1,219	230
1991	5,742	2,612	230	4,892	1,506	245
1992	6,029	2,899	241	5,136	1,750	257
1993	6,392	3,262	256	5,445	2,059	272
1994	6,737	3,607	269	5,740	2,354	287
1995	7,135	4,005	285	6,079	2,693	304
1996	7,505	4,375	300	6,392	3,006	320
1997	7,975	4,845	319	6,792	3,406	340
1998	8,403	5,273	336	7,157	3,771	358
1999	8,887	5,757	355	7,566	4,180	378
2000	9,360	6,230	374	7,974	4,588	399
2001	9,819	6,689	393	8,364	4,978	418
2002	10,300	7,170	412	8,774	5,388	439
2003	10,805	7,675	432	9,204	5,818	460
2004	11,334	8,204	453	9,655	6,269	483
2005	11,889	8,759	476	10,128	6,742	506

(a) Number of teachers was calculated based upon pupil teacher ratios of 25 for primary schools and 20 for secondary schools.

TABLE 4.1-41

BASELINE FORECAST OF NUMBER OF PRIMARY SCHOOL-AGE CHILDREN IN
MAT-SU BOROUGH AND SELECTED COMMUNITIES, 1981-2005 (A)

YEAR	PALMER	WASILLA	HOUSTON	TRAPPER CREEK	TALKEETNA	OTHER	TOTAL MAT-SU BOROUGH
1981	291	246	68	26	73	1824	2527
1982	337	287	81	29	83	2136	2953
1983	359	308	89	30	87	2326	3199
1984	382	332	98	31	91	2522	3457
1985	407	356	108	32	96	2842	3842
1986	433	383	119	34	101	3110	4180
1987	461	412	131	35	106	3397	4542
1988	495	447	145	37	113	3647	4884
1989	530	482	160	38	119	3852	5182
1990	569	523	178	40	126	3969	5406
1991	594	567	197	42	133	4210	5744
1992	620	615	219	44	141	4390	6029
1993	645	664	242	46	149	4646	6392
1994	673	719	268	49	158	4870	6738
1995	702	780	298	51	167	5138	7136
1996	730	842	329	53	177	5374	7505
1997	762	912	365	56	187	5692	7974
1998	795	989	404	59	198	5958	8403
1999	826	1067	447	61	209	6274	8884
2000	862	1144	495	64	222	6573	9360
2001	892	1228	545	67	233	6855	9819
2002	923	1317	599	69	245	7146	10300
2003	955	1413	659	72	257	7447	10805
2004	989	1516	725	75	270	7758	11334
2005	1023	1627	798	78	284	8079	11889

(3)02

(A) CALCULATED AS 54 PERCENT OF TOTAL SCHOOL-AGE CHILDREN.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT
ROUNDING.

TABLE 4.1-42

BASELINE FORECAST OF NUMBER OF SECONDARY SCHOOL-AGE CHILDREN IN
THE MAT-SU BOROUGH AND SELECTED COMMUNITIES, 1981-2005 (A)

YEAR	PALMER	WASILLA	HOUSTON	TRAPPER CREEK	TALKEETNA	OTHER	TOTAL MAT-SU BOROUGH
1981	248	209	58	22	62	1554	2153
1982	287	244	69	25	70	1820	2515
1983	305	263	76	26	74	1981	2725
1984	325	282	84	27	78	2149	2945
1985	346	304	92	28	82	2421	3272
1986	369	326	101	29	86	2649	3561
1987	393	351	111	30	90	2894	3869
1988	422	381	124	31	96	3107	4160
1989	451	411	137	33	101	3282	4414
1990	485	446	152	34	107	3381	4605
1991	506	483	168	36	114	3586	4893
1992	528	524	187	38	120	3739	5136
1993	549	565	206	39	127	3958	5445
1994	573	613	229	41	135	4149	5739
1995	598	664	254	43	143	4377	6079
1996	622	717	280	45	151	4578	6393
1997	649	777	311	48	159	4849	6793
1998	677	842	344	50	169	5075	7158
1999	704	909	380	52	178	5344	7568
2000	734	975	422	55	189	5600	7973
2001	760	1046	464	57	198	5839	8364
2002	786	1122	511	59	209	6088	8774
2003	814	1204	562	61	219	6344	9204
2004	842	1292	618	64	230	6609	9655
2005	872	1386	680	66	242	6882	10128

(3)02

(A) CALCULATED AS 46 PERCENT OF TOTAL SCHOOL-AGE CHILDREN.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT
ROUNDING.

it is projected that new facilities in addition to those planned in Trapper Creek and Wasilla will be needed by 1985. In 2000, 230 additional primary teachers and classrooms will be needed. This would be the equivalent of 19 12-classroom schools or nine 24-classroom schools. These estimates seem to be in accordance with the Borough's plans to acquire 16 new elementary school sites between 1978 and 1987, most of which would initially accommodate up to 12 classrooms.

By 2000, secondary school enrollment will grow to about 8,000 from the 1981 level of 2,155. The schools, which are currently operating at a combined 64 percent of capacity, will be able to absorb a portion of these students; but by 1985-1986 additional facilities will be needed. The planned junior-senior high school in the Houston area will provide additional room for 300 students. Beyond that a further 214 classrooms and teachers will be needed by 2000. This is the equivalent of 3.5 full-size secondary schools.

The increase in enrollment will necessitate the hiring of approximately 273 additional primary school teachers and 291 additional secondary school teachers. It is estimated that other school district personnel requirements will rise by about 560, from present levels, by the year 2000.

(ix) Recreation

- Baseline

This section will focus upon the recreational facilities provided and maintained by public entities in Impact Area 2. Additional information on recreational resources in the Upper Susitna River Basin can be found in Section 4.1(i) Fish and Wildlife Use Patterns.

Situated between the major population centers of Anchorage and Fairbanks, the Mat-Su Borough and Copper River-Wrangell Mountains area provides a wide range of recreational opportunities. As is true of Alaska in general, many of the recreation experiences available are unique in the nation. Endowed with vast natural resources supporting many varieties and species of wildlife, Alaska offers numerous opportunities for recreational activities. These activities are generally characterized by low intensity, low impact, resource-oriented uses. Opportunity for hunting and fishing, sightseeing, backpacking, and climbing abound. Table 4.1-43 displays a recent inventory of publicly operated facilities in the Matanuska-Susitna Borough.

The largest attraction in the region is Denali National Park and Preserve. The road entrance to the park is off the Parks Highway north of the Borough where a variety of services and accommodations are available. For climbing expeditions in the Park, Talkeetna serves as a primary take-off point.

TABLE 4.1-43

INVENTORY OF RECREATIONAL FACILITIES IN THE MAT-SU BOROUGH

** NO.

* PERSONS AT ONE TIME

INVENTORY OF ACREAGE AND FACILITIES					ACREAGE BY TIME-DISTANCE CLASSIFICATION					QUANTITY AND CAPACITY OF RECREATION FACILITIES														SUPPORT FACILITIES				
MATANUSKA - SUSITNA BOROUGH					ACREAGE BY TIME-DISTANCE CLASSIFICATION					QUANTITY AND CAPACITY OF RECREATION FACILITIES														SUPPORT FACILITIES				
AS OF 6/30/73					ACREAGE BY TIME-DISTANCE CLASSIFICATION					QUANTITY AND CAPACITY OF RECREATION FACILITIES														SUPPORT FACILITIES				
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Chugach State Park, located 10 miles east of Anchorage, is a major recreation area for the metropolis. The park consists of 495,000 acres and offers camping, canoeing, fishing, hiking, and a variety of winter uses.

The Denali State Park is the largest state park within the Borough. Consisting of 282,000 acres, the park is located west of the project site (Impact Area 1). The Denali Master Plan calls for development of a range of recreational facilities. Winter sports, including cross country skiing, dog mushing, ice skating, ice fishing, sledding, and snowmobiling are planned or presently available. Campgrounds, boat launches, picnic areas, and a visitor center are also provided or planned.

Nancy Lake Recreation Area, located just south of Willow, is a 23,000 acre area of numerous lakes. The State Division of Parks plans to develop the area into a major recreation area with extensive facilities including cabins, horse trails, camping, picnicing sites, and swimming beaches. The plan ultimately calls for a total of 1,760 camping units.

The Lake Louise area in the southeastern part of the Borough is a major fishing, boating, and hunting area. The area is predominately in private ownership. Lake Louise feeds the Tyone River which is a tributary of the Upper Susitna.

The Big Lake area between Wasilla and Willow has developed into a recreation area mainly catering to persons from Anchorage who maintain summer cabins on the shores.

Other public and private recreational developments in the Borough include roadside campgrounds and lodges, scenic pullouts and hunting lodges in remote areas.

The Mat-Su Borough's power to develop playgrounds and neighborhood parks has been at issue for some years. It is likely that there will be future development of this type in the Houston area in the near future. The City's Comprehensive Development Plan currently calls for construction of play fields, ball diamonds and playgrounds.

Road transportation is the primary means of access to recreational areas. For remote areas, boats, float planes and light aircraft are often used. All-terrain-vehicles (ATVs) and snowmobiles have also become major modes of transportation, especially for hunting. Use of these vehicles is becoming more restricted, however, as hunting pressure increases and herds decrease. ATVs can also be very detrimental to the fragile ecosystems of the area.

- Baseline Forecast

Table 4.1-44 displays projected requirements, in terms of acreage, of playgrounds, neighborhood parks and community parks as calculated by applying national standards for rural areas. As previously noted, the Mat-Su Borough contains over 305,000 acres of park land, including Denali National Park, which provides recreational enjoyment to people from all over Alaska and the rest of the U.S. as well. However, there is a lesser abundance of playgrounds and neighborhood parks, and, as the Borough's popula-

TABLE 4.1-44

BASELINE FORECAST OF REQUIREMENTS FOR RECREATIONAL FACILITIES IN THE MAT-SU
BOROUGH AND INCORPORATED CITIES, 1981-2005

YEAR	PLAYGROUNDS (A)			NEIGHBORHOOD PARKS (B)			COMMUNITY (C)
	PALMER	WASILLA	HOUSTON	PALMER	WASILLA	HOUSTON	PARKS
1981	3.40	2.80	0.89	2.88	2.37	0.76	41.19
1982	3.58	2.98	0.94	3.03	2.52	0.79	42.19
1983	3.85	3.23	1.03	3.25	2.73	0.88	46.06
1984	4.13	3.51	1.14	3.49	2.97	0.97	50.22
1985	4.43	3.81	1.26	3.75	3.22	1.07	56.31
1986	4.76	4.13	1.39	4.03	3.50	1.18	61.77
1987	5.12	4.49	1.54	4.33	3.80	1.30	67.66
1988	5.50	4.87	1.70	4.65	4.12	1.44	72.58
1989	5.91	5.29	1.88	5.00	4.48	1.59	77.24
1990	6.35	5.75	2.08	5.37	4.86	1.76	80.42
1991	6.63	6.24	2.30	5.61	5.28	1.94	85.10
1992	6.93	6.78	2.54	5.86	5.74	2.15	89.15
1993	7.23	7.37	2.81	6.12	6.23	2.38	94.85
1994	7.56	8.00	3.10	6.39	6.77	2.62	99.94
1995	7.89	8.70	3.43	6.68	7.36	2.90	105.80
1996	8.25	9.45	3.79	6.98	8.00	3.21	111.73
1997	8.62	10.27	4.19	7.29	8.69	3.54	118.65
1998	9.01	11.17	4.63	7.62	9.45	3.92	125.03
1999	9.41	12.14	5.11	7.96	10.27	4.33	132.83
2000	9.84	13.06	5.65	8.32	11.05	4.78	140.19
2001	10.18	14.01	6.22	8.62	11.86	5.26	147.00
2002	10.54	15.04	6.84	8.92	12.72	5.79	154.15
2003	10.91	16.13	7.53	9.23	13.65	6.37	161.64
2004	11.29	17.31	8.28	9.55	14.65	7.01	169.49
2005	11.68	18.58	9.11	9.89	15.72	7.71	177.71

(A) CALCULATED BASED UPON A STANDARD OF 3.9 ACRES PER THOUSAND DWELL-
ING UNITS.

(B) CALCULATED BASED UPON A STANDARD OF 3.3 ACRES PER THOUSAND DWELL-
ING UNITS.

(C) CALCULATED BASED UPON A STANDARD OF 4.8 ACRES PER THOUSAND DWELL-
ING UNITS.

TABLE 4.1-45

TEN YEAR SCHOOL-PARK SITE
ACQUISITION PROGRAM IN THE MAT-SU BOROUGH

<u>Project</u>	<u>Description/Purpose</u>
West Palmer	Acquire 40 acre site for elementary school, community center and park complex
Matanuska	Acquire 40 acre site for elementary school, community center and park complex
Lazy Mountain	Acquire 40 acre site for elementary school, community center and park complex
Palmer Senior High	Acquire additional 70 acres for high school/park complex
Palmer Junior High	Acquire additional 55 acres for junior high school/park complex
Four Corners Jr/Sr High	Acquire 180 acres for Jr/Sr high school, community center and park complex
Houston/Meadow Lakes Jr/Sr High	Acquire 180 acre site for Jr/Sr high school, community center and park complex
Montana	Acquire 40 acre site for elementary school, community center, and park complex
Houston	Acquire 40 acre site for elementary school, community center and park complex
Meadow Lakes	Acquire 40 acre site for elementary school, community center and park complex
Hollywood Rd.	Acquire 40 acre site for elementary school, community center and park complex
North Wasilla	Acquire 40 acre site for elementary school, community center and park complex
Bogard Rd.	Acquire 40 acre site for elementary school, community center and park complex
East Wasilla	Acquire 40 acre site for elementary school, community center and park complex

TABLE 4.1-45
(Cont.)

<u>Project</u>	<u>Description/Purpose</u>
Fairview/Parks	Acquire 40 acre site for elementary school, community center and park complex
Trunk/Fishhook	Acquire 40 acre site for elementary school, community center and park complex
Snowshoe	Acquire additional 20 acres for elementary school, community center, and park complex
Butte	Acquire 35 acre site for elementary school, community center and park complex
Four Corners	Acquire 40 acre site for elementary school, community center and park complex
Glacier View	Acquire 25 acre site for elementary school, community center and park complex
Sutton	Acquire 20 acre site for elementary school, community center and park complex
Pittman Road	Acquire 40 acre site for elementary school, community center and park complex
Talkeetna	Acquire 30 acre site for elementary school, community center and park complex
Willow	Acquire 20 acre site for elementary school, community center and park complex
Big Lake	Acquire 20 acre site for elementary school, community center and park complex
Wasilla Jr/Sr High	Acquire 80 acre addition for Jr/Sr high school community center and park complex
Susitna Valley Jr/Sr High	Acquire 140 acre addition for Jr/Sr high school, community center and park complex

Source: Matanuska-Susitna Borough Planning Department. March 1978. Ten Year Program for School Sites.

tion increases, it is likely there will be added interest in the provision of additional local recreational facilities.

Mat-Su Borough planners have favored an approach which calls for sites that combine elementary schools with neighborhood parks and playgrounds, and high schools with community parks and community centers. The current school land acquisition program takes this into account by planning for 40-acre sites for elementary school-park complexes and 180 acre sites for high school-park complexes. Table 4.1-45 contains a listing of planned complexes. The planned playgrounds and parks in this acquisition program should be more than sufficient to provide for the requirements listed in Table 4.1-44.

(e) Economic Base

(i) Baseline

The economy of the Matanuska-Susitna Borough is dominated from Anchorage. Development, as a result, has occurred within close proximity to Anchorage, concentrated along the Parks Highway, with the exception of the City of Palmer. At least 37 percent of the Borough residents work outside the Borough (Policy Analysts, 1980). Thus, the Borough, to a large degree, is a bedroom community. Moreover, many of the recreational homes in the area are owned by Anchorage residents. The Big Lake area is perhaps a prime example. One of the Borough's recent planning document notes: "Indicative of the link between the Borough and Anchorage is the fact that approximately 55 percent of the Borough's tax noti-

ces are mailed to Anchorage addresses" (Mat-Su Borough Planning Department, April 1978, p. 172).

The dominant sectors of the Borough's economy reflect the large influence of the tourism, recreation and residential elements present there. Table 4.1-46 presents an estimate for the types and locations of businesses in the major communities. Figure 4.1-1 presents the aggregated data graphically. From the Table it can be seen that the largest number of businesses are in the support and service sectors. Services, retail trade, and finance-insurance-real estate firms comprise the majority of businesses in these communities. Construction is also a major category of businesses in the Borough. This reflects the growth and development conditions present there.

Next to Palmer, Wasilla has the greatest number of businesses. Dramatic growth in the community occurred during the pipeline years. Most of the businesses in Wasilla are service or construction-oriented.

Manufacturing businesses are concentrated in the Palmer area. In 1972, the city created the Palmer Industrial Park to encourage economic development. The park is zoned for light to medium industry. Half the sites have been filled.

The Borough is encouraging economic development and is concentrating on promoting the Point MacKenzie area which is situated across the Knik Arm from Anchorage. The foci of the development plan are dairy farming and an industrial complex and a possible petrochemical development.

TABLE 4.1-46
MAT-SU BOROUGH COMMUNITIES:
BUSINESS LOCATION AND TYPE

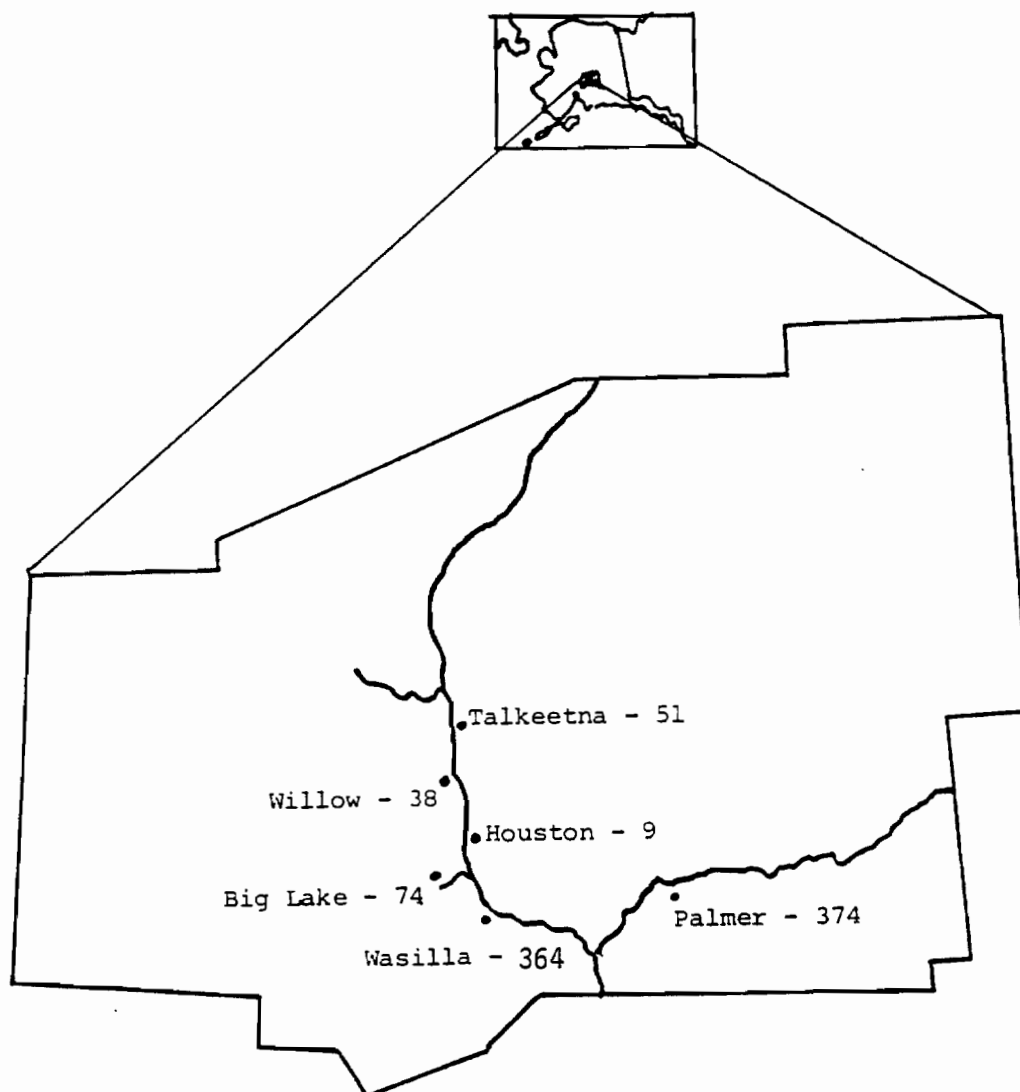
Standard Industrial Classification	Number in Community (a)					
	Big Lake	Houston	Palmer	Talkeetna	Wasilla	Willow
Agriculture, Forestry, Fisheries	3	-	22	-	-	-
Mining	-	-	2	-	-	-
Construction	19	3	50	3	91	4
Manufacturing	3	-	21	2	4	3
Transportation & Public Utilities	2	-	20	8	-	6
Wholesale Trade	-	-	11	-	-	-
Retail Trade	24	3	80	19	-	18
Finance, Insurance, Real Estate	-	1	22	2	37	3
Services	17	1	115	13	129	4
Public Administration	-	1	12	3	5	-
Nonclassifiable Establishments	6	-	19	1	98	-
Total	74	9	374	51	364	38

(a) SIC classifications were assigned by the OEDP staff for use in this table, and number of establishments must be considered approximations.

Source: Overall Economic Development Program Inc. July 1980. Volume II: Economic Conditions, Development Options and Projections. Palmer, AK. pp. 19-21.

FIGURE 4.1-1

MATANUSKA-SUSITNA BUSINESS DISPERSION



Source: Overall Economic Development Program Inc. July 1980.
Volume II: Economic Conditions, Development Options and
Projections. Palmer, AK. p. 24.

Other indicators of the economy show that the Borough's base is oriented towards the service sectors. Table 4.1-47 presents gross business receipts for 1977 for Palmer and the Borough. Overall, Palmer accounted for 35 percent of total sales in 1977. Notable categories in the table include construction, retail and services, especially real estate. Sales in these sectors relate to the tourism, recreation and residential-oriented components of the economy. Real estate sales account for the majority of sales in the finance, insurance, and real estate sector. Most likely this includes a large speculative element associated with the potential capital move to the Willow area.

Examination of employment data for the Borough provides a different view of the major components of the economy, although the view that emerges conforms with that of the state in general. The largest employer is the government sector. State and local bodies account for about 90 percent of total government employment. Retail trade is the next largest, followed by services, transportation-communications-utilities, and construction.

Employment figures used in the preceding paragraph are based on place of work. Utilizing survey data dealing with employment by place of residence, the Borough's profile can be presented as in Table 4.1-48. The major difference is in the construction category. This is attributable to the fact that construction workers who maintain residences there are employed in other parts of Alaska.

Table 4.1-49 presents occupational information for the Borough's residents. The large professional/ technical

TABLE 4.1-47

PALMER AND THE MAT-SU BOROUGH: GROSS BUSINESS RECEIPTS
JANUARY 1, 1977, TO DECEMBER 31, 1977

Standard Industrial Classification	Palmer	Gross Business Receipts(\$)	
		Mat-Su Borough Excluding Palmer	Mat-Su Borough
Agriculture, Forestry, Fisheries	79,938	441,859	521,797
Mining	---	644,188	644,188
Construction	3,505,346	22,313,229	25,818,575
Manufacturing	1,363,967	899,123	2,263,090
Transportation & Public Utilities	1,679,365	1,134,058	2,813,423
Wholesale Trade	1,463,515	3,383,748	4,847,263
Retail Goods	16,980,898	15,104,553	32,085,451
Finance, Insurance, Real Estate	954,292	2,952,816	3,907,108
Services	2,792,649	5,589,364	8,382,013
Nonclassifiable Establishments	---	799,689	799,689
Total	28,819,970	53,262,627	82,082,597

Source: Alaska Department of Revenue

From: Overall Economic Development Program Inc. July 1980. Volume II: Economic Conditions, Development Options and Projections. Palmer, AK. pp. 30-32.

—(116)1.2854

TABLE 4.1-48

EMPLOYMENT BY INDUSTRY FOR ADULT RESIDENTS
OF MATANUSKA-SUSITNA BOROUGH
(percent of total adults)

<u>Industry</u>	<u>Percent of Adults</u>
Agriculture-Fishing	2.9
Mining	5.5
Construction	16.6
Manufacturing	2.5
Transportation, Utilities, Communications	10.5
Wholesale Trade	2.8
Retail Trade	11.4
Finance, Insurance, Real Estate	4.5
Professional Services	9.4
Other Services	9.4
Education	9.1
Federal Government	6.3
State Government	5.4
Local Government	3.6

Source: Policy Analysts, Limited, and Dr. Richard L. Ender. May 1980. Mat-Su Housing and Economic Development Study: Survey Findings. p. 72.

TABLE 4.1-49

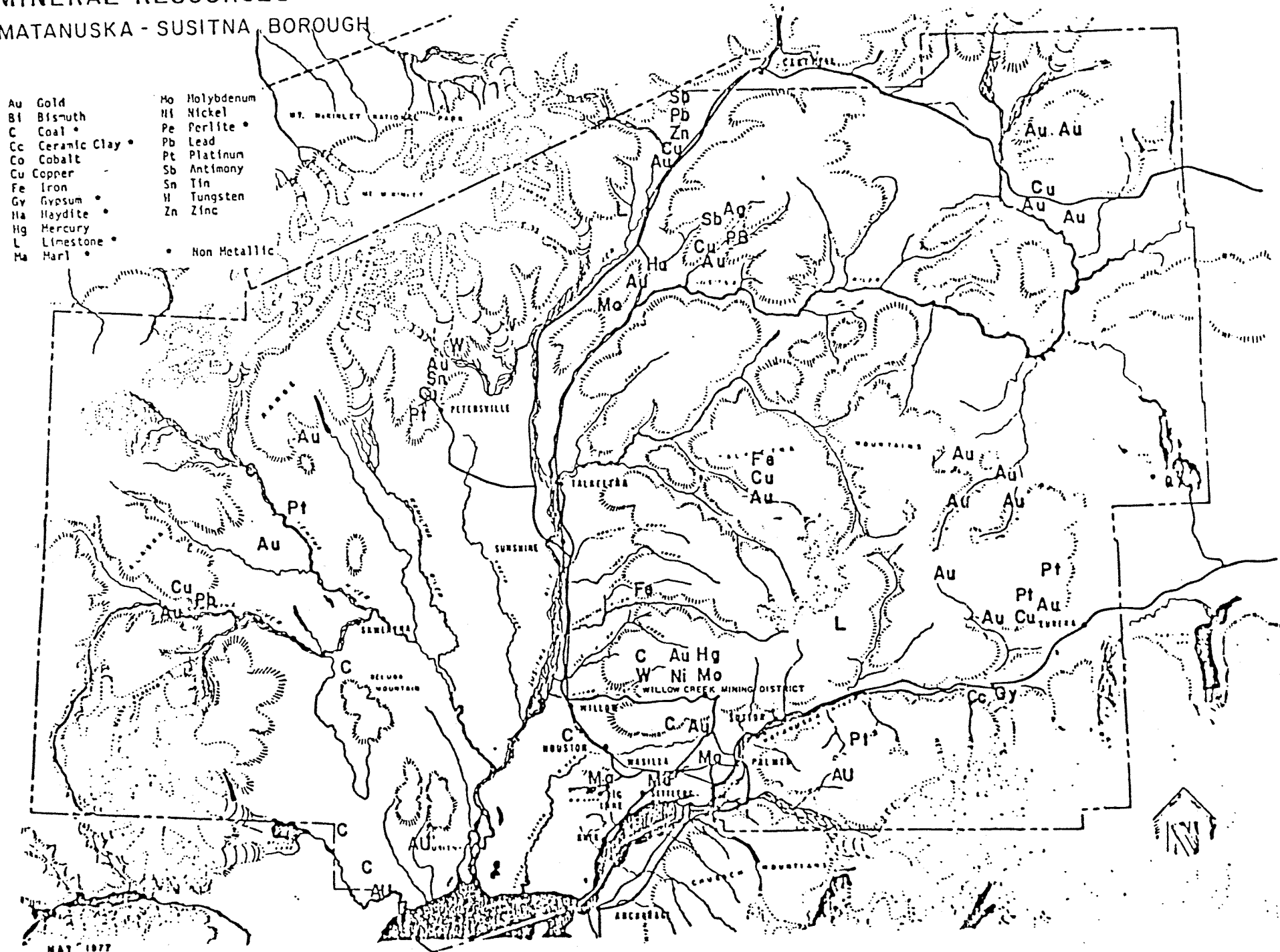
OCCUPATION OF MATANUSKA-SUSITNA BOROUGH ADULT RESIDENTS
(percent of total adults)

<u>Occupation</u>	<u>Percent of Adults</u>
Professional/Technical	20.2
Manager, Official	13.8
Clerical, Sales	16.0
Craftsmen	14.6
Operatives	12.2
Service Workers	10.6
Laborers	9.7
Farmers	1.2
Armed Forces	0.9
Others (Trappers, Self Employed, etc.)	1.0

Source: Policy Analysts, Limited, and Dr. Richard L. Ender. May 1980. Mat-Su Housing and Economic Development Study: Survey Findings. p. 73.

FIGURE 4.1-2

MINERAL RESOURCES
MATANUSKA - SUSITNA BOROUGH



MAY 1977
Source: Matanuska-Susitna Borough, Planning Department

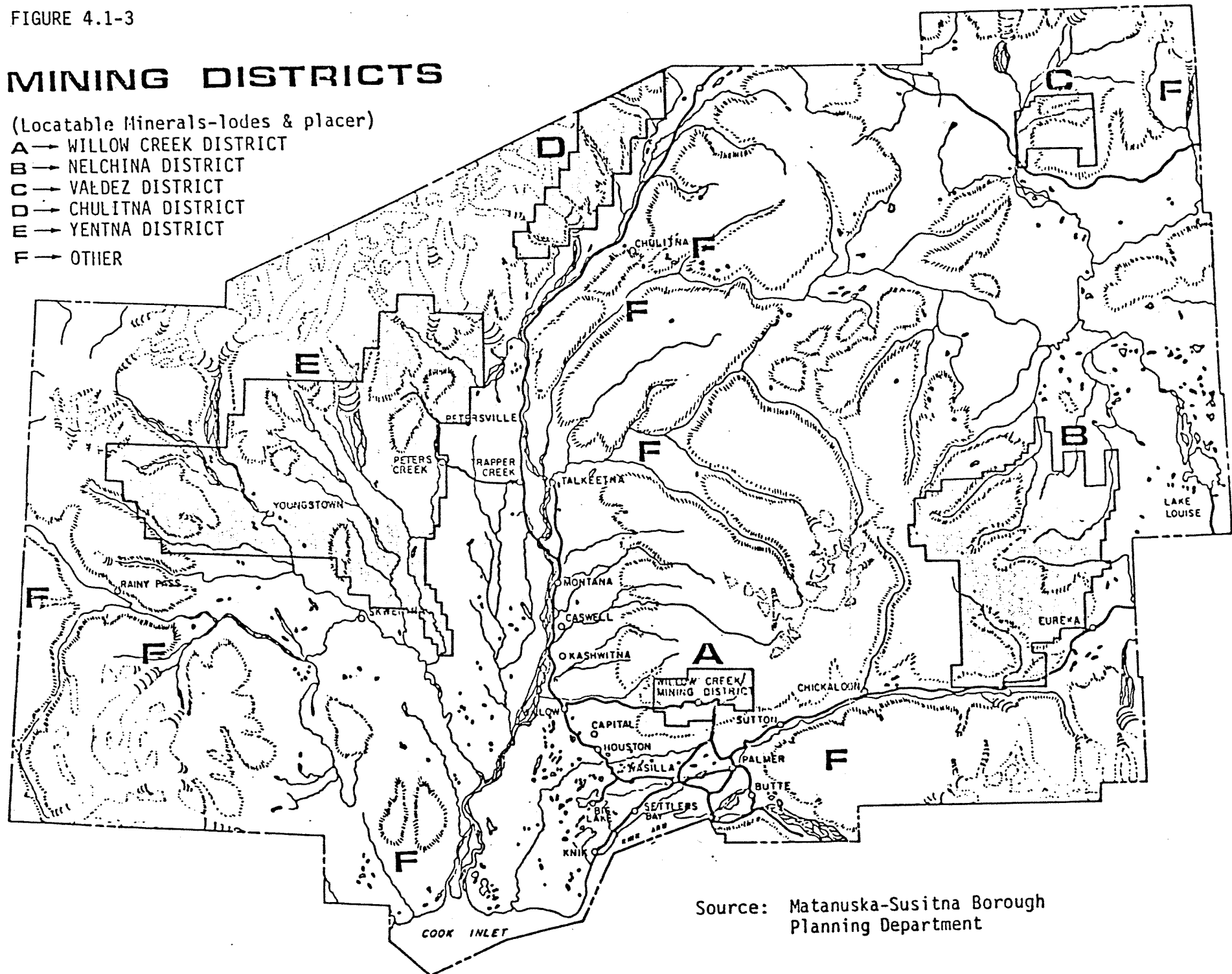
From: Overall Economic Development Program Inc. July 1980. Volume II: Economic Conditions, Development Options and Projections. p. 132.

FIGURE 4.1-3

MINING DISTRICTS

(Locatable Minerals-lodes & placer)

- A → WILLOW CREEK DISTRICT
- B → NELCHINA DISTRICT
- C → VALDEZ DISTRICT
- D → CHULITNA DISTRICT
- E → YENTNA DISTRICT
- F → OTHER



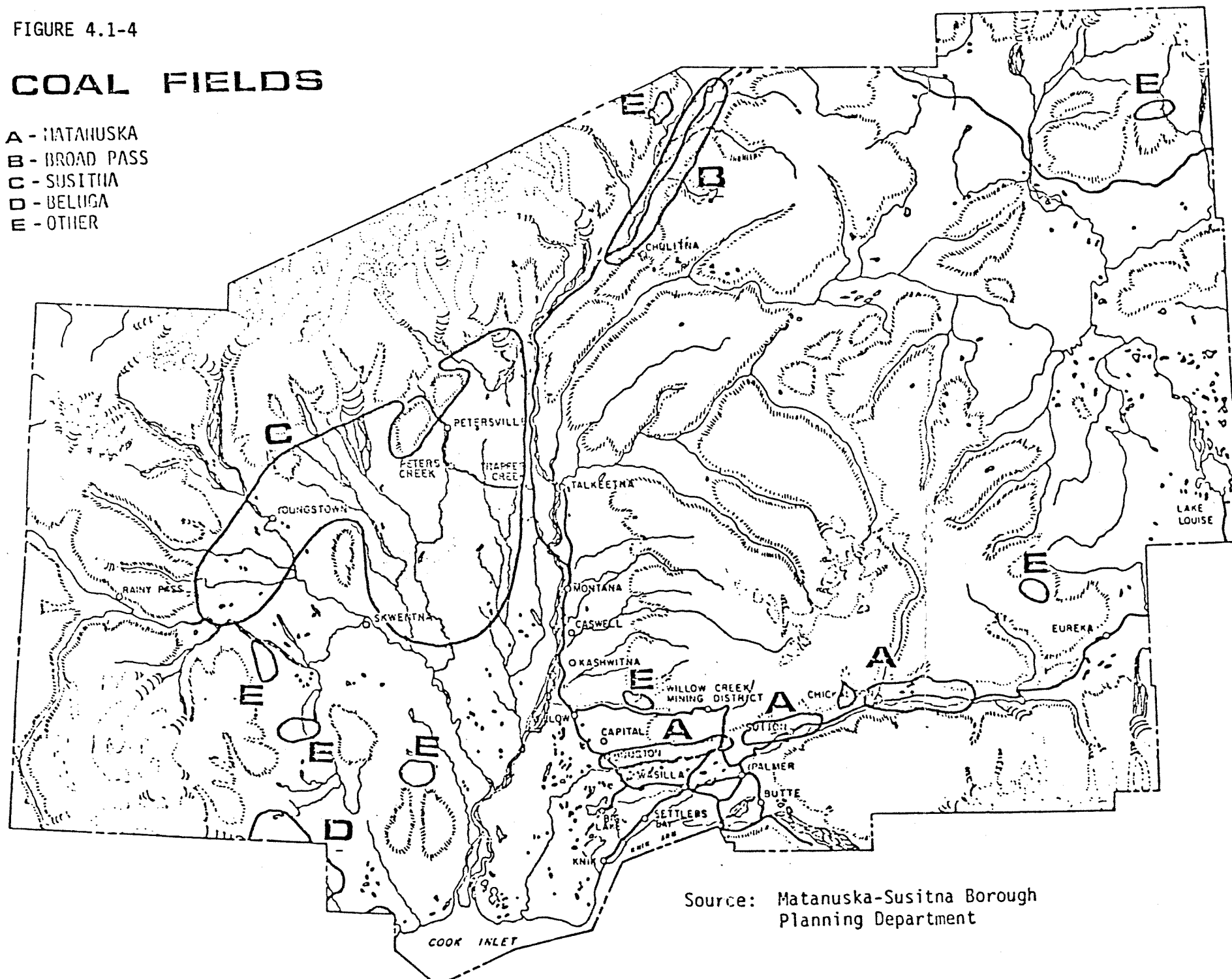
Source: Matanuska-Susitna Borough
Planning Department

From: Overall Economic Development Program Inc. July 1980. Volume II: Economic Conditions, Development Options and Projections. p. 140.

FIGURE 4.1-4

COAL FIELDS

- A - MATANUSKA
- B - BROAD PASS
- C - SUSITNA
- D - BELUGA
- E - OTHER



Source: Matanuska-Susitna Borough
Planning Department

From: Overall Economic Development Program Inc. July 1980. Volume II: Economic Conditions, Development Options and Projections. p. 134.

and manager/official categories are in keeping with the services and bedroom community orientations of the population and economy.

Outside of the major communities in the Borough, economic activity is related to mining, agriculture, timber products, or in providing recreational services. Figure 4.1-2 shows locations of some of the known mineral deposits in the Borough. Many of the mining sites in the Borough are placer mines which work alluvial deposits for minerals. Figure 4.1-3 shows locations of mining districts in the Borough. In addition, the central area from the Talkeetna Mountains north to the Alaska Range has been designated a multiple use area which will permit mining activity. Virtually all mining historically has occurred in these districts, and this pattern is expected to continue (Overall Economic Development Program, 1980, p. 139). Of particular relevance to the proposed Susitna dams are the following areas:

- . The Susitna-Chulitna portion of the Yentna Mining District where molybdenum, gold, copper, lead, silver, and antimony are scattered over a distance of several tens of miles.
- . The Upper Susitna River area where the Denali prospect, a copper deposit, has been discovered but has not yet been developed into a mine.

The major mineral resource in the Borough is coal. Extensive deposits of varying quality occur in the river valleys. Figure 4.1-4 shows locations of known fields. Also present in the Borough are peat bogs which may become an important energy source.

The U.S. Forest Service has classified 1,295,000 acres in the Borough as commercial forest land. This acreage is located primarily in the lowlands, since elevations above 1,500 feet in Alaska are not conducive to timber growth. (There are no commercially valuable timber stands in Impact Area 1 due to the elevation.) Most of the Borough's timber is suitable only for pulp and chip production. Some lumber is produced for the local market. Louisiana-Pacific Corporation signed a 10-year contract with Japanese concerns for wood chips, which are being produced in the Borough.

Agriculture has played an important part in the historical development of the Borough. Up until the early 1960's commercial agriculture production continued to increase. Since then the number of farms and volume of production has declined. This condition is due to changes in economic activity within the Borough. "The focus of public attention has turned to land speculation, residential subdivisions, service and construction businesses to meet the needs of the Valley's suburban population and public services for people whose employment is not related to agriculture in any manner." (Matanuska-Susitna Borough Planning Department, April 1978, p. 104). The Borough government is attempting to reverse the decline through various means, including the Point MacKenzie Project.

(f) Employment

(i) Baseline

Employment figures in Alaska are collected by place of employment. Virtually all employment in the Borough is

government, service, and support sector oriented (see Table 4.1-50). Total employment has risen steadily from 1,145 in 1970 to 3,078 in 1979, an increase of 169 percent. Employment in the first three quarters of 1980 averaged 3,224. However, the Borough consistently has had high unemployment rates (20 percent in 1970 and 13.8 percent in 1979) that are often the highest in the state. Employment opportunities have not kept pace with the growth of the labor force. The Borough is more dependent on seasonal employment than larger population centers such as Anchorage.

As displayed in Table 4.1-51, the Mat-Su Borough has an extremely high ratio of population to employment (by place of employment) that averaged around 5.5 during the years for which complete data exist. This is more than twice as high as the overall Anchorage Region's population to employment ratio of 2.5 and is mostly due to the emergence of the southern part of the Borough as a bedroom community for Anchorage. A lesser contributing factor may be the high prevalent unemployment rate in the Borough.

(ii) Baseline Forecast

Projections of employment for the Mat-Su Borough and other Census Divisions of the Anchorage Region are shown in Table 4.1-52. For 1981-2000, these projections were made by regressing each Census Division's share of Anchorage Region employment against time (1970-1979). The annual rate at which each Census Division's share of Anchorage Region employment will change was calculated from the regressions and applied to the Institute of Social and Economic Research's (ISER's) employment pro-

TABLE 4.1-50

MATANUSKA-SUSITNA BOROUGH ANNUAL NONAGRICULTURAL EMPLOYMENT BY SECTOR

(a)							PERCENT OF IMPACT AREA 3		
	1970		1975		1979		1970	1975	1979
	Total	%	Total	%	Total	%	%	%	%
<u>TOTAL - Nonagricultural Industries</u>	1,145	100.0	2,020	100.0	3,078	100.0	1.8	1.8	2.7
Mining	*	-	*	-	11	.3	*	*	.0
Construction	120	10.5	188	9.3	184	6.0	2.3	1.1	2.2
Manufacturing	*	-	30	1.5	40	1.3	*	1.2	1.1
Transportation - Communication & Utilities	114	9.6	218	10.8	316	10.2	1.9	1.8	2.6
Wholesale Trade			44	2.2	49	1.6		.8	1.0
Retail Trade	174	15.2	271	13.4	696	22.6	1.4	1.7	3.8
Finance-Insurance and Real Estate	22	1.9	62	3.1	129	4.2	.8	1.3	2.1
Services	179	15.6	288	14.3	447	14.5	2.0	1.4	2.3
Federal Government	106	9.3	124	6.1	97	3.1	.9	1.0	.8
State and Local Government	376	32.8	758	37.5	1,101	35.8	3.2	4.3	5.2
Miscellaneous	*	-	*	-	21	.7	*	*	1.8

* Data unavailable due to disclosure policy.

(a) Figures may not total correctly because of averaging and disclosure limitations on data.

Source: Alaska Department of Labor. Statistical Quarterly. Juneau, AK. (various issues)

TABLE 4.1-51

RATIO OF POPULATION TO BOROUGH EMPLOYMENT
IN THE MAT-SU BOROUGH, 1966, 1970-1980

	<u>Employment in Borough</u>	<u>Population</u>	<u>Population to Employment Ratio</u>
1966	1,138	5,800	5.1
1970	1,145	6,509	5.7
1971	1,414	7,300	5.2
1972	1,445	8,000	5.5
1973	1,607	8,753	5.4
1974	1,784	9,500	5.3
1975	2,020	10,100	5.0
1976	2,269	14,196	6.3
1977	2,524	14,800	5.9
1978	2,954	16,100	5.5
1979	3,078	-	-
1980	3,224(a)	17,766	5.5(a)

(a) 1980 Employment in the Borough is based on the first three quarters of the year.

TABLE 4.1-52

BASELINE FORECAST OF EMPLOYMENT IN THE
ANCHORAGE REGION, BY CENSUS DIVISION, 1981-2005

	<u>Municipality of Anchorage</u>	<u>Kenai- Cook Inlet</u>	<u>Mat-Su Borough</u>	<u>Seward</u>	<u>Total Anchorage Region</u>
1981	94,681	8,439	4,002	1,631	108,753
1982	97,908	8,834	4,248	1,690	112,680
1983	101,876	9,304	4,535	1,762	117,477
1984	107,002	9,890	4,883	1,854	123,630
1985	116,356	10,884	5,442	2,020	134,702
1986	124,727	11,806	5,975	2,170	144,678
1987	129,938	12,444	6,373	2,265	151,021
1988	132,308	12,819	6,641	2,311	154,080
1989	133,579	13,093	6,858	2,338	155,868
1990	131,705	13,058	6,914	2,310	153,987
1991	132,980	13,335	7,135	2,337	155,788
1992	133,093	13,498	7,296	2,343	156,231
1993	134,854	13,831	7,550	2,379	158,615
1994	136,571	14,164	7,806	2,414	160,956
1995	138,434	14,517	8,076	2,452	163,479
1996	141,174	14,968	8,403	2,506	167,051
1997	144,212	15,457	8,755	2,565	170,989
1998	147,134	15,942	9,107	2,622	174,806
1999	150,643	16,499	9,505	2,690	179,337
2000	153,935	17,041	9,897	2,754	183,627
2001	157,238	17,596	10,308	2,819	187,960
2002	160,611	18,170	10,733	2,885	192,399
2003	164,057	18,761	11,176	2,953	196,947
2004	167,577	19,373	11,636	3,022	201,608
2005	171,173	20,004	12,116	3,093	206,386

Note: The Municipality of Anchorage's percentage share of regional employment was calculated to decline by .17 percent per year. Kenai-Cook Inlet's and Mat-Su Borough's percentage shares were calculated to increase by .08 percent and .09 percent per year, respectively.

jections for the Anchorage Region (See Section 10.2(a) for further discussion of methodology). For 2001-2005, the average annual rate of increase during 1996-2000 was applied to the year 2000 estimate to obtain the year 2001 estimate. The average annual rate of increase was then applied to the 2001 employment estimate to obtain the 2002 estimate. This procedure was repeated to obtain estimates for 2003-2005.

The Mat-Su Borough's and Kenai Cook-Inlet's percentage share will increase by about 0.09 percent and 0.08 percent per year, respectively. The Municipality of Anchorage's percentage share will decrease by about 0.17 percent per year, and Seward's percentage share will remain constant.

Given the employment projections for the Anchorage Region, and the Mat-Su Borough's 0.09 percent increase in share per year, employment will increase in the Borough by about four to five percent per year. Population is projected to increase at a slightly higher rate per year (See section 4.1(a)). This reflects the continuing trend of persons locating in the Borough and working in Anchorage.

(g) Income

(i) Baseline

Trends in per capita personal income are evident in Table 4.1-53. As occurred elsewhere in the state, nominal personal income rose substantially in the Mat-Su Borough in the 1970's, and stabilized as the trans-Alaska pipeline (TAPS) was completed. Personal

TABLE 4.1-53
PER CAPITA PERSONAL INCOME IN
THE MAT-SU BOROUGH IN CURRENT
AND 1970 DOLLARS

<u>Year</u>	<u>Per Capita Personal Income</u>	
	<u>Current Dollars</u>	<u>In 1970 Dollars (a)</u>
1970	3,957	3,957
1971	4,279	4,150
1972	4,539	4,286
1973	4,970	4,526
1974	6,068	5,011
1975	8,092	5,855
1976	8,542	5,718
1977	9,032	5,666
1978	8,939	5,231
1979	8,878	4,704

(a) Discounted using the Anchorage CPI - U as a measure of inflation.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

income rose from \$3,957 per capita in 1970 to \$9,032 per capita in 1977 and declined to \$8,878 in 1979.

The increase between 1970 and 1979 was therefore 124 percent. However, in real terms (using the Anchorage CPI-U as a measure of inflation) personal income in 1979 was only 19 percent higher than the 1970 level.

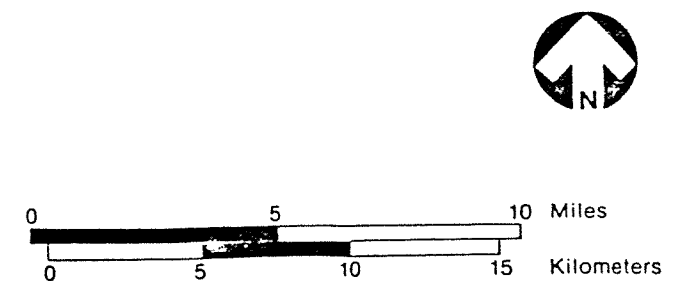
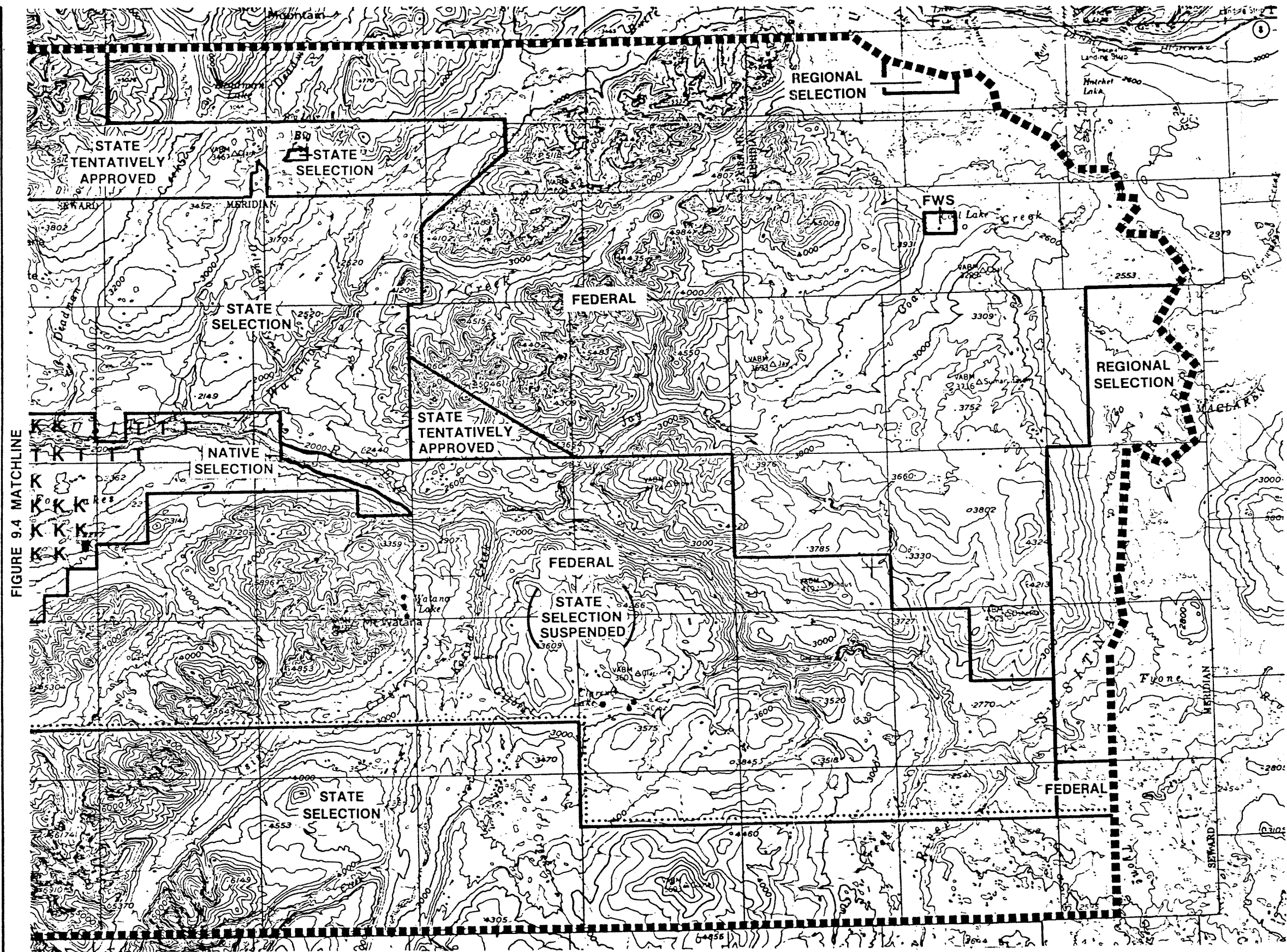
(h) Land Use

(i) Baseline

Status of land in the Borough is a complicated and on-going issue, increasing in importance as the Borough continues to experience substantial growth concentrated in the southern portion. Figures 41.5 and 41.6 display tenure patterns and land selections in the areas surrounding the Watana and Devil Canyon sites.

Of the 14,720,000 acres in the Borough, 25 percent are Federal lands, 68 percent State lands, 2.5 percent Borough lands, one percent Native-owned land and 3.5 percent privately owned land. Of 525,836 acres of taxable land in the Borough, only 16 percent (84,838 acres) contain any type of improvements. The current amount of private land, though small in proportion to the total, has been more than sufficient to meet the recent and present demand for land.

Both the State and the Borough have been pursuing land disposal programs which put additional land into private hands. These programs are expected to continue in the future.



LEGEND

- STUDY AREA BOUNDARY
- PRIVATE LANDS
- ▨▨▨▨ FEDERAL RAILROAD WITHDRAWAL
- CIRI "IN LIEU" BOUNDARY
- NATIVE SELECTED LANDS
- C,K,T VILLAGE SELECTIONS
(Individual village selections appear in the center of sections.)
- C CHICKALOON SELECTIONS
- K KNIK SELECTIONS
- T TYONEK SELECTIONS

FIGURE 4.1-5 LAND OWNERSHIP/STEWARDSHIP, WATANA PORTION

END OF MAP INSERTS

Much of the land involved in the proposed Susitna Hydroelectric Project has been selected by the Cook Inlet Region, Inc. (CIRI) and its member village corporations. Future use of this area will depend largely on future ownership and owner's policies regarding land use.

Some land near the Susitna Hydroelectric project site has been included in two recent State land disposals in the Indian River area. The Indian River subdivision disposal is comprised of 700 acres in 139 parcels. The Indian River remote disposal contains 1,500 acres. Two additional sites may be disposed of in FY83: one of these consists of 2,000 acres near the Indian River subdivision.

Land use planning powers in the Borough for the most part reside with the various land owners. The Borough, however, does exercise overall planning authority for all lands within its boundaries. Roughly half of the Borough is designated as a special use district permitting multiple use of the lands within the district.

The Borough's traditional reluctance to allow zoning to be implemented is beginning to change, and planned growth is being advocated as a way to avoid strip development and conflicting land use, and to protect wildlife and wildlife habitat.

(ii) Baseline Forecast

As the population of the Mat-Su Borough grows, an increased amount of land for housing will be needed. Based upon an average standard of one acre per household

lot, an additional 20,616 acres will be required for housing purposes by the year 2,000.

The current 78,962 acres of unimproved subdivision land would be more than adequate to provide for this increased demand. Borough planners have estimated that present subdivided land could support a population of 100,000.

Land disposals by the Borough and the State are expected to continue. The Borough presently has over 100,000 acres which could be sold, and is expecting to receive almost 200,000 acres more as part of its land entitlement from the State. Most will be available in southern part of Borough.

It is difficult to project the size of future land disposals by the State. Negative public input, the opposition of other state agencies, Native land selections, and access problems are all factors that can contribute to the cancellation of proposed offerings. However, it is likely that sizeable amounts of State land in the Mat-Su Borough will continue to be sold to the private sector.

As the Borough continues to grow, the area's traditional reluctance to allow zoning to be implemented may need to give way. Borough and city officials in the Mat-Su Borough have begun to advocate zoning and regional planning as a way of controlling growth and preparing for the future.

(i) Fish/Wildlife and Water Recreation Use Patterns

(i) Baseline

- Sport Fishing

Many of the developed recreation areas in the Borough are located around bodies of water. This is due to inherent aesthetic values as well as to the activities available, i.e., fishing and boating.

Throughout Southcentral Alaska, sport fishing is a major recreational activity. Perhaps the most renowned area is the Kenai Peninsula. Fishing pressure there has recently become so intense that fishermen are practically elbow to elbow during the season. One result of this has been an increase in the use of alternative areas in the region.

The Alaska Department of Fish & Game (ADF&G) estimates that 71 percent of the 1,285,063 angler days fished in Alaska in 1978 were spent in the Southcentral region. The Cook Inlet area (Anchorage, Knik Arm Drainage, East Susitna Drainage, West Cook Inlet - West Susitna Drainage, and the Kenai Peninsula) accounted for 752,966 angler days or 59 percent of the total State effort in 1978. The Kenai Peninsula itself had 521,498 or 41 percent of total angler days fished. (Mills, 1980.)

Data for four subareas of the Southcentral region which incorporate Impact Areas 1 and 2 are presented in Tables 4.1-54 through 4.1-57. These subareas are East Susitna Drainage, West Cook Inlet - West Susitna

TABLE 4.1-54
SPORT FISH HARVEST BY SPECIES(a)

<u>RANK</u>	<u>SPECIES</u>	<u>SYMBOL (b)</u>	<u>ESTIMATED NUMBER OF FISH HARVESTED</u>
1	Pink Salmon	PS	58,808
2	Rainbow Trout	RT	46,453
3	Arctic Grayling	GR	42,226
4	Coho Salmon	SS	27,154
5	Land locked Coho Salmon	LL	24,071
6	Dolly Varden, Arctic Char	DV AC	18,034
7	Chum Salmon	CS	17,970
8	Burbot	BB	8,099
9	Lake Trout	LT	7,413
10	Sockeye Salmon	RS	4,746
11	Chinook Salmon	KS	4,184
12	Whitefish	WF	3,634
13	Other	-	1,345
14	Northern Pike	NP	316
15	Steelhead	SH	45

(a) For the following areas: East Susitna Drainage, East Cook Inlet - West Susitna Drainage, Knik Arm Drainage, and Glenallen.

(b) Symbols are used to identify species in the following tables.

TABLE 4.1-55

EAST SIDE SUSITNA DRAINAGE* SPORT FISH HARVESTS AND EFFORT BY FISHERY AND SPECIES, 1978

	Days Fished	KS	SS	LL	RS	PS	CS	RT	DV AC	LT	GR	BB	Other
Willow Creek	22,682	47	905	0	56	18,901	2,458	913	280	0	208	9	27
Montana Creek	25,762	408	2,451	0	85	15,619	4,429	1,193	633	0	958	9	27
Clear (Chunilna) Creek	5,040	12	2,200	0	28	2,074	1,912	1,501	1,817	0	859	27	0
Sheep Creek	11,869	256	478	0	14	6,981	1,697	470	108	0	461	18	9
Little Willow Creek	5,687	0	151	0	28	3,142	1,015	334	63	0	334	0	0
Others	14,970	163	2,388	2,368	56	3,994	2,692	1,519	2,739	877	3,770	208	90
GRAND TOTAL	86,010	886	8,573	2,368	267	50,711	14,203	5,930	5,640	877	6,600	271	153

*East Side Susitna Drainage (Area H): All East side drainages of the Susitna River below its confluence with the Oshetna River. Fish taken while fishing from the East bank of the Susitna River are included in this area.

Source: Mills, Michael J. July 1, 1979 - June 30, 1980. Annual Performance Report for Alaska State-wide Sport Fish Harvest Studies, Vol. 21. Alaska Department of Fish and Game, Sport Fish Division. Juneau, AK. p. 44.

Note: The sum of individual entries may not equal totals due to independent rounding.

TABLE 4.1-56

WEST SIDE COOK INLET-WEST SIDE SUSITNA RIVER DRAINAGE* SPORT FISH HARVESTS AND EFFORT
BY FISHERY AND SPECIES, 1978.

	Days Fished	KS**	SS	RS	PS	CS	RT	DV AC	LT	GR	NP	BB	Other
Dezhka River	9,111	850	1,798	0	697	0	3,634	0	0	579	0	0	72
Lake Creek	8,767	326	2,212	254	2,833	1,015	2,721	154	36	2,115	9	45	18
Alexander Creek	6,914	769	2,401	183	1,146	215	2,640	136	0	1,871	0	0	181
Talachulitna River	732	12	88	141	31	234	0	235	0	99	0	0	0
Chuit River	1,185	408	277	0	155	0	443	461	0	0	0	0	0
Theodore River	905	58	101	0	449	0	226	353	0	0	0	0	0
Lewis River	172	12	0	0	46	0	54	27	0	0	0	0	0
Other Rivers	6,011	82	3,683	662	898	1,171	1,528	1,220	0	1,953	0	72	63
Shell Lake	302	0	0	28	0	0	27	0	45	0	0	0	0
Whiskey Lake	129	0	0	28	0	0	0	0	0	0	0	0	0
Hewitt Lake	172	0	0	0	0	0	127	0	0	0	0	0	0
Judd Lake	151	0	0	70	0	0	0	371	0	0	0	0	0
Other Lakes	3,420	0	0	268	0	0	1,618	551	515	108	307	36	36
GRAND TOTAL	38,771	2,517	10,560	1,634	6,255	2,635	13,018	3,508	596	6,725	316	153	370

Razor Clams

Total Digging Days: 800

Total Clams Taken: 39,175

*West Side Cook Inlet-West Side Susitna River Drainage (Area N): All West side Susitna River drainages and all West side Cook Inlet waters southward to Cape Douglas. Fish taken while fishing from the West bank of the Susitna River are included in this area.

**Kings less than 20 inches.

Source: Mills, Michael J. July 1, 1979 - June 30, 1980. Annual Performance Report for Alaska Statewide Sport Fish Harvest Studies, Vol. 21. Alaska Department of Fish and Game, Sport Fish Division. Juneau, AK. p. 45.

TABLE 4.1-57

KNIK ARM DRAINAGE* SPORT FISH HARVESTS AND EFFORT BY FISHERY AND SPECIES, 1978

	Days Fished	KS	SS	LL	RS	PS	CS	RT	DV AC	LT	GR	BB	Other
Little Susitna River	12,127	93	4,865	0	859	1,517	956	886	570	0	54	9	759
Wasilla Creek (Rabbit Slough)	3,446	47	2,112	0	0	279	59	45	325	0	0	0	0
Finger Lake	11,502	0	0	8,588	0	0	0	0	0	0	0	0	0
Kepler Lake Complex	5,730	0	0	298	0	0	0	5,180	0	0	985	0	0
Lucille Lake	4,803	0	0	4,963	0	0	0	0	0	0	0	0	0
Big Lake	9,865	0	0	226	0	0	0	4,845	5,433	0	0	18	0
Nancy Lake Recreation Area, including Nancy Lake	7,647	0	0	262	14	0	0	1,853	18	127	0	145	0
Others	20,420	0	918	4,547	366	46	117	10,330	1,636	380	1,374	280	36
GRAND TOTAL	75,540	140	7,895	18,884	1,239	1,842	1,132	23,139	7,982	507	2,413	452	795

*Knik Arm Drainage (Area K): All waters inside the area bounded by the Little Susitna River on the North and West and the Knik Arm on the South, including all drainages of the Matanuska and Knik Rivers. (Boundary streams included in the area).

Source: Mills, Michael J. July 1, 1979 - June 30, 1980. Annual Performance Report for Alaska Statewide Sport Fish Harvest Studies, Vol. 21. Alaska Department of Fish and Game, Sport Fish Division. Juneau, AK. p. 42.

Drainage, Knik Arm Drainage, and Glenallen. Table 4.1-54 presents aggregated statistics for these areas by species. In terms of number of fish harvested, pink salmon, rainbow trout, and arctic grayling are the three most popular species for the combined area. A total of 244,887 angler-days were expended in the area which constitutes 19 percent of the State total and 27 percent of the Southcentral effort. From 1977 to 1978, angler days spent in the area increased ten percent (ibid.).

Fishing is a major recreational activity for both Alaska residents and non-residents. Approximately three-quarters of the estimated 206,185 anglers who fished in 1978 were residents. Thus, roughly 50,000 sport fishermen were visitors, i.e., nonresidents. More than half of all sport fishermen in 1978 who were Alaska residents were from the Anchorage and Mat-Su Borough area (ibid.).

It should be noted that the data presented here was gathered by means of a postal survey to random samples of Alaska sport fishing license holders. This data was corroborated using on-site creel surveys of random samples of fishermen. The data was then statistically adjusted to provide estimates of overall harvest levels and effort. This data is regarded by sport fish biologists as providing effective estimates of sport fishing activity. (ibid.)

- Hunting

Hunting is the major recreational activity in the region between the Talkeetna Mountains and the Alaska

Range. The major species hunted are caribou, moose, and bear. Each of these species is briefly addressed below. For the purposes of this study, ADF&G's Game Management Unit 13 will be used as the source of hunting data. When available, Subunit 13E, which corresponds more closely to Impact Area 1, will be used as the relevant data area.

. Caribou

The caribou in the region near the project site are part of the Nelchina herd. This herd reached a peak population of about 70,000 in 1962 and a low of about 8,000 in 1972. Reasons for the decline include natural factors as well as intensive hunting. Current population estimates put the size of the herd at about 19,000.

The following information is taken from the Alaska Wildlife Management Plans (Draft, 1980) page 81, published by the Alaska Department of Fish and Game.

The Nelchina herd has been the most heavily sports-hunted caribou herd in Alaska since 1950. Harvests exceeded 4,000 caribou in most years from 1959 to 1971. Sharp restrictions in hunting seasons and bag limits in 1972, from an eight-month season to a six-week season, and a three caribou bag limit to one caribou, reduced the kill to about 600. The harvest increased to 800 in 1973

and to 1,200 in 1974. In 1975, a further reduction in season length to three weeks reduced the kill to about 800 caribou. Large harvests in the period 1967-1971 and proportionally large kills on a reduced population since 1972 can be attributed to increased access, greater use of all-terrain vehicles, and increased hunting pressure.

Table 4.1-58 presents data on harvest totals, hunting effort and other variables for the Nelchina herd hunting effort since 1972. Since 1977 the number of permits has been substantially reduced and, correspondingly, the size of the herd has increased dramatically. (The population was estimated at 7,842 caribou in 1972 and 18,981 caribou in 1978). ADF&G received 5,600 permit applications and issued 1,300 permits to harvest Nelchina caribou during the 1980 season. Hunters harvested 630 caribou. ADF&G intends to allow the herd to increase to 20,000 animals which will support an estimated 2,000 annual harvest.

. Moose

Data for moose harvests and hunting pressure are presented in Table 4.1-59 and 4.1-60 for game management Unit 13. This unit includes a large part of Impact Area 2, including the project site.

Since 1972, the moose harvest and population have remained fairly constant, accounting for approxi-

TABLE 4.1-58

NELCHINA HERD

Reported Unit 13 caribou harvest by sex, residency of hunter, success ratios, and total extrapolated harvest, 1972-1978.

Year	Total reported harvest	Total extr. harvest	Number reported hunters	Success ratio	Number		Number		Resident		Nonresident	
					males	(Percent)	females	(Percent)	harvest		harvest	
									No.	%	No.	%
1972	555	N/A	1,586	34%	388	(72%)	153	(28%)	301	(56%)	237	(44%)
1973	629	810	1,982	32%	411	(67%)	203	(33%)	401	(68%)	187	(32%)
1974	1,036	1,192	2,550	41%	656	(66%)	343	(34%)	820	(82%)	181	(18%)
1975	669	806	1,991	34%	441	(69%)	201	(31%)	515	(80%)	126	(20%)
1976	776	822	1,807	43%	560	(74%)	201	(26%)	642	(85%)	117	(15%)
1977	360	--	580	62%	275	(78%)	77	(22%)	--	--	--	--
1978	539	--	747	72%	416	(79%)	111	(21%)	510	(95%)	25	(4%)

PREPARED BY: Sterling Eide, Game Biologist III

Source: Alaska Department of Fish and Game, Division of Game. March 1980. Annual Report of Survey-Inventory Activities, Part II, Bison, Caribou, Moose and Muskoxen. Juneau, AK. p. 33.

TABLE 4.1-59

FALL 1979 DRAWING PERMIT APPLICATIONS

Species	Hunt #	Season Dates	Area & Game Management Unit ^{1/}	# Permits to be Issued	Total # Applications Received	Total # Harvested	Percent Successful Hunts
Caribou (either sex)	503	Aug. 20 - Sept. 20	Units 13 & 14, except 14C	1,300	5,600	630	48
Moose (antlerless)	910	Sept. 1 - Sept. 20	Matanuska Valley - 14A	200	2,740	97	48
	911	Sept. 1 - Sept. 20	Willow to Talkeetna - 14B	100	667	22	22
	913	Jan. 23 - Feb. 6	Willow to Talkeetna	50	6,011	43	86

Source: ADF&G records.

^{1/} The Willow Subbasin encompasses southwest portion of 14B and western half of 14A.

From: Soil Conservation Service, et. al., December 1980. Susitna River Basin Study. Draft Report. p. 4-86.

TABLE 4.1-60

MOOSE - GMU 13 Nelchina Basin

A comparison of Annual Moose Harvest and Hunting Pressure, 1963-1978

Year	Season	Male	Female	Unknown	Total	Hunters	Percent Success
1963	Total	1385	343	7	1735		
1964	Total	1213	394	0	1607		
1965	Total	1318	3	10	1331		
1966	Total	1336	181	36	1553	4163	37
1967	1st	1009	319				
	2nd	112	0				
	Total	1217*	319	16	1552	4027	28
1968	1st	1013	243				
	2nd	171	0				
	Total	1240*	243	29	1512	4476	34
1969	1st	817	0				
	2nd	87	7	8			
	Total	1204*	7	8	1219	2553	48
1970	1st	746	56	14			
	2nd	271	58	8			
	Total	1141*,**	220	30*	1391	3535	39
1971	1st	703	333				
	2nd	205	338				
	Total	1126*	670***	18	1814	4881	37
1972	1st	559	5	7			
	2nd	39	2	1			
	Total	689*	7*	16*	712	3199	22
1973	Total	604	4	10	618	2513	24
1974	Total	768	3	23	794	2770	29
1975	Total	690	2	23	715	2978	24
1976	Total	708	1	23	732	3122	23
1977	Total	684	1	13	698	2299	30
(1977)****	Total	855	-	--	855****	3698****	23
1978	Total	846	1	16	863	3034	28

* Moose whose date of kill is unknown are included in the total.

** Adult, antlerless bulls killed during the late antlerless season are included.

*** Data from antlerless permit returns. Harvest ticket returns indicated a female kill of 614.

**** Extrapolated results to correct for absence of reminder letters in 1977.
(Total = 855 ± 133 , $p = .05$; hunters = $3698 \pm 1,080$, $p = .05$).

PREPARED BY: Sterling Eide, Game Biologist III

Source: Alaska Department of Fish and Game, Division of Game. March 1980.
Annual Report of Survey-Inventory Activities, Part II, Bison, Caribou,
Moose and Muskoxen. Juneau, AK. p. 105.

mately 20 percent of annual state harvests. Since the early 1970's, increasingly restrictive regulations have been adopted in an attempt to limit the harvest in the face of increasing effort. Currently, the bag limit reads, "One bull having an antler spread of at least 36 inches or at least 3 brow tines on one antler."

In light of the demand for permits (to hunt antlerless moose) in 1979, as evidenced from data for the Willow subbasin where more than ten times the number of available permits were applied for, the moose resource in Southcentral Alaska is being fully utilized and cannot meet existing demand. (See Table 4.1-60).

As with caribou, practically all hunters are residents of Alaska.

- Bear

The two species of bear hunted in Unit 13 are brown and black bear. Brown bears are the targeted species, while black bears are most often taken incidentally. Tables 4.1-61 and 4.1-62 present harvest data for each species.

Several characteristics of bear hunting activities are noteworthy. Foremost is the fact that many fewer bear are taken and fewer hunters involved than for either caribou or moose. Of the hunters, many are non-residents. It is likely that this is a result of the fact that fewer non-residents can participate in hunting other species and that

TABLE 4.1-61

BLACK BEAR HARVEST DATA, GAME MANAGEMENT UNIT 13, 1973-1978

Regulatory year	Total kill	No. males	Percent males	No. kills by nonres.	Mean skull size males(mm)	Percent incidental kill	Percent salvaging meat	Season and bag limit
1973	69	42	61	34	411	--	--	3 bears; provided that the taking of cubs or females accompanied by cubs is prohibited. No closed season.
1974	50	32	64	10	413	--	--	Same
1975	71	47	66	15	429	--	--	Same
1976	60	38	63	13	425	48	55	Same
1977	58	37	64	10	421	41	52	Same
1978	64	41	68	11	419	39	64	Same

PREPARED BY: Robert Tobey, Game Biologist II

Source: Alaska Department of Fish and Game, Division of Game. December 1979. Annual Report of Survey-Inventory Activities, Part I, Black Bear, Brown Bear, and Polar Bear. Juneau, AK. p. 36.

TABLE 4.1-62

UNIT 13

Brown bear sport harvest summary by year, sex of bear, residency of hunter, and length of season.

Calendar Year	Total Kill**	No. of Males	No. of Females	% of Males*	% of Females*	No. of Unknown	No. by Nonres.	% by Nonres.	Length of season
1961	0041	020	020	050%	050%	001	025	061%	30 days
1962	0034	021	013	062%	038%	000	019	056%	30 days
1963	0041	021	019	053%	048%	001	026	063%	30 days
1964	0036	015	020	043%	057%	001	023	064%	30 days
1965	0044	025	018	058%	042%	001	021	048%	30 days
1966	0063	033	026	056%	044%	004	041	065%	30 days
1967	0031	016	014	053%	047%	001	014	045%	30 days
1968	0038	018	019	049%	051%	001	018	047%	21 days
1969	0017	015	002	088%	012%	000	008	047%	31 days
1970	0027	018	008	069%	031%	001	015	056%	21 days
1971	0072	032	035	048%	052%	005	044	061%	35 days
1972	0048	028	020	058%	042%	000	025	052%	31 days
1973	0044	026	017	060%	040%	001	026	059%	31 days
1974	0072	040	031	056%	044%	001	034	047%	40 days
1975	0080	043	031	058%	042%	006	037	046%	40 days
1976	0059	028	025	053%	047%	006	023	039%	40 days
1977	0038	031	007	082%	018%	000	012	032%	40 days
1978	0063	036	025	059%	041%	002	028	044%	40 days
TOTALS	0848	0466	0350	0057%	0043%	0032	0439	052%	

* All percentages are based on total known sex bears.

** Harvest totals for previous years may change as late sealing certificates are added.

PREPARED BY: Lee Miller, Game Technician V

Source: Alaska Department of Fish and Game, Division of Game. December 1979. Annual Report of Survey-Inventory Activities, Part I, Black Bear, Brown Bear, and Polar Bear. Juneau, AK. p. 95.

brown bear are often hunted as trophies. Bear are also often taken incidentally by hunters after caribou or moose.

. Other Species

In the 1978 - 1979 season 69 wolves, 59 wolverines, 68 lynx, and 17 otter were taken in Unit 13. With the possible exception of wolves, these species are primarily utilized for commercial purposes and primarily taken by trapping methods.

In the 1978 - 1979 season, 77 sheep were harvested from Units 13 and 14. The majority of the sheep came from the Talkeetna Mountains area. Hunting pressure has been fairly constant over the past decade, averaging about 300 hunters per year.

- Boating and Kayaking

Much of the boating activity occurring in the waterways of the region is associated with fishing or hunting, i.e., a means of transportation. Some pleasure boating occurs in the more developed recreation areas.

Kayaking, canoeing, and rafting occur throughout the region where feasible. All levels of difficulty can be found, the pinnacle of which is the Devil Canyon run. Few individuals have dared the whitewater. Cole in his History of the Use of Upper Susitna River; Indian River to the Headwaters (Cole, 1979), recounts the various expeditions which attempted to pass through the canyon. Most did not succeed though they escaped with few serious injuries.

The following paragraph describing the whitewater resource in the region is taken from the study done for the Army Corps of Engineers by Jones & Jones in 1975.

Not only does much of the Upper Susitna River occupy a stream-cut valley, but the rapids in Devil's Canyon are so exceptionally violent and spectacular as to constitute a nearly unique aesthetic and recreational resource. Most Alaskan rivers occupy broad glacially scoured valleys, and whitewater beyond class III is rare (conversations with members of the U.S.D.I. Alaska Task Force responsible for recommendations on additions to the National Wild and Scenic Rivers System, 1974). Only three major whitewater rivers are known in Alaska: the Susitna and the Bremner in the Southcentral Region, and the Alsek in the Southeast. All are class VI rivers (I.A.C. rating), at the limit of navigability, and cannot be attempted without risk of life. All three are glacial rivers; the near-freezing water and its opacity further add to the danger posed by the turbulence of their rapids. The Susitna and Alsek were recently both successfully kayaked by Dr. Walt Blackadar for the first time. It is not known if anyone has yet attempted the Bremner, a tributary of the Copper. According to whitewater boaters, the characteristics

of the three are quite different, although equally violent. The Bremner is a small, steep river in an exceptionally narrow slot-like gorge; the Alsek is a short, very steep, turbulent river; the Susitna has a relatively flat gradient and owes its violence to its great volume, the constriction of its channel in Devil's Canyon, and the rocky obstructions in its bed. Blackadar has described Devil's Canyon as much more difficult than the Grand Canyon and as the "Mount Everest" of kayaking (Anchorage Daily Times, March 28, 1973).

Dr. Blackadar also wrote a letter to the Corps responding to the draft environmental impact statement concerning the Susitna hydroelectric project describing in detail his trip through the canyon. Apparently there are certain sections which have never been traversed by anyone.

(ii) Fish and Game Values

- Species

A variety of fish and wildlife species will be impacted by the Watana and Devil's Canyon Dams and Reservoirs. They have been identified as follows by fish, game and furbearer classifications:

<u>Fish</u>	<u>Game</u>	<u>Furbearers</u>
Salmon	Black Bear	Red Fox

- Sockeye	Brown Bear	Pine Marten
- Pink	Nelchina Caribou	Mink
- Coho	Dall Sheep	River Otter
- Chinook	Wolverine	Short-Tailed Weasel
- Chum	Moose	Muskrat
Eulachon	Wolf	Beaver
Arctic Grayling		Coyote
Rainbow Trout		Lynx
Dolly Varden		
Burbot		
Whitefish		
Humpback Whitefish		
Three Spined Sticklebacks		
Long Nose Sucker		
Pacific Lamprey		
Arctic Lamprey		
Spiny Sculpin		
Lake Trout		

- Empirical Values

Project efforts to date to establish commercial and sport values for these impacted species have concentrated on empirical data collection representative of prevailing valuation methodologies. These include for commercial values the Market Value System, and for recreational values the Gross Expenditure, Contingency (Willingness-to-Pay or Required Compensation), Travel Cost, and other methodologies.

Additionally, empirical data for subsistence replacement cost and legal values was researched.

Contacts in research and data collection included government agencies, state agencies, private research

organizations, educational institutions and private consultants throughout the United States and Canada.

Following are listed those studies and research which have produced value data. There is a wide divergence in reporting technique and methodology.

Phillips, William; Depape, Dennis; and Ewanyk, Leoanard. February 1977, Socioeconomic Evaluation of the Recreational Use of Fish and Wildlife Resources in Alberta, With Particular Reference to the Athabasca Oil Sands Area. Dept. of Rural Economy, Univ. of Alberta. Edmonton, Alberta.

Extramarket benefits per person per day for nonconsumptive recreational fish and wildlife were determined to be:

<u>Bird Life</u>	<u>Animal Life</u>	<u>Aquatic Life</u>
\$3.61/person/day	\$4.48/person/day	\$3.12/person/day

Resident sport fishermen were determined to incur \$26.77 in variable costs per day, and \$52.51 per day in capital costs.

The total annual extramarket benefits to resident sport fishermen were established at \$144.60 per person. Resident hunters were determined to incur \$257.29 in costs per person annually. Extramarket benefits averaged \$200.85 for big game, \$157.63 for upland bird game and \$115.13 for waterfowl per annual season.

Travel cost methodology was utilized in this study.

Phillips, William E.; and McElhaney, Evelyn R. December 1977. A Socioeconomic Evaluation of Nonresident Sport Fishing Activities in Alberta. I.M.P.A.C.T. Environments Ltd. Edmonton, Alberta.

This study determined that per trip cost to nonresident anglers during 1976 and 1977 was \$245.31, this sum actually spent within the province. Extramarket benefits to nonresident anglers was \$21.42 per day.

Travel cost methodology was utilized.

Phillips, William E.; and McElhaney, Evelyn R. Dec. 1977. A Socioeconomic Evaluation of Nonresident Sport Hunting Activity in Alberta. I.M.P.A.C.T. Environments Ltd. Edmonton, Alberta.

Per trip cost to nonresident hunters during 1976 and 1977 was found to be \$479.26, this sum actually spent within the Province. Extramarket benefits per day were found to be as follows:

<u>Big Game</u>	<u>Upland Bird</u>	<u>Waterfowl</u>
\$54.97/day	\$38.68/day	\$31.56/day

Travel cost methodology was utilized.

Taylor, C. Robert; Beattie, Bruce R.; and Livengood, Kerry R. December 1980. Public vs. Private Systems

for Big Game Hunting. Montana State University.
Bozeman, Montana.

This study determined values per hunting day in Texas during the big game season were \$16.00+ for lease holders during 1978 and 1979.

Pattison, William S.; and Phillips, William E. October, 1971. Economic Evaluation of Big Game Hunting: An Alberta Case Study. Canadian Journal of Agricultural Economics. pp. 72-86.

This study determined benefits to society in general, to Alberta, and to Northern Alberta specifically from moose hunting during the 1968 hunting season.

	<u>Society</u>	<u>Alberta</u>	<u>No. Alberta</u>
Total per moose			
killed	\$86.54	\$168.83	\$171.36

The total value of the moose hunting experience to each nonresident hunter was established at \$293.45 and for each resident hunter at \$79.53.

This study utilized Willingness-To-Pay methodology.

Phillips, William E. and Carroll, Michael R. 1978. Socioeconomic Evaluation of the Recreational Use of Fish and Wildlife Resources in Alberta, Canada. Univ. of Alberta. Edmonton, Alberta.

This study established per day values for hunting and fishing activities for residents and nonresidents in

Alberta during 1976 and 1977. Results were as follows:

<u>Non-Consumptive Activities</u>	<u>Fishing Activities</u>	<u>Hunting Activities</u>
Resident <u>1976</u> \$3.00	Resident <u>1976</u> \$7.68	Resident <u>1976</u> \$35.00
	Nonresident <u>1977</u> \$22.80	Nonresident <u>1977</u> \$58.00

Brown, William G., et. al. August, 1976. Improved Economic Evaluation of Commercially and Sport-Caught Salmon and Steelhead of the Columbia River. Special Report of Oregon State University. Corvallis, Oregon.

This study estimated the value per day for salmon and steelhead sport fishing in the Columbia River. The estimated value was \$22.00 and is recommended as "the lowest value to be used for a fishery threatened by some water-related project or alternative."

Talhelm, Daniel P., et. al. December, 1979. Current Estimates of Great Lakes Fisheries Values: 1979 Status Report. Great Lakes Fisheries Commission. Ann Arbor, Michigan.

This study estimated the net value to anglers of having the Great Lakes sport fisheries, as opposed to not having them at all, at \$21.00 per day per angler.

Masse, William D. and Peterson, Ken. March 21, 1977. Evaluation of Incremental Recreational Benefits from Salmonoid Enhancement. Appendix 6 to the British Columbia Salmonid Enhancement Program Report. Vancouver, British Columbia, Canada.

The value per salmonid angler day in British Columbia was determined by this study to be \$15.00 per day for conventional fishing areas, and \$25.00 per day for trophy areas.

Gordon, D.; Chapman, D.W.; and Bjorn, T.C. 1972. Economic Evaluation of Sport Fisheries: What Do They Mean? American Fisheries Society. Lawrence, Kansas.

This study utilized travel cost methodology to establish values per angler day for salmonid sport fishing in Idaho streams ranging from \$23.00 to \$34.00.

Charbonneau, J.J., and Hay, M.J. 1978. Determinants and Economic Values of Hunting and Fishing. 43rd North American Wildlife and Natural Resources Conference. Washington D.C.

The U.S. National Sample of Anglers was utilized by this study in determining an estimated daily value to anglers of \$25.00 for trout and landlocked salmon. The bidding game methodological approach was used.

Soil Conservation Service, et. al. December, 1980.
Susitna River Basin Study, Willow Subbasin. Draft
Report.

User-day values were determined by this study in
terms of 1981 dollars for the Talkeetna Subbasin
area.

	Within Talkeetna Subbasin	Anchorage	Fairbanks	Outside Alaska
<u>Fishing</u>				
Freshwater				
Fishing	13.22	33.04	46.26	100.60
Big Game				
Hunting	19.62	49.05	68.66	388.16

Travel cost methodology was used in determining these
values, and access as a variable was limited to high-
way only.

Work is proceeding on this study to develop travel
cost method estimated big game and fish values incor-
porating several other forms of travel access.

Dubert, John T. and Young, Robert A. November, 1981.
Recreational Demands for Maintaining Instream Flows:
A Contingent Valuation Approach. American Journal of
Agricultural Economics.

This study established values of instream flows to
fishing activities on the Poudre River in Colorado
during 1978. Bidding game methodology was used,
including two different willingness-to-pay
situations.

<u>Flow (cfs)</u>	<u>Value per angler day (\$)</u>

100	11.67
200	20.48
300	26.53
400	29.82
500	30.35
600	28.10
700	23.15
800	15.40
900	4.85

- Commercial Values

The Alaska Department of Fish and Game has published the following commercial values per pound for salmon species in the Upper Cook Inlet in 1981:

	<u>Gillnet</u>	<u>Setnet</u>
	<u>Average Price</u>	<u>Low Price</u>
Kings	1.48	1.25
Reds	1.25	0.98
Pinks	0.40	0.31
Coho	0.90	0.50
Chums	0.65	0.46

- Summary

Empirical evidence indicates little if any fish and wildlife value work has been done for the majority of project impacted species. A diverse range of methodologies have been historically applied on a

situational basis. A comprehensive methodology review is indicated, with the understanding that a particular approach needs to be selected for this impacted environment.

4.2 - Regional - Impact Area 3

The following sections describe the baseline and baseline forecast conditions of key socioeconomic variables. Additional discussion of the forecasts methodologies used can be found in Section 11.2.

(a) Population

(i) Baseline

As shown in Table 4.2-1 population in Impact Area 3 (the Railbelt) rose from 204,523 in 1970 to 284,166 in 1980. The Railbelt contains over 70 percent of the State's population. The majority is centered in the greater Anchorage area.

Within the Greater Anchorage area, there has been a gradual shift in the relative shares of population that live within the Municipality and in nearby areas (see Tables 4.2-2 and 4.2-3). As Table 4.2-3 displays, the Municipality's share of the total population fell from 87 percent in 1966 to 80 percent in 1980. The Kenai and Mat-Su Borough Census Divisions have grown more rapidly, and now account for 10.3 percent and 8.2 percent of the Anchorage region population, respectively.

Population in the Municipality of Anchorage itself rose from 126,385 in 1970 to a peak of 182,000 in 1977, and stabilized at a level of around 174,431 in 1980. The average annual increase in Anchorage population during this period was 3.5 percent.

TABLE 4.2-1
TOTAL RESIDENT POPULATION AND COMPONENTS OF CHANGE,
BY IMPACT AREA, 1970-1980

	Impact Area 2	Impact Area 3(a)	Impact Area 4
	Matanuska- Susitna Borough	Railbelt	State
1980 Census	17,766	284,166	400,481
1970 Census	6,509	204,523	302,361
Net Change	+11,257	+79,643	+98,120
Percent Change	+173	+42	+32
Change in Military Pop.	+141	-4,730	-8,102
Natural Increase (Births & Deaths)	+1,430	+45,107	+61,142
Implied net Civilian Migration	9,686	39,266	45,080

(a) Fairbanks, S.E. Fairbanks Mat-Su, Anchorage, Kenai Peninsula, and Valdez-Cordova Census Divisions

Sources: U.S. Census Bureau and Alaska Department of Labor, Administrative Services Division. Alaska's 1980 Population: A Preliminary Overview. Juneau, AK. p. 26.

TABLE 4.2-2
POPULATION IN THE ANCHORAGE REGION, 1966, 1970-1980

	<u>Anchorage</u>	<u>Kenai- Cook Inlet</u>	<u>Mat-Su</u>	<u>Seward</u>	<u>Total Anchorage Region</u>
1966	105,300	7,700	5,800	2,200	121,000
1970	126,385	14,250	6,509	2,336	149,480
1971	133,000	14,200	7,300	2,400	156,900
1972	142,200	14,500	8,000	2,600	167,300
1973	147,268	13,943	8,753	2,597	172,561
1974	150,600	14,100	9,500	2,600	176,800
1975	161,300	16,000	10,100	3,000	190,400
1976	179,464	18,697	14,196	3,546	215,903
1977	182,000	21,300	14,800	3,000	221,100
1978	179,800	22,300	16,100	3,100	221,300
1979(a)	NA	NA	NA	NA	NA
1980	174,431	22,473	17,766	2,809	217,479

(a) 1979 data are not yet available.

Sources: U.S. Census Bureau. 1970 Census, 1980 Census, and Current Population Reports, various issues.

TABLE 4.2-3

POPULATION IN THE ANCHORAGE, KENAI-COOK INLET, MAT-SU, AND SEWARD
CENSUS DIVISIONS AS A PERCENT OF TOTAL ANCHORAGE REGION POPULATION
1966, AND 1970-1980
(percent)

	<u>Anchorage</u>	<u>Kenai</u>	<u>Mat-Su</u>	<u>Seward</u>	<u>Total Anchorage Region</u>
1966	87.0	6.4	4.8	1.8	100.0
1970	84.5	9.5	4.4	1.6	100.0
1971	84.8	9.1	4.7	1.5	100.0
1972	85.0	8.7	4.8	1.6	100.0
1973	85.3	8.1	5.1	1.5	100.0
1974	85.2	8.0	5.4	1.5	100.0
1975	84.7	8.4	5.3	1.6	100.0
1976	83.1	8.7	6.6	1.6	100.0
1977	82.3	9.6	6.7	1.4	100.0
1978	81.2	10.1	7.3	1.4	100.0
1979	-	-	-	-	-
1980	80.2	10.3	8.2	1.3	100.0

Sums of individual items may not equal totals due to independent rounding.

Sources: U.S. Census Bureau. 1970 Census, 1980 Census, and Current
Population Reports, various issues.

(ii) Baseline Forecast

Population in the Railbelt is expected to rise from 284,166 in 1980 to 483,686 in 2000. The growth rate will be greatest in the mid-1980's (over seven percent in 1985), decline substantially as construction of the natural gas pipeline ends, and then stabilize at around two percent per year in the 1990's.

Of the three regions that comprise the Railbelt, the Fairbanks region will experience the greatest fluctuation in population, due mainly to its location on the route of the gas pipeline. The population in the Fairbanks region will rise from 59,753 in 1980 to a peak of 83,702 in 1986 and will decline to 77,593 by 1988. Growth will then resume at an average annual rate of about 1.5 percent.

To be able to compare impact forecasts for the Fairbanks-North Star Borough and Southeast Fairbanks Census Division with baseline forecasts, it was necessary to develop baseline forecasts for this Borough and Census Division. These forecasts are shown in Table 4.2-4. Because each area's share of total regional population is assumed to remain constant during the forecast period, the Borough's and Census Division's population will grow at the same rate as the regional population.

The Anchorage region will experience a pattern similar to the Railbelt as a whole--rapid growth through 1987, a stabilizing period and then an average annual growth rate of about two percent during the 1990's. The Anchorage region population of 375,000 in 2000 will

TABLE 4.2-4

BASELINE FORECAST OF POPULATION IN THE
FAIRBANKS REGION, BY CENSUS DIVISION, 1981-2005

<u>Year</u>	<u>Fairbanks North Star Borough^(a)</u>	<u>Southeast Fairbanks^(b)</u>	<u>Total Fairbanks Region</u>
1981	54,602	5,282	59,825
1982	56,466	5,462	61,868
1983	58,197	5,630	63,764
1984	61,973	5,995	67,901
1985	69,168	6,691	75,785
1986	76,394	7,390	83,702
1987	75,399	7,294	82,611
1988	70,819	6,851	77,593
1989	71,017	6,870	77,810
1990	71,162	6,884	77,969
1991	71,795	6,945	78,663
1992	72,805	7,043	79,769
1993	74,186	7,177	81,282
1994	75,328	7,287	82,534
1995	76,585	7,409	83,911
1996	78,051	7,551	85,517
1997	79,609	7,701	87,224
1998	81,286	7,864	89,062
1999	82,996	8,029	90,935
2000	84,702	8,194	92,804
2001	86,430	8,346	94,776
2002	88,193	8,502	96,695
2003	89,992	8,660	98,652
2004	91,828	8,821	100,649
2005	93,701	8,985	102,686

(a) Based on an average share of .9127 of total region.

(b) Based on an average share of .0883 of total region.

Sums of individual items may not equal total for the region due to independent rounding.

account for 75 percent of the Railbelt. This is slightly lower than the region's 77 percent share in 1980. The Valdez region's growth rate follows a similar pattern in the 1990's. In addition, an initial population influx of 3,500 (30 percent) is projected for 1982.

(b) Housing

(i) Baseline

In 1981, the Municipality of Anchorage contained 65,771 civilian housing units. Of this total, 46 percent were single family units, 12 percent were mobile homes and 42 percent were in multi-family buildings (see Table 4.2-5). The majority of mobile homes were located in mobile home parks.

There is no consistent time series for data on the housing stock of the Municipality of Anchorage over the last few years. However, data do exist for the Anchorage Bowl which represents over 90 percent of the housing units in the Municipality, and this information is indicative of recent trends. Between 1975 and 1981, the civilian housing stock in the Borough increased by 35 percent. The growth in residential housing was strongest between 1975 and 1978, during the construction boom associated with the TAPS pipeline. Between 1980 and 1981, the growth rate had slowed to about one percent.

The vacancy rate in the Municipality was calculated by R. L. Polk and Co. to be about 14 percent in 1980 (R.L. Polk and Co., 1981). Table 4.2-6 displays data on

TABLE 4.2-5

1981 CIVILIAN HOUSING STOCK IN THE
MUNICIPALITY OF ANCHORAGE, BY TYPE

<u>Type of Unit</u>	<u>Number of Units</u>	<u>Percent of Total</u>
Single Family	30,097	45.8
Duplex	6,040	9.2
3-4 Units	6,211	9.4
5-19 Units	9,356	14.2
20+ Units	6,036	9.2
Mobile Homes	<u>8,031</u>	<u>12.2</u>
In Parks	6,146	9.3
On Lots	1,885	2.9
Total	<u>65,771</u>	<u>100.0</u>

Source: Municipality of Anchorage Planning Department.

vacancy rates by type. As Table 4.2-6 shows, housing units in apartment buildings with 5 or more units had an average vacancy rate which was almost twice that of single family homes in recent years.

Table 4.2-7 shows data on vacancy rates derived from U.S. Post Office surveys, for the Anchorage Bowl. This set of data is not considered as accurate as the Polk data, especially during times of high vacancy rates, but it does show the recent fluctuations in the housing market. As the Table shows, the overall vacancy rate reached a low of approximately one percent in 1975, peaked in 1980, and fell considerably to about five percent in 1981.

In October, 1978, the housing stock of the Fairbanks-North Star Borough stood at 13,738, of which 54 percent were located in the city of Fairbanks (see Table 4.2-8). Single family housing accounted for 50 percent of the Borough's housing stock. Duplexes accounted for 7 percent; multifamily units and mobile homes represented 28 and 15 percent, respectively, of the total. Within the Fairbanks city limits, multifamily units accounted for a much larger part of the total (43 percent) and mobile homes for a far smaller percentage (2 percent).

Vacancy rates in the Fairbanks North Star Borough have risen in the post-pipeline period, but not as dramatically as in Anchorage. As Table 4.2-9 shows, the overall vacancy rate rose from a low of 0.4 percent in May, 1976, to 9.1 percent in June, 1980. Vacancy rates for single family houses remained below 3 percent, whereas the vacancy rates for multifamily units and

TABLE 4.2-6
VACANCY RATES IN THE MUNICIPALITY
OF ANCHORAGE, BY TYPE OF HOUSING UNIT
1978-1981

<u>Housing Type</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Single Family	8.0	10.4	10.7	4.4
2-4 Unit	10.4	15.7	16.9	6.8
5 or More Unit	11.7	18.4	19.5	13.8
Overall	9.6	13.7	14.4	8.4

Source: 1978-1980: R.L. Polk; 1981: Survey conducted by the Municipality of Anchorage Planning Department.

TABLE 4.2-7
POST OFFICE SURVEY VACANCY RATES
IN THE ANCHORAGE BOWL,
BY TYPE OF HOUSING UNIT
1975-1981

<u>Year(a)</u>	<u>Single Family</u>	<u>Multi- Family</u>	<u>Mobile Home</u>	<u>Overall</u>
1975	0.5	4.2	0.0	1.0
1976	0.8	2.5	3.3	1.8
1977	1.1	6.3	3.2	3.6
1978	2.2	10.3	3.6	5.9
1979	2.9	16.2	6.3	9.1
1980	2.0	20.2	7.7	11.1
1981	1.6	8.2	5.8	4.9

(a) The surveys were conducted in May, June or July

Source: U.S. Post Office Vacancy Rate Surveys

TABLE 4.2-8
HOUSING STOCK IN FAIRBANKS
AND THE FAIRBANKS-NORTH STAR BOROUGH, BY TYPE,
OCTOBER 1978

	<u>Fairbanks- North Star Borough</u>	<u>Municipality of Fairbanks</u>
Single Family	6,849	3,312
Duplex	960	714
Multifamily	3,832	3,187
Mobile Homes	<u>2,097</u>	<u>138</u>
Total	13,738	7,351

Source: Fairbanks North Star Borough Community Information Center.
Community Information Quarterly: Summer 1980. Volume III, Number
2. p. 70.

TABLE 4.2-9
VACANCY RATES IN THE FAIRBANKS -
NORTH STAR BOROUGH, 1976 - 1980
(in percent)

<u>Year</u>	<u>Single Family</u>	<u>Multi- Family</u>	<u>Mobile Home</u>	<u>Overall</u>
May 1976	0.3	0.5	1.1	0.4
November 1977	1.3	1.9	0.1	1.5
May 1978	2.0	4.4	3.7	3.4
August 1979	2.7	12.6	6.4	8.2
June 1980	2.7	13.5	6.8	9.1

Housing vacancy surveys are conducted by U.S. mail carriers under the supervision of the local postmaster.

Source: Fairbanks-North Star Borough Community Information Center.
Community Information Quarterly: Fall 1980. Volume III, Number 3.
p. 81.

mobile homes rose to 13.5 percent and 6.8 percent in 1980.

(ii) Baseline Forecast

Tables 4.2-10 through 4.2-13 contain projections of households and housing stock in the Anchorage Region and in the whole Impact Area 3. By the year 2000, the number of households and housing units will reach 176,604 and 187,232, respectively. The Anchorage region will continue to account for over three-fourths of the housing in the Impact Area. Vacant housing units in the region are estimated to total 8,638 in 1990 and 10,628 in 2000.

(c) Fiscal

(i) Municipality of Anchorage

- Baseline

Statehood in 1959 brought a home rule charter to the City of Anchorage, and in 1963 the Greater Anchorage Area Borough (GAAB) was established. The Mandatory Borough Act gave the GAAB areawide powers for planning and zoning, education, property assessment, and tax collection. Additional powers including health, sewers, animal control, and transit, and service area provisions for fire, police, libraries, roads and drainage were later added by voter approval. The term areawide refers to responsibilities throughout the total area of the Borough, including those areas within incorporated cities.

TABLE 4.2-10

BASELINE FORECAST OF HOUSEHOLDS
IN THE ANCHORAGE REGION, 1981-2005 (A)

YEAR	MUNICIPAL- ITY OF ANCHORAGE	KENAI- SEWARD	MAT-SU BOROUGH	TOTAL ANCHORAGE REGION
1981	60137	8739	6810	75686
1982	61929	9249	7402	78580
1983	63681	9776	8099	81556
1984	66048	10327	8843	85218
1985	69920	11234	9927	91081
1986	73213	11981	10916	96110
1987	76042	12785	11986	100813
1988	78142	13390	12910	104442
1989	79106	13914	13788	106808
1990	79028	14277	14417	107722
1991	79960	14716	15354	110030
1992	80557	15219	16156	111932
1993	81832	15751	17245	114828
1994	82886	16374	18235	117495
1995	83923	16891	19371	120185
1996	85275	17620	20528	123423
1997	86760	18265	21885	126910
1998	88117	19029	23145	130291
1999	89664	19737	24670	134071
2000	91113	20594	26095	137802
2001	95848	21296	27373	144517
2002	97209	22022	28715	147945
2003	98589	22773	30122	151484
2004	99989	23550	31598	155137
2005	101409	24353	33146	158908

(3)04

(A) CALCULATED BY APPLYING POPULATION PER HOUSEHOLD (PPH) FIGURES TO THE POPULATION FORECASTS IN TABLE 4.2-2. THE PPH MEASURES WERE CALCULATED TO GRADUALLY DECLINE FROM THE LEVELS OF 1980, AS MEASURED BY THE U.S. CENSUS BUREAU, TO A PROJECTED NATIONAL AVERAGE OF 2.657 IN THE YEAR 2000.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT ROUNDING.

TABLE 4.2-11

BASELINE FORECAST OF HOUSING STOCK
IN THE ANCHORAGE REGION, 1981-2005 (A)

YEAR	MUNICIPAL- ITY OF ANCHORAGE	KENAI- SEWARD	MAT-SU BOROUGH	TOTAL ANCHORAGE REGION
1981	69890	11740	8582	90212
1982	69890	11740	8790	90420
1983	69890	11740	9595	91225
1984	69890	11740	10462	92092
1985	73416	11796	11730	96942
1986	76874	12585	12868	102327
1987	79844	13424	14094	107362
1988	82049	14060	15121	111230
1989	83061	14610	16092	113763
1990	83061	14991	16754	114806
1991	83958	15452	17728	117138
1992	84585	15980	18574	119139
1993	85924	16539	19761	122224
1994	87030	17193	20821	125044
1995	88119	17736	22043	127898
1996	89539	18501	23278	131318
1997	91099	19178	24719	134996
1998	92523	19980	26048	138551
1999	94147	20724	27672	142543
2000	95669	21623	29207	146499
2001	100640	22360	30626	153627
2002	102069	23123	32115	157307
2003	103519	23911	33675	161105
2004	104989	24727	35310	165025
2005	106479	25571	37023	169074
(C) 04				

(A) THE MUNICIPALITY OF ANCHORAGE AND KENAI-COOK INLET FORECASTS WERE CALCULATED BY APPLYING A FIVE PERCENT VACANCY RATE TO THE PROJECTION OF HOUSEHOLDS IN TABLE 4.2-10.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL TOTALS DUE TO INDEPENDENT ROUNDING.

TABLE 4.2-12

BASELINE FORECAST OF HOUSEHOLDS IN IMPACT AREA 3, 1981-2005

YEAR	ANCHORAGE REGION	FAIRBANKS REGION	VALDEZ- CORDOVA	TOTAL IMPACT AREA 3
1981	75686	19943	2717	98346
1982	78580	20683	2995	102258
1983	81556	21378	3957	106891
1984	85218	22830	4067	112115
1985	91081	25554	4166	120801
1986	96110	28305	3896	128311
1987	100813	28017	4165	132995
1988	104442	26392	4371	135205
1989	106808	26543	4460	137811
1990	107722	26673	4543	138938
1991	110030	26691	4636	141357
1992	111932	27450	4780	144162
1993	114828	28054	4921	147803
1994	117495	28570	5054	151119
1995	120185	29133	5200	154518
1996	123423	29779	5353	158555
1997	126910	30463	5519	162892
1998	130291	31198	5696	167185
1999	134071	31950	5874	171895
2000	137802	32741	6061	176604
2001	144517	35670	6195	186383
2002	147945	36392	6333	190670
2003	151484	37129	6473	195086
2004	155137	37881	6617	199634
2005	158908	38647	6764	204320
(3) 04				

SOURCE: INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH,
UNIVERSITY OF ALASKA, SEPTEMBER 1981.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL
TOTALS DUE TO INDEPENDENT ROUNDING.

TABLE 4.2-13

BASELINE FORECAST OF HOUSING STOCK
IN IMPACT AREA 3, 1981-2005 (A)

YEAR	ANCHORAGE REGION	FAIRBANKS REGION	VALDEZ- CORDOVA	TOTAL IMPACT AREA 3
1981	90212	25198	4145	119555
1982	90420	25198	4145	119763
1983	91225	25198	4155	120578
1984	92092	25198	4272	121562
1985	96942	26832	4374	128148
1986	102327	27125	4374	133826
1987	107362	27418	4374	139154
1988	111230	27712	4590	143532
1989	113763	27870	4683	146316
1990	114806	28007	4770	147583
1991	117138	28341	4868	150347
1992	119139	28823	5019	152981
1993	122224	29457	5167	156848
1994	125044	29999	5307	160350
1995	127898	30590	5460	163948
1996	131318	31268	5621	168207
1997	134996	31986	5795	172777
1998	138551	32758	5981	177290
1999	142543	33548	6168	182239
2000	146499	34378	6364	187241
2001	153627	37454	6505	197586
2002	157307	38212	6649	202168
2003	161105	38986	6797	206887
2004	165025	39775	6948	211748
2005	169074	40580	7102	216756
(3) 04				

(A) CALCULATED BY APPLYING FIVE PERCENT VACANCY RATES
TO THE PROJECTIONS OF HOUSEHOLDS IN TABLE 4.2-12.

NOTE: THE SUM OF INDIVIDUAL ENTRIES MAY NOT EQUAL
TOTALS DUE TO INDEPENDENT ROUNDING.

The City of Anchorage offered a broad range of services including police, fire, public works, parks and recreation, library, water, and power, and operated a deep water port, a museum, a small airport, and a large telephone utility. Utility services were even extended beyond city limits. However, two years after the GAAB was formed, the concept of government unification was developed. After much conflict and several referendums, a unified Anchorage government was formed. At present Anchorage is considered a unified home rule municipality and operates as a mayor form of government with an eleven-member Municipal Assembly elected from multimember districts. A city manager handles the daily operational aspects of government, and the Office of Management acts as the focal point for budget decision-making. (Ender, Richard L. et al. January 1980).

CURRENT EXPENDITURES FY 1981/82

Current average per capita expenditures for services provided by the Municipality of Anchorage are as follows: (Correspondence from Gene Dusek, Budget Officer, Municipality of Anchorage, December 30, 1981).

Police protection	\$153 per capita cost
Fire protection	100
Ambulance	19
Parks and Recreation	56
Library	21
Health care	25
Transportation	84

Sewage Service	\$254 per household cost
Solid waste disposal	59 " " "
Water supply	348 " " "

Road repair and maintenance \$28,550 per mile
(includes snow removal)

Education	total expenditure per pupil \$4,212
Operations expenditure	3,518

Data on the current revenues of the Municipality of Anchorage will not be provided.

- Baseline Forecast: Municipality of Anchorage Budget

Expenditure projections for the Municipality of Anchorage are provided in Table 4.2-14. These are derived from average per capita costs of service incurred in FY81/82. In general, costs of service increased directly with increases in population, however, between 1981 and 1990, population increases (28 percent) are slightly less than those for expenditures. Between 1981 and 1990 the overall projected rate of increase will be approximately 32 percent; this rate increase declines to 12 percent between 1991 and 2000.

The relative shares of total expenditures for each category of service are:

Police	22%
Fire	14%

TABLE 4.2-14

MUNICIPALITY OF ANCHORAGE BUDGET: BASELINE EXPENDITURE FORECASTS.

		A	B	C	D	E	F	G	H	I	J	
	ANCHORAGE	POLICE	FIRE	AMBLNC	PARKS	LIBRARY	HEALTH	TRANS	SEWAGE	SOLID	WATER	TOTAL
YEAR	PDP	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	WASTE DISPOSAL (\$000)	SUPPLY (\$000)	EXPENDS (\$000)
1981	174717	26732	17472	3320	9784	3669	4368	14676	15899	3669	21665	121254
1982	179410	27450	17941	3409	10047	3768	4485	15070	16326	3768	22247	124511
1983	184022	28155	18402	3496	10305	3864	4601	15458	16746	3864	22819	127711
1984	190313	29118	19031	3616	10658	3997	4758	15986	17318	3997	23599	132077
1985	200962	30747	20096	3818	11254	4220	5024	16881	18288	4220	24919	139468
1986	209820	32102	22031	4186	11750	4406	5403	17625	19094	4406	26018	147021
1987	217298	33247	22816	4335	12169	4563	5595	18253	19774	4563	26945	152261
1988	222731	34078	23387	4443	12473	4677	5735	18709	20269	4677	27619	156068
1989	224822	34398	23606	4485	12590	4721	5789	18885	20459	4721	27878	157533
1990	224027	35304	23523	4469	12546	4705	5769	18818	20998	4846	28613	159590
1991	226005	35616	23731	4554	12656	4746	5863	18984	21183	4888	28865	161087
1992	227024	35777	23839	4575	12713	4768	5889	19070	21279	4911	28996	161814
1993	229940	36236	24144	4633	12877	4829	5965	19315	21552	4974	29368	163892
1994	232299	36608	24391	4681	13009	4878	6026	19513	21773	5025	29669	165573
1995	234507	36956	24623	4725	13132	4925	6083	19699	21980	5072	29951	167147
1996	237668	37454	25205	4789	13309	4991	6165	19964	22277	5141	30355	169650
1997	241086	37993	25567	4858	13501	5063	6254	20251	22597	5215	30792	172090
1998	244125	38472	25889	4919	13671	5127	6333	20507	22882	5280	31180	174259
1999	247759	39044	26275	4992	13875	5203	6427	20812	23222	5359	31644	176853
2000	251102	39571	26629	5060	14062	5273	6514	21093	23536	5431	32071	179239
2001	254617	40125	27002	5131	14259	5347	6605	21388	23865	5507	32520	181748
2002	258182	40687	27380	5202	14458	5422	6697	21687	24199	5584	32975	184293
2003	261797	41257	27764	5275	14661	5498	6791	21991	24538	5663	33437	186873
2004	265462	41834	28152	5349	14866	5575	6886	22299	24882	5742	33905	189489
2005	269178	42420	28546	5424	15074	5653	6982	22611	25230	5822	34379	192142

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING AVERAGE PER CAPITA COSTS:

- (A) \$153 1981-1989; +3% 1990-2005.
- (B) \$100 1981-1985; +5% 1986-1995; +1% 1996-2005
- (C) \$19 1981-1985; +5% 1986-1990; +1% 1991-2005.
- (D) \$56
- (E) \$21
- (F) \$25 1981-1985; +3% 1986-1990; +3% 1991-2005..
- (G) \$84
- (H) \$91 1981-1989; +3% 1990-2005.
- (I) \$21 1981-1989; +3% 1990-2005.
- (J) \$124 1981-1989; +3% 1990-2005.

EXPENDITURE PROJECTIONS ARE NOT ALL INCLUSIVE.

Ambulance	3%
Parks and Recreation	8%
Library	3%
Health Care	4%
Transportation	12%
Sewage Service	13%
Solid Waste Disposal	3%
Water Supply	18%

(ii) City of Fairbanks

- Baseline

The City of Fairbanks is a home rule municipality that operates with a mayor-council form of government. The Fairbanks North Star Borough is a second-class Borough with a mayor-assembly form of government. The City of Fairbanks offers a broad range of services including police, fire, public works, health and Alaska Land, a division of parks and recreation. The Municipal Utilities System of the City of Fairbanks is responsible for electric, water, steam and telephone services. The City Manager, along with a city clerk and respective department heads, manages the daily operational aspects of government.

CURRENT EXPENDITURES FY 81/82

Current average per capita expenditures for services provided by the City of Fairbanks are as follows:

Parks and Recreation	\$ 35 per capita cost
Police Protection	135

Fire Protection	142	
Health Care	32	
Public Works	102	
Sewer Service	110	per capita <u>or</u> \$418 per household
Electric Utility	360	
Water Supply	83	<u>or</u> \$315 per household.

Education per pupil \$5,400 total expenditure

Data on the current revenues of the City of Fairbanks will not be provided.

Baseline Forecast: City of Fairbanks Budget

Table 4.2-15 provides expenditure projections for the City of Fairbanks based upon average per capita costs of service delivery in FY81/82. In general, real costs of services are projected to increase 35 percent between 1981 and 1990, decreasing to 18 percent between 1991 and 2000. This is consistent with the forecasts of population increases for these time periods. The relative shares of total expenditures for each category of service are:

Parks and Recreation	4%
Police	14%
Fire Service	14%
Health Care	3%
Public Works	10%
Sewer Service	11%
Electric Utilities	36%
Water Supply	8%

TABLE 4.2-15

CITY OF FAIRBANKS BUDGET:EXPENDITURE BASELINE FORECAST.

YEAR	FAIRBANKS POP	PARKS & RECR (\$000)	POLICE (\$000)	FIRE SERVICE (\$000)	HEALTH CARE (\$000)	PUBLIC WORKS (\$000)	SEWER SERVICE (\$000)	ELECTRIC UTILS (\$000)	WATER SUPPLY (\$000)	TOTAL EXPENDS (\$000)
1981	22734	796	3069	3228	727	2319	2501	2154	1887	16681
1982	23510	823	3174	3338	752	2398	2586	2227	1951	17250
1983	24230	848	3271	3441	775	2471	2665	2296	2011	17779
1984	25802	903	3483	3664	826	2632	2838	2444	2142	18932
1985	28798	1008	3888	4089	922	2937	3168	2728	2390	21130
1986	31807	1113	4294	4742	1048	3407	3499	3013	2640	23757
1987	31392	1099	4238	4681	1035	3362	3453	2974	2606	23447
1988	29485	1032	3980	4396	972	3158	3243	2793	2447	22022
1989	29568	1035	3992	4409	975	3167	3252	2801	2454	22084
1990	29628	1037	4120	4418	977	3173	3357	2891	2533	22505
1991	29892	1046	4156	4457	1015	3201	3387	2917	2555	22735
1992	30312	1061	4215	4520	1029	3246	3434	2958	2591	23054
1993	30887	1081	4295	4605	1048	3308	3499	3014	2641	23491
1994	31366	1098	4361	4677	1065	3359	3554	3061	2681	23856
1995	31886	1116	4434	4754	1082	3415	3613	3111	2726	24251
1996	32496	1137	4519	4894	1103	3480	3682	3171	2778	24764
1997	33145	1160	4609	4991	1125	3550	3755	3234	2834	25258
1998	33844	1185	4706	5097	1149	3625	3835	3302	2893	25791
1999	34555	1209	4805	5204	1173	3701	3915	3372	2954	26333
2000	35266	1234	4904	5311	1197	3777	3996	3441	3015	26874
2001	36300	1271	5048	5466	1232	3888	4113	3542	3103	27662
2002	37041	1296	5151	5578	1257	3967	4197	3614	3167	28227
2003	37796	1323	5256	5692	1283	4048	4282	3688	3231	28802
2004	38567	1350	5363	5808	1309	4131	4370	3763	3297	29390
2005	39354	1377	5472	5926	1336	4215	4459	3840	3364	29990

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING PER CAPITA COSTS:

(A)\$35.00 CONSTANT

(B)\$135.00 1981-1989; +3% 1990-2005.

(C)\$142.00 1981-1985; +5% 1986-1995; +1% 1996-2005.

(D)\$32.00 1981-1985; +3% 1986-1990; +3% 1991-2005.

(E)\$102.00 1981-1985; +5% 1986-2005.

(F)\$110.00 1981-1989; +3% 1990-2005.

(G)\$94.74 1981-1989; +3% 1990-2005.

(H)\$83.00 1981-1989; +3% 1990-2005.

(d) Public Facilities and Services

(i) Transportation

Alaska's transportation needs are unique compared to those of the contiguous states. Given a small population scattered over a large geographic area, in most cases impassable by road, there is a great reliance on marine and air transportation. Of the different regions in Alaska, the southcentral and interior regions (which together comprise the Railbelt) have the most comprehensive transportation networks. Two reasons for this comprehensive and extensive transportation system are: 1) diverse economies relative to other areas in the state; and 2) greater concentrations of population. These factors make such a transportation system both feasible and affordable.

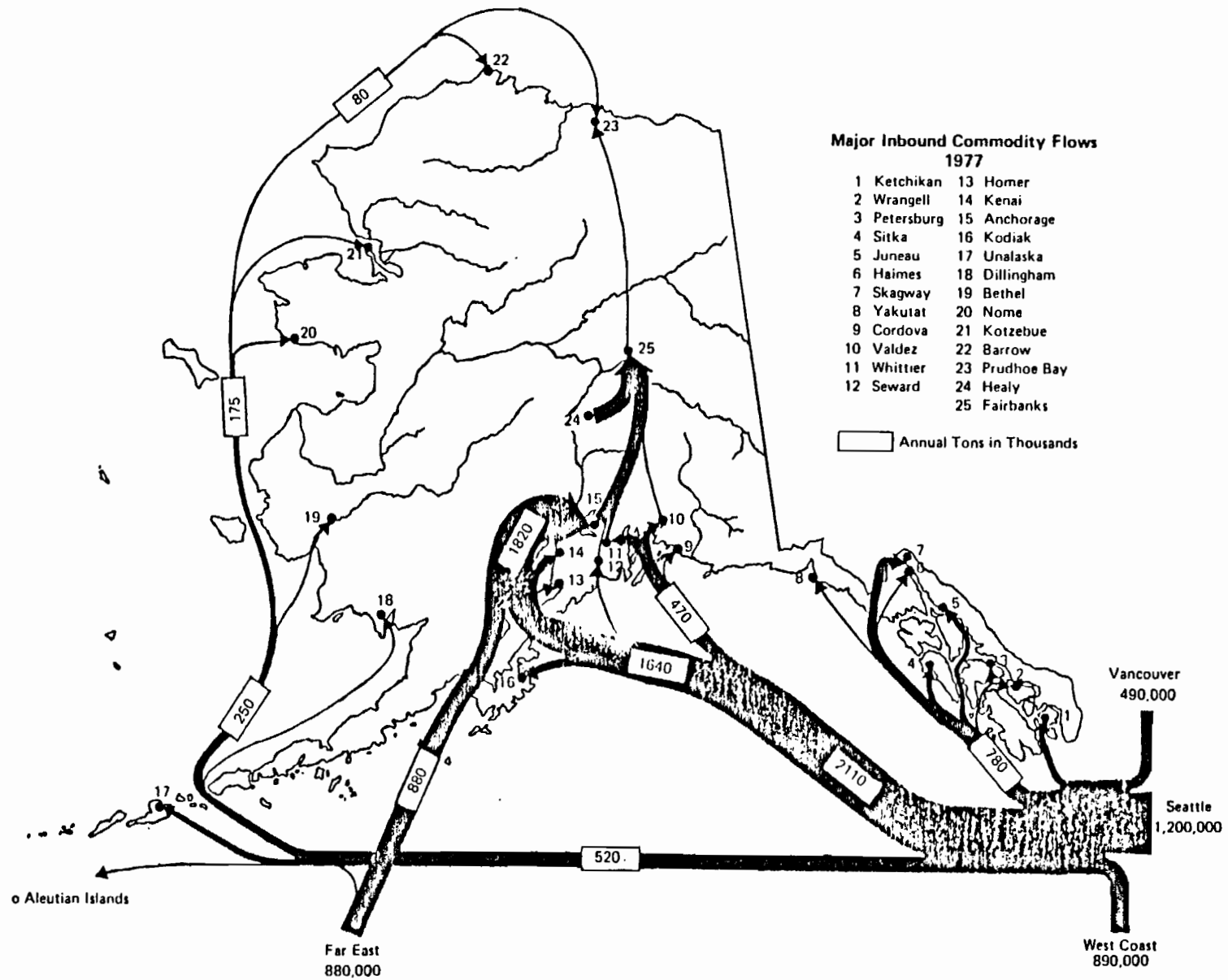
- Marine

The dominant mode of freight transport in Alaska is marine. Practically every significant population center in Alaska is connected by marine transport, and Fairbanks is an anomaly in this sense. Figures 4.2-1 and 4.2-2 show the major inbound and outbound commodity flows for the State of Alaska in 1977.

. Valdez

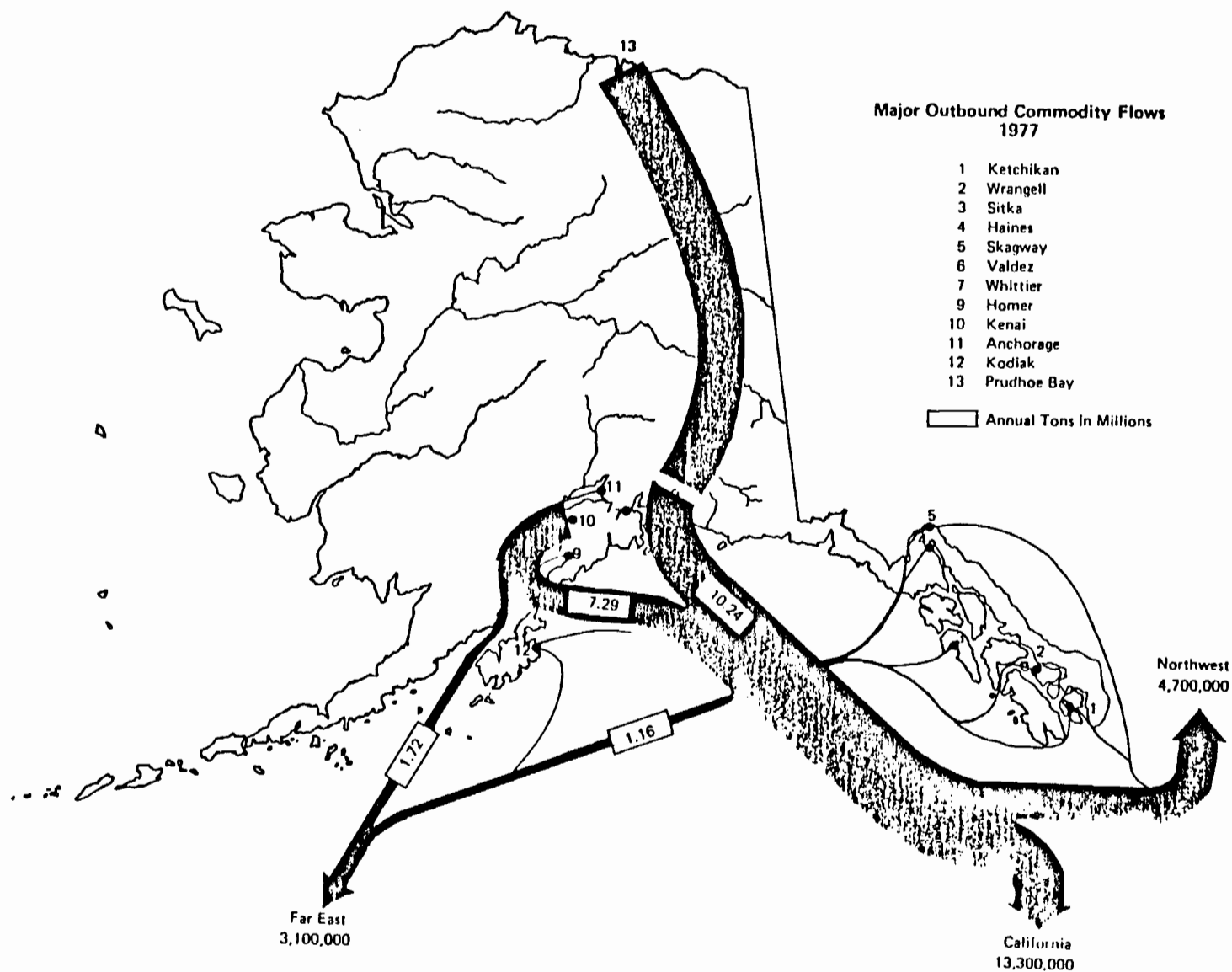
Valdez is the state's largest port in terms of annual tonnage. (See Table 4.2-16). This is due almost exclusively (99 percent) to its being the terminus of the trans-Alaska pipeline and therefore the principal port for the shipment of crude

FIGURE 4.2-1



Source: Institute of Social and Economic Research, University of Alaska. June 1980. Alaska Review of Social and Economic Conditions. Alaska's Unique Transportation System. p.6.

FIGURE 4.2-2



Source: Institute of Social and Economic Research, University of Alaska. June 1980. Alaska Review of Social and Economic Conditions. Alaska's Unique Transportation System. p. 7.

TABLE 4.2-16

Total Traffic for Selected Alaska Ports:

Historical Trends
(in thousands of short tons)

Ports	1977	1976	1974	1972	1970	1968	1966
Ketchikan	2,168	1,559	2,162	2,186	1,868	1,881	1,542
Metlakatla	224	174	318	291	117	70	15
Wrangell	656	827	1,023	1,169	1,181	755	502
Petersburg	67	56	205	157	294	134	114
Sitka	553	998	970	1,243	916	1,009	1,072
Juneau	152	167	154	201	119	126	133
Skagway	1,026	833	1,514	1,388	1,273	575	297
Valdez	10,667	507	357	254	478	182	188
Cordova	36	66	35	42	34	44	57
Seward	115	237	72	62	29	117	49
Homer	126	31	12	170	190	17	14
Whittier	414	457	662	646	349	312	N/A
Anchorage	2,220	2,932	2,340	2,058	1,937	1,311	1,009
Kodiak	501	388	217	193	124	109	213
Unalaska	325	350	157	190	252	121	171
Bethel	96	110	41	N/A	N/A	N/A	N/A
Nome	64	30	32	43	21	41	47
Bristol Bay	71	59	12	34	169	26	61

Source: U.S. Army, Corps of Engineers, Waterborne Commerce of the United States, Part 4.

From: Institute of Social and Economic Research, University of Alaska.
June 1980. Alaska Review of Social and Economic Conditions: Alaska's
Unique Transportation System; p. 4.

petroleum. Currently estimated annual throughput is 60 million tons. The City of Valdez is nearing completion of a 750 foot container terminal, which will introduce container cargo shipping to Valdez. Presently there is no container cargo. The Port of Valdez has also just recently inaugurated monthly barge service between Valdez and Seattle with Pacific Western Lines and has plans to install grain export facilities. Table 4.2-17 lists the current carrier marine services now operating out of Anchorage and Valdez. Transshipment from the Valdez port is by truck.

The recent increase in icebergs in the Prince William Sound may pose some difficulties for ships approaching to and departing from Valdez.

. Anchorage

The Port of Anchorage handles approximately 90 percent of the container cargo for the Southcentral region and is second to Valdez in annual tonnage. It is Alaska's largest general cargo port. Current freight throughput is estimated at approximately 2 million tons. Of this, about 90 percent of the general cargo is inbound, with close to half being petroleum products. The remaining freight consists of bulk construction material delivered by barge from Seattle. Table 4.2-18 shows the trend in freight movement by commodity from 1965 to 1979. It is estimated that the Port of Anchorage is operating at approximately 50 percent of container handling capacity (PRC Harris, Inc. and Alaska Consultants, Inc. September 8, 1980).

TABLE 4.2-17

PRINCIPAL SCHEDULED COMMON CARRIER MARINE SERVICES
TO SELECTED ALASKA PORTS

<u>Between</u>		<u>Carrier</u>	
Anchorage	Valdez	A.M.H.S	Five times weekly (mid-May--mid-September)
Anchorage	Seattle	S.L.S	Twice weekly container ship
		T.O.T.E.	Twice weekly Roll-on-Roll-off ship
		P.W.L.	Barge every two weeks (mid-March--mid-November)
		C.B.L.	Barge monthly (April-November)

Abbreviations

A.M.H.S.	Alaska Marine Highway System
S.L.S.	Sea-Land Service
T.O.T.E.	Totem Ocean Trailer Express
P.W.L.	Pacific Western Lines
C.B.L.	Coastal Barge Line

Source: Institute of Social and Economic Research, University of Alaska. June 1980. Alaska Review of Social and Economic Conditions: Alaska's Unique Transportation System; p. 3.

TABLE 4.2-18
PORT OF ANCHORAGE FREIGHT MOVEMENTS IN TONS^a
BY COMMODITY: 1965, 1970, 1972 - 1979

	1965	1970	1972	1973	1974
Freight N.O.S. ^b	17,046	1,258	1,805	1,845	8,005
Cement, Drilling Mud, etc.	569	24,510	7,459	14,994	18,225
Iron & Steel Articles	10,816	3,459	6,828	3,336	14,787
Lumber	9,532	197	393	539	13,921
Oil Field & Equipment					
Supplies	228	2,279	--	--	--
Petroleum Bulk	675,052	1,320,960	1,501,184	1,507,994	1,595,667
Petroleum N.O.S.	865	2,169	639	1,008	2,220
Vans, Flats, Containers.	192,777	478,234	462,546	476,883	590,474
Vehicles.	15,323	4,543	4,271	5,739	11,846
Plastic Material, Insulation	--	--	--	--	--
Total.	922,208	1,837,609	1,985,125	2,012,338	2,255,175
	1975	1976	1977	1978	1979
Freight N.O.S.	7,564	6,147	3,073	5,784	2,324
Cement, Drilling Mud, etc.	44,384	40,360	37,943	21,879	21,423
Iron & Steel Articles	8,823	7,421	13,680	14,184	5,751
Lumber	8,315	266	2,748	272	34
Oil Field & Equipment					
Supplies	--	--	--	0	0
Petroleum Bulk	1,290,065	1,695,000	1,130,986	977,600	678,008
Petroleum N.O.S.	2,084	1,395	851	604	1,427
Vans, Flats, Containers.	838,676	978,610	978,584	1,013,427	934,125
Vehicles.	21,518	36,677	40,360	39,746	28,626
Plastic Material, Insulation	391	1,273	0	0	0
Total.	2,851,820	2,767,149	2,208,225	2,073,495	1,671,720

a/ Includes both inbound and outbound traffic from local, domestic and foreign ports.

b/ N.O.S. = Not Otherwise Specified.

Source: Port of Anchorage.

From Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. Alaska Statistical Review 1980. p. J-5.

Approximately 60 percent of the cargo moving into the Port of Anchorage is destined for the City of Anchorage with the remainder being dispersed throughout other areas in the region. Transshipment is by both truck and rail out of Anchorage.

Two physical phenomena hamper activity in the port. The first is the fact that the harbor is not ice free; however, the tidal action does keep the ice broken. A second problem arises from the need to dredge the channel on an annual basis in order to maintain a sufficient depth for ocean-going vessels.

- Marine Highway

The Alaska Marine Highway primarily serves southeastern Alaska connecting the numerous islands and communities with each other and Seattle. Another section of the Marine Highway connects Valdez, Cordova, and Whittier. Part of this system connects cities on the Kenai Peninsula with various communities out on the Alaska peninsula and Aleutian Islands. Total traffic on this system during 1978 was 47,000 passengers and 13,000 vehicles. Valdez was among the busiest ports. There is no service to Anchorage.

- Road and Highway

The road and highway system in Alaska consists of roughly 11,000 miles of paved and unpaved surfaces. The principal roads connect Anchorage and Valdez with

Fairbanks and connect these points to the Alaska Highway. The Alaska Highway is the only overland route connecting the Lower-48 with Alaska. The Al-Can Highway consists of approximately 1,520 miles of gravel road and runs from Dawson Creek, British Columbia to Fairbanks.

The Richardson Highway, the State's oldest road, is the main arterial route connecting Valdez with Anchorage and Fairbanks. The 370 miles of this highway from Fairbanks to Valdez was used quite heavily during construction of the trans-Alaska pipeline, which has left several sections of the road in particularly poor condition. The section from Gulkana to Delta Junction is perhaps the worst. The highway is four lanes from Fairbanks to Eielson and two lanes the remainder of its length (Institute of Social and Economic Research. June 1980).

- Rail

The 470-mile corridor from Seward to Fairbanks is connected, in addition to the Parks Highway, by the only federally-owned and operated railroad in the United States. Physically, the system is well-maintained. Major renovations and upgrading of the track and structures during the 1975-1977 period account for its excellent condition.

Annual traffic volume varies between 1.8 and 2.3 million tons, with coal and gravel accounting for 75 percent of this. It is estimated that the system is

working at only 20 percent of its capacity at present (conversation with Fred Hoefler, Alaska Railroad, January 9, 1981). About half the total volume is gravel, transported during the summer months from Palmer to Anchorage. Coal from Healy mines, amounting to approximately 500,000 to 600,000 tons annually, is transported to Fairbanks and Eielson Air Force Base (Institute of Social and Economic Research. June 1980; p. 21).

Freight service operates three times weekly between Anchorage and Fairbanks, with overnight delivery to Fairbanks of goods arriving in Anchorage by ship. In addition, coal trains operate twice weekly from Healy to Fairbanks; there is service once or twice weekly from Anchorage to meet barges in Whittier; once weekly to Seward, mostly for log movements; and five or six times weekly for summer gravel trains from Palmer to Anchorage. Freight rates are calculated on a per volume basis and therefore no set rate exists.

Daily Anchorage-Fairbanks and Anchorage-Whittier passenger service is provided during the summer months with service being reduced to twice and three times weekly, respectively, during the winter. The passenger train will stop at any location for embarking or disembarking passengers.

- Air

Because of the long distances between populated centers and the lack of roads in Alaska, air transportation is the major form of transportation in moving

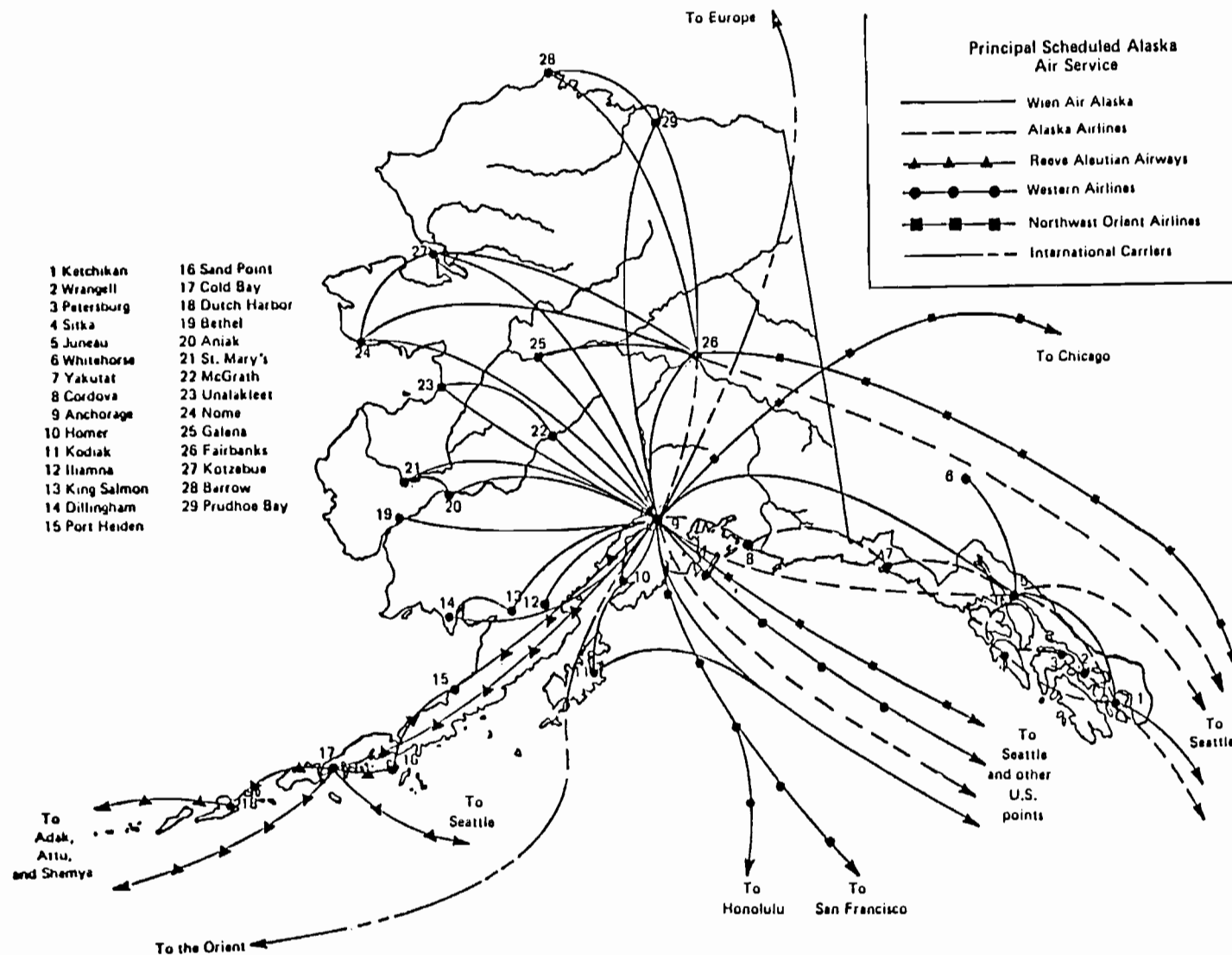
passengers throughout the state. If it were not for air transportation, many coastal and bush communities would be inaccessible. The airport facilities at Anchorage and Fairbanks are of international classification, and there are two airlines that schedule daily flights to Valdez; Valdez Airlines and Alaska Aeronautical Industries. Also available is commercial weekly service to Glennallen, Tok, and Delta Junction.

Anchorage is the air traffic hub, not only of the region and the state but also for the Northern Pacific Rim. It is also a major refueling point for air traffic between the Far East and Europe. Both Fairbanks and Anchorage serve as refueling stops; Fairbanks, however, is becoming increasingly more important in this role because of the new jet fuel refining capabilities at Earth Resources North Pole refinery outside of Fairbanks.

Figure 4.2-3 is a schematic of international, interstate, and intra- regional scheduled air services.

Private air transportation, is a primary form of transportation to communities that do not offer commercial scheduled service. For many areas in Alaska this may be the only link to populated centers. This is not necessarily the case in the Matanuska-Susitna Borough and the Valdez-Cordova census division because of the comprehensive highway system; nonetheless, many communities have active airstrips.

FIGURE 4.2-3



Source: Institute of Social and Economic Research, University of Alaska. June 1980. Alaska Review of Social and Economic Conditions. Alaska's Unique Transportation System. p. 23.

(ii) Health Care

The Municipality of Anchorage, being the predominant metropolitan area and transportation center in the state, has developed a comprehensive acute and long-term health care system in keeping with the needs of the state, and therefore provides the main medical care for the residents of southcentral Alaska. The communities in the outlying areas are not without medical facilities; but it is not uncommon for patients to be airlifted to Anchorage when necessary.

Table 4.1-34 displays the necessary information for evaluating the capabilities of the various medical facilities in Anchorage, the Matanuska-Susitna Borough, Valdez, and the communities along the Richardson Highway. The best indicators of performance and capacity are the occupancy rates and average day per patient figures. The low average day per patient figure for Valdez reflects the young, healthy composition of the residents. Even during the peak of the pipeline construction, the occupancy of Valdez Community Hospital never exceeded 50 percent (conversation with supervising nurse, Valdez Community Hospital, Valdez, AK).

- Anchorage

Anchorage provides a wide spectrum of health services to its residents in addition to the acute care mentioned above. The following section briefly describes the long term care, ambulatory service, and other health services offered (Ender, Richard L., et al. January 1980. Volume I: Gulf of Alaska and Lower Cook Inlet Development Scenarios Anchorage

Socioeconomic and Physical Baseline. Anchorage, AK.
p. 99).

. Long-Term Care

Convalescent and long term care is provided by the following:

Skilled nursing facilities. There are 101 skilled nursing beds for 24-hour professional restorative care.

Intermediate care facilities. The role of the intermediate care facilities is to provide limited nursing and personal care to long-term patients with chronic medical problems. There are currently 217 intermediate care beds available in Anchorage.

Residential and custodial care facilities. Constraints involved in securing licensing and adequate funding have precluded the development of needed residential and custodial facilities. There are currently 100 beds in the Anchorage Pioneer Home for 65-year old Alaskan residents (of at least 15 years). There are approximately 14 residential facilities for youth, drug, alcohol, and other rehabilitative clients. Because of federal government reimbursement requirements, custodial care is more costly to the state than intermediate care and therefore, this element of a comprehensive health care system has not developed in relation to the needs indicated within the community.

. Ambulatory Care

As an alternative to institutionalized care, ambulatory care through outpatient services, private clinics, practices, etc. is designated to facilitate at-home convalescence.

. Emergency Care

Trained medics with the Municipality of Anchorage Emergency Medical Services provide on-site aid in emergency situations. The Emergency Medical Division has five medic units with 36 personnel on staff, including administration.

. Specialty Services

In addition to standard medical facilities and services available, the local delivery system also provides: full burn and debriding room; hypothermia expertise; comprehensive or orthopedic surgical and therapy unit; neurosurgery and neurology expertise; two comprehensive critical care units; two comprehensive neo-natal intensive care units; open-heart I.C. surgical expertise; renal dialysis; cardiovascular catheterization; and nuclear medicine.

. Mental Health

Mental health care is provided by both the private and public sector. Types of services that presently exist in Anchorage are:

- psychiatric inpatient (200 beds at Alaska Psychiatric Institute);
- outpatient therapy and counseling;
- crisis lines;
- rape and assault counseling;
- battered women and children's services;
- group homes;
- facilities for developmental and emotional disabilities; and
- pastoral counseling.

In addition, each acute care facility provides psychiatric services, as well as many of the services listed above.

. Social Services

The Alaska Department of Health and Social Services, Division of Social Services, is the principal provider of social services in the Municipality of Anchorage. Additional services, to a limited degree, are also provided by the local municipal and select private organizations.

Local social services available in the Anchorage area fall into six categories:

1. children's services;
2. senior citizens' assistance;
3. employment assistance;
4. income assistance;
5. housing assistance; and
6. youth services.

(e) Economic Base

(i) Baseline

- Anchorage

As the major population center in Alaska, Anchorage is the hub of the state's economy. The metropolis provides many of the support services required by development in other parts of the state with the possible exception of Southeastern Alaska. Most major industries have their state headquarters in Anchorage. In addition, the sheer size of the city creates internal demand for a wide range of goods and services. Anchorage is virtually all service or support oriented, except for some fish processing and construction-related manufacturing.

The city's growth over the past decade has been dramatic even though the rate of growth in economic activity has slowed since the pipeline days. Unlike Fairbanks, the Anchorage economy did not suffer a precipitous drop in activity after the pipeline, but tended to level off at a higher economic plateau. Indications at present suggest that resumed growth at a moderate rate will materialize, especially as much of the excess capacity created by the pipeline surge is filled.

The slowdown in Anchorage's economy was most pronounced in the trade and construction sectors. This, in turn, affected the real estate industry. Table 4.2-19 shows the value of construction authorized for Anchorage by quarter for 1975 through 1980. Deflated

TABLE 4.2-19

TOTAL VALUE OF PERMITS ISSUED FOR RESIDENTIAL AND
NON-RESIDENTIAL IN ANCHORAGE

(expressed in current and 1967 dollars)

	1975				1976			
	1	2	3	4	1	2	3	4
CONSTRUCTION								
Total Construction (in 000 current \$)	3,632	49,214	48,010	22,302	22,323	38,842	77,692	40,797
Residential (in 000 current \$)	1,227	38,126	38,065	11,137	6,369	29,795	36,876	21,481
Non-residential (in 000 current \$)	2,405	11,088	9,945	11,165	15,954	9,047	40,816	19,316
Total Construction (in 000 1967 \$) ^a	2,542	32,809	31,216	14,169	14,058	24,021	47,115	24,298
Residential (in 000 1967 \$)	859	25,417	24,750	7,076	4,011	18,426	22,363	12,794
Non-residential (in 000 1967 \$)	1,683	7,392	6,466	7,093	10,047	5,595	24,752	11,504

	1977				1978			
	1	2	3	4	1	2	3	4
CONSTRUCTION								
Total Construction (in 000 current \$)	18,563	131,747	134,961	56,064	23,711	56,828	77,853	38,081
Residential (in 000 current \$)	10,042	49,584	81,605	23,383	16,196	47,100	54,999	23,440
Non-residential (in 000 current \$)	8,519	82,163	53,356	32,681	7,515	9,728	22,854	14,641
Total Construction (in 000 1967 \$) ^a	10,957	76,331	76,078	31,621	13,232	30,952	41,301	19,629
Residential (in 000 1967 \$)	5,928	28,728	46,001	13,188	9,038	25,654	29,177	12,082
Non-residential (in 000 1967 \$)	5,029	47,603	30,077	18,433	4,194	5,298	12,124	7,547

	1979				1980		
	1	2	3	4	1	2	3
CONSTRUCTION							
Total Construction (in 000 current \$)	11,813	49,367	28,295	11,359	5,399	34,838	60,162
Residential (in 000 current \$)	7,054	37,695	17,582	6,947	1,826	20,615	48,024
Non-residential (in 000 current \$)	4,759	11,672	10,613	4,412	3,573	14,223	12,138
Total Construction (in 000 1967 \$) ^a	5,963	24,403	13,643	5,320	2,474	15,484	26,340
Residential (in 000 1967 \$)	3,561	18,633	8,526	3,254	837	9,162	21,026
Non-residential (in 000 1967 \$)	2,402	5,770	5,117	2,067	1,637	6,322	5,314

Source: Municipality of Anchorage. First Quarterly 1980. Quarterly Economic Indicators. Anchorage, AK. pp. 4-5.

figures are presented also. The slowdown in activity is readily apparent in comparing current dollar figures for the first quarter of 1980 with the first quarter of 1975.

Anchorage is unique in Alaska in that activity almost anywhere else in the state stimulates its economy. Thus, if any of the major projects mentioned in the state economic base section occur, the effects will be noticed in Anchorage. (See Section 4.3(e)). Even without major resource development projects Anchorage's economy will be boosted by the many public projects planned for the area. Most important of these is "Projects 80's," a large scale civic improvement and construction program. The major elements of this program are described below.

Civic/Convention Center - A \$20 million project of 50,000 square feet, capable of seating 4,500 people, and sized to handle 85 percent of the conventions held in the U.S.

Performing Visual Arts Center - To be built in phases. Phase One will be a \$15.5 million project consisting of a 2,700-seat concert hall and 300-seat drama center. Ultimately it will include an 1,800-seat opera house and 800-seat playhouse.

F Street Mall - To be built in phases. Phase One will be a \$5.4 million project. The mall will serve as a pedestrian-only connection between the previous two projects.

Sports Arena - A \$25 million enclosed sports facility which will seat up to 10,000 people.

- Kenai Peninsula

The economic base of the Kenai Peninsula is based primarily on the oil and gas industry, fishing and fish processing, and the tourism and recreation-related industries. These industries have greatly expanded over the past decade and generally broadened the economic base. Employment distribution in the region is concentrated in the Kenai-Nikiski industrial area.

The Kenai-Cook Inlet area is uncommonly dependent upon manufacturing and extractive industries. Alaska's largest petrochemical plant, Union Oil Company's Collier Carbon and Chemical Corporation's ammonia-urea plant, is located in the Kenai-Nikiski area. Tesoro-Alaska's refinery, Phillips Marathon LNG plant, and SOCAL's refinery also operate in the Western Kenai area. Nikiski was also chosen as the site for Pacific-Alaska's LNG plant, which has been delayed due to legal conflicts concerning the California receiving facility.

Eastern Kenai Peninsula is dominated by Seward. Historically, principal economic activity has been related to the port and the Alaska railroad. This activity has been reduced as Anchorage and Valdez have become the major ports of entry for cargo; however it is hoped that the development of Seward's marine-oriented Fourth of July Industrial Park complex will contribute to the revitalization of the port. Presently, 50,000 to 150,000 tons of cargo per year are handled through Seward. The port now serves as a shipping point for log and wood chip exports to

Japan. Approximately 40,000 tons are shipped per year. Future economic activity in the area will likely develop around the fishing, forest products, and oil and gas industries.

- Fairbanks

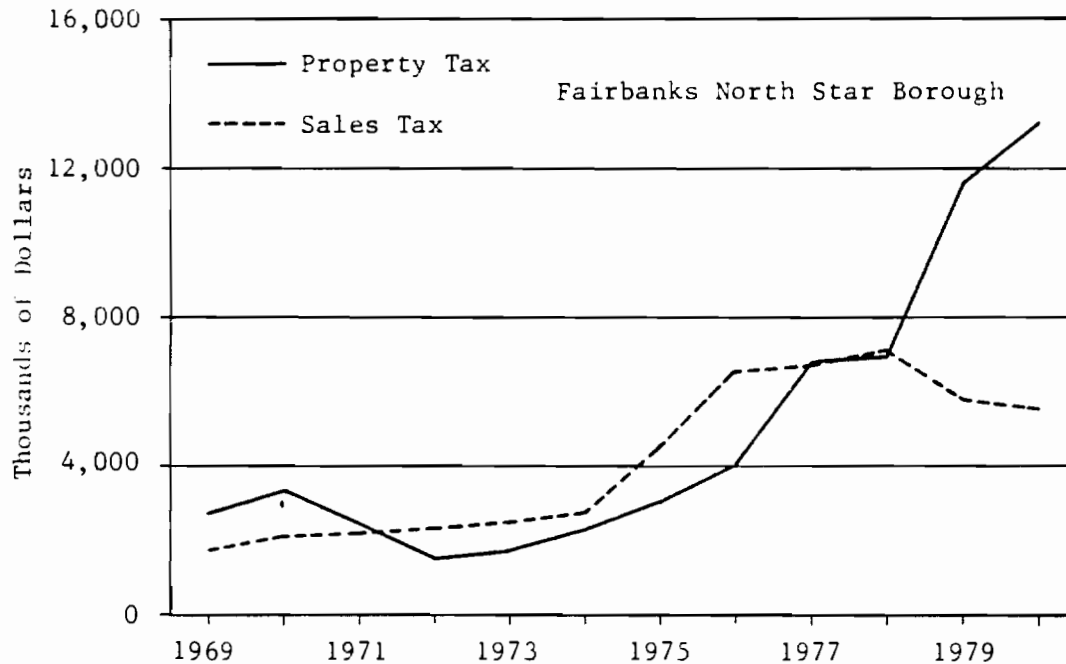
As the major city closest to the trans-Alaska pipeline, Fairbanks enjoyed the greatest stimulus and the sharpest declines resulting from its construction. By almost all indicators, Fairbanks' economy suffered a substantial "bust" from which it is still recovering.

Figure 4.2-4 and Table 4.2-20 present sales and property tax revenue since 1969 for the Fairbanks North Star Borough. The rise and fall of sales as reflected by revenues during the pipeline is apparent. If the figures were discounted to account for impacts of inflation, the decrease would be even more dramatic. The upward trend in property tax revenues reflects the impact of an increase in value of pipeline-related property and an oil refinery, and general inflation.

Fairbanks is similar to other cities in Alaska in that it is characterized by few manufacturing and many service or support firms. For Fairbanks, the regional center for interior Alaska, the recent upswing in mining activity is a favorable event. Figure 4.2-5 and Table 4.2-21 present data concerning new mining claims received. During the first eight months of 1980, 32 percent of all new claims were filed in Fairbanks.

FIGURE 4.2-4 - TABLE 4.2-20

TAX REVENUE BY SOURCE
City of Fairbanks and Fairbanks North Star Borough
Fiscal Years 1969-1980*



Fiscal Year*	-----City of Fairbanks-----		Fairbanks North Star Borough**	
	Sales Tax	Property Tax	Sales Tax	Property Tax
1969	\$2,166,000	\$1,137,000	\$1,679,000	\$ 2,747,000
1970	2,526,000	1,254,000	2,087,000	3,331,000
1971	2,757,000	1,650,000	2,188,000	2,448,000
1972	2,949,000	2,123,000	2,360,000	1,504,000
1973	3,111,000	2,354,000	2,497,000	1,786,000
1974	3,878,000	2,360,000	2,780,000	2,290,000
1975	6,324,000	3,148,000	4,518,000	3,035,000
1976	7,489,000	3,697,000	6,596,000	4,034,000
1977	7,385,000	3,761,000	6,744,000	6,820,000
1978	6,257,000	4,076,000	7,100,000	6,977,000
1979	5,645,000	4,004,000	5,819,644	11,621,219***
1980	5,707,136****	4,278,210****	5,586,641	13,206,637***

* The city's fiscal year runs from January 1 through December 31 of the year listed. The borough's fiscal year runs from July 1 of the previous year through June 30 of the year listed.

** Fairbanks North Star Borough figures in years after 1975 reflect the modified accrual basis for revenue.

*** Does not include the partial residential property tax exemption.

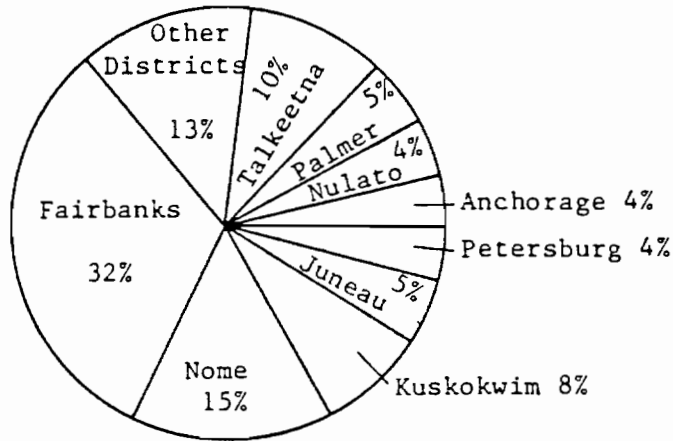
**** The 1980 tax figures are preliminary subject to audit.

Source: Fairbanks North Star Borough, Finance Department; compiled by the Community Information Center.

From: Fairbanks North Star Borough, Community Research Center. Fall 1980. Community Research Quarterly, A Socioeconomic Review. Fairbanks, AK. p. 38.

FIGURE 4.2-5 - TABLE 4.2-21

NEW MINING CLAIMS RECEIVED
Alaska
1979-1980, First Eight Months Comparisons



	-----1980-----								1979	
	January	February	March	April	May	June	July	August	8 Month Total	% Change 1979-80
Fairbanks	65	158	165	293	600	361	1,240	998	3,880	250%
Barrow	0	0	0	0	362	0	0	0	362	141%
Manley Hot Springs	19	0	0	0	7	73	4	42	145	353%
Nulato	5	19	2	0	452	31	14	23	546	3,112%
Mt. McKinley	6	1	28	128	110	0	2	0	275	485%
Nenana	0	5	15	17	4	8	15	6	70	4%
Rampart	0	0	12	0	0	0	6	0	18	500%
Ft. Gibbon	12	0	0	0	0	9	2	0	23	-66%
Kotzebue	0	0	0	0	0	4	0	0	4	-100%
Talkeetna	26	266	122	58	227	28	152	334	1,213	75%
Palmer	12	61	93	98	108	14	72	95	553	145%
Nome	141	125	0	137	1,281	42	100	65	1,891	92%
Seward	5	0	0	12	0	0	0	0	17	-88%
Juneau	0	50	102	105	206	125	37	6	631	256%
Haines	0	4	0	3	4	18	5	7	41	925%
Skagway	0	0	0	0	0	0	1	0	1	*
Petersburg	0	47	335	0	0	45	30	30	487	147%
Wrangell	0	0	0	0	0	0	0	0	0	*
Ketchikan	2	0	0	0	0	3	58	17	80	-62%
Sitka	0	0	0	0	0	0	0	0	0	*
Anchorage	311	0	46	98	0	13	0	16	484	1,141%
Iliamna	0	16	0	0	0	0	0	0	16	*
Aleutian Islands	1	0	0	12	0	0	0	0	13	*
Bristol Bay	0	0	0	0	0	0	0	0	0	*
Seldovia	0	0	0	0	0	0	0	0	0	*
Cordova	0	0	1	12	0	1	0	14	28	600%
Chitina**	69	4	104	32	164	20	8	2	403	1,819%
Valdez	0	0	0	0	4	0	0	0	4	-20%
Bethel	0	0	0	0	0	0	0	59	59	-5%
Kuskokwim	0	0	162	45	2	720	0	5	934	*
Kodiak	0	0	0	27	0	30	0	2	59	883%
Homer	0	0	0	0	0	0	0	0	0	*
Kenai	0	0	0	0	0	0	0	0	0	*
TOTAL	674	756	1,187	1,077	3,531	1,545	1,746	1,721	12,237	126%

* Number of units is too small to make a valid percentage comparison.

** Includes both the former districts of Chitina and Glenallen.

Source: Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys; compiled by the Community Information Center.

From: Fairbanks North Star Borough, Community Research Center. Fall 1980.
Community Research Quarterly, A Socioeconomic Review. Fairbanks, AK.
p. 48.

Table 4.2-22 presents a list of businesses in the Fairbanks North Star Borough classified by S.I.C. categories. The table illustrates the service/support orientation of the area. Of particular note is the number of construction firms. An important element of the Borough economy which does not show up in the Table is the military presence. Eielson Air Force Base and Fort Wainwright together account for approximately 7,000 military and related civilian employees.

A major basic industry has emerged in the Borough. This is the 30,000 barrels per day North Pole Refinery of Earth Resources Company. The company recently expanded its capacity to produce more jet fuel and diesel/heating oil. The refinery supplies all the jet fuel sold at the Fairbanks airport, including the 66 flights per week attributable to foreign carrier refueling stops. Besides assuring a supply of fuels for the interior, the refinery generates substantial revenues to the Borough. Its assessed value was \$33,058,125 in 1980.

Total Borough assessment is presented for 1977-1980 in Table 4.2-23, along with related pipeline assessments. From the Table it is apparent that pipeline assessments constitute about a third of the Borough's total assessments.

- Southeast Fairbanks

The Southeast Fairbanks Borough is unincorporated and consists primarily of communities spread out along the Alaska Highway. The economic base of the area is

TABLE 4.2-22
CLASSIFICATION AND NUMBER OF BUSINESSES
Fairbanks North Star Borough
March and September, 1980

Type of Business	Number of Businesses March 1980	September 1980	% Change March - Sept. 1980	Type of Business	Number of Businesses March 1980	September 1980	% Change March - Sept. 1980
<u>Agriculture, Forestry and Fishing</u>	65	60	-8%	<u>Retail Trade</u>	1,050	1,177	12%
Agricultural Production - Crops	16	17	6%	Building Materials and Garden Supplies	41	42	2%
Agricultural Production - Livestock	16	15	-6%	General Merchandise Stores	22	28	27%
Agricultural Services	32	27	-16%	Food Stores	43	40	-7%
Forestry	1	1	0%	Automotive Dealers and Service Stations	76	75	-1%
<u>Mining</u>	7	10	43%	Apparel and Accessories Stores	42	44	5%
Metal Mining	4	5	25%	Furniture and Home Furnishings Stores	56	48	-14%
Bituminous Coal and Lignite Mining	0	1	*	Eating and Drinking Places	126	135	7%
Oil and Gas Extraction	1	1	0%	Drug and Proprietary Stores	6	5	-17%
Nonmetallic Minerals, Except Fuels	2	3	50%	Liquor Stores	13	13	0%
<u>Construction</u>	347	350	2%	Used Merchandise Stores	27	28	4%
General Building Contractors	94	96	2%	Miscellaneous Shopping Goods Stores	177	185	5%
Heavy Construction Contractors	50	49	-2%	Nonstore Retailers	261	364	39%
Plumbing, Heating, Air Conditioning	60	61	2%	Fuel Oil Dealers	30	28	-7%
Painting, Paper Hanging, Decorating	12	11	-8%	Miscellaneous Retail Stores	130	142	9%
Electrical Work	33	31	-6%	<u>Finance, Insurance and Real Estate</u>	52	55	6%
Masonry, Stonework and Plastering	17	16	-6%	Credit Agencies Other Than Banks	1	2	-33%
Carpentry and Flooring	19	18	-5%	Securities/Commodities Brokers and Services	2	2	0%
Roofing and Sheet Metal Work	4	6	50%	Insurance Carriers	3	4	33%
Concrete Work	3	4	33%	Insurance Agents, Brokers and Services	5	5	0%
Water Well Drilling	9	11	22%	Real Estate	18	42	133%
Miscellaneous Special Trade Contractors	42	47	12%	Holding and Other Investment Offices	1	0	*
<u>Manufacturing</u>	80	93	16%	<u>Services</u>	861	905	5%
Apparel and Other Textile Products	4	6	50%	Hotels and Other Lodging Places	25	24	-4%
Lumber and Wood Products	11	13	18%	Personal Services	102	110	8%
Furniture and Fixtures	1	3	200%	Advertising	7	6	-14%
Printing and Publishing	14	16	14%	Credit Reporting and Collection	5	5	0%
Petroleum and Coal Products	2	2	0%	Mailing, Reproduction, Steno	44	43	-2%
Rubber and Miscellaneous Plastics Products	2	2	0%	Services to Buildings	46	46	0%
Leather and Leather Products	0	1	*	Personnel Supply Services	2	2	0%
Stone, Clay and Glass Products	16	16	0%	Computer and Data Processing Services	16	15	-6%
Primary Metal Industries	1	1	0%	Miscellaneous Business Services	131	143	9%
Fabricated Metal Products	5	8	60%	Auto Repair, Services and Garages	141	146	4%
Machinery, Except Electrical	7	6	-14%	Miscellaneous Repair Services	111	117	5%
Electrical and Electronic Equipment	3	3	0%	Motion Pictures	2	2	0%
Instruments and Related Products	0	1	*	Amusement and Recreation Services	38	44	16%
Miscellaneous Manufacturing Industries	14	15	7%	Health Services	4	3	-25%
<u>Transportation and Public Utilities</u>	106	107	1%	Legal Services	18	44	144%
Local and Interurban Passenger Transit	7	8	14%	Educational Services	18	26	44%
Trucking and Warehousing	28	25	-11%	Social Services	2	2	0%
Water Transportation	1	1	0%	Museums, Botanical, Zoological Gardens	1	1	0%
Air Transportation	25	30	20%	Membership Organizations	6	8	33%
Pipelines, Except Natural Gas	1	1	0%	Miscellaneous Services	122	118	-3%
Transportation Services	4	2	-50%	<u>Public Administration</u>	3	5	67%
Communication	11	13	18%	<u>TOTAL</u>	<u>2,584</u>	<u>2,785</u>	<u>8%</u>
Electric, Gas and Sanitary Services	29	27	-7%				
<u>Wholesale Trade</u>	17	23	35%				
Wholesale Trade-Durable Goods	10	13	30%				
Wholesale Trade-Non-durable Goods	7	11	57%				

* Number of units is too small to make a valid percentage comparison.

Note: The Sales Tax Office uses the Standard Industrial Classification Code List to classify businesses that have registered with the Fairbanks North Star Borough.

Source: Fairbanks North Star Borough, Sales Tax Office; compiled by the Community Information Center.

TABLE 4.2-23

BOROUGH AND PIPELINE RELATED ASSESSMENTS
Fairbanks North Star Borough
1977-1980

<u>Year</u>	<u>Borough Assessment</u>	<u>% Change From Previous Year</u>	<u>Pipeline Related Assessment *</u>	<u>% Change From Previous Year</u>	<u>Total Assessment</u>	<u>% Change From Previous Year</u>
1977	\$ 856,118,575	NA	\$505,326,780	NA	\$1,361,445,355	29%
1978	1,039,003,025	21%	595,071,640	18%	1,634,074,665	20%
1979	1,158,310,825	11%	795,252,410	34%	1,950,563,235	19%
1980	1,271,671,200	10%	638,848,930	-20%	1,910,520,130	-2%

NA Not available.

* Assessed by the State.

Source: Fairbanks North Star Borough, Assessing Department; compiled by the
Community Information Center.

From: Fairbanks North Star Borough, Community Research Center. Fall 1980.
Community Research Quarterly, A Socioeconomic Review. Fairbanks, AK.
p. 40.

dependent upon highway-related services and businesses, Fort Greely, and agriculture. Government bodies including the military accounted for 82 percent of total employment in 1978. Military-related entities employed about 63 percent of the total. Roughly half of the non-government-related employment was in the services category. Retail trade accounted for over a quarter of non-government employment.

Because government plays such a dominant role in the economy, seasonal variations in total employment are minor. Highway-related businesses, however, have a definite seasonal cycle.

Agricultural activities in the Tanana River Valley, especially in the Delta area near the intersection of the Richardson and Alaska Highways, have been expanding in recent years. In 1978, 58,000 acres of undeveloped land was sold by lottery. Loans were made available through the state for agricultural development. Tracts ranged in size from 2,000 to 3,600 acres. An additional 16,000 acres has been offered for agricultural development since that time.

The Tanana River Valley activity, known as the Delta Agricultural Project, has emphasized barley and rapeseed production for both domestic and export markets. A test marketing program in 1979 indicated that Delta barley was equal to or better than export quality. Rapeseed is also getting more attention as an export crop, and fits in well with barley cultivation on a rotation basis.

Several native villages are in the Southeast Fairbanks Borough. Employment trends in these com-

munities have been similar to trends for the Borough as a whole. Many natives, however, also pursue traditional hunting and gathering activities. Trapping is also a winter occupation for some. During the summer, some natives work for the Alaska Bureau of Land Management.

- Valdez-Chitina-Whitter

This region can be divided into two sections; Valdez and the interior communities along the Richardson Highway. Each section is addressed separately below.

. Valdez

Historically, Valdez served as an important point of entry into interior Alaska. The construction of the pipeline and terminal in Valdez ensured the City's present-day role as a major transshipment point to the Interior. Oil shipments account for the overwhelming majority of gross tonnage moving through the port. Under construction, however, is a \$40 million containerized cargo facility which will expand the port's capacity to handle cargo other than oil.

State and local government is the largest category of employment in Valdez, accounting for about 25 percent of the entire workforce. The transportation-communications-utilities sector also employs about a quarter of the employed labor force. Retail trade and construction follow as the next largest employers.

Growth in the local government sector can be attributed to the dramatic increase in assessed value of land incorporated by Valdez. The pipeline terminal is the major piece of property within the city limits. The City of Valdez currently has the second largest per capita assessed value in Alaska, trailing only the North Slope Borough.

Valdez is likely to become one of Alaska's few manufacturing-oriented cities. The City is actively promoting diversification of the local economy. Efforts to promote the fishing industry are underway, including the development of harbor facilities and a processing plant.

. Interior Communities

The economy of the interior communities is based largely upon tourism-related and transportation activities. The latter category includes maintenance and operation activities relating to the trans-Alaska pipeline as well as the highways.

The region has experienced a substantial increase in mining activity recently as Table 4.2-21 illustrates. Important minerals in the area include copper, gold, silver, lead, iron, molybdenum, and chromite. Sand and gravel deposits are abundant in the area as well. Most mining operations at this time are small, placer-type mines. Although many minerals occur in commercial quantities, development problems remain.

Government constitutes the most important economic sector for the Valdez-Chitina-Whittier area, employing about 40 percent of the work force. The next largest sector in terms of employment is transportation-communication-utilities followed by services and retail trade. In large part, the latter two are related to seasonal tourist-related activities. The region offers extensive natural resources conducive to climbing, hunting, fishing, and camping.

Employment opportunities in the interior communities are generally limited. Seasonal jobs occur in construction and fire-fighting. Some natives are employed by AHTNA, Inc. and other Native corporations. Some natives either rely on or supplement their livelihood through traditional hunting, trapping, and gathering activities.

(f) Employment

(i) Baseline

Table 4.2-24 presents non-agricultural employment data for the Railbelt. Included in Table 4.2-24 are figures showing each sector's employment as a percent of total state employment in the sector. These figures provide estimates of the Railbelt's (regional) share of total state employment in each sector.

In general, the same trends are apparent here as for the state figures. Notable differences are the relatively higher share of the service and support sectors and relatively lower shares for producing sectors, with the

TABLE 4.2-24

IMPACT AREA 3 ANNUAL NONAGRICULTURAL EMPLOYMENT BY SECTOR

	1970		1975		1979		PERCENT OF STATE		
	Total	%	Total	%	Total	%	1970 %	1975 %	1979 %
<u>TOTAL¹ - Nonagricultural Industries</u>	62,690	100.0	113,818	100.0	113,204	100.0	67.8	70.4	68.0
Mining	1,610	2.6	2,243	2.0	2,822	2.5	53.7	59.2	48.9
Construction	5,264	8.4	16,359	14.4	8,257	7.3	76.3	63.6	81.8
Manufacturing	1,850	3.0	2,596	2.3	3,705	3.3	23.7	26.9	28.9
Transportation - Communication & Utilities	6,021	9.6	12,094	10.6	12,062	10.7	66.2	73.4	72.2
Wholesale Trade	12,111	19.3	5,366	4.7	5,083	4.5	79.2	90.8	92.2
Retail Trade			15,965	14.0	18,309	16.2		78.6	76.7
Finance-Insurance and Real Estate	2,520	4.0	4,696	4.1	6,139	5.4	81.3	77.9	76.4
Services	8,868	14.1	20,995	18.4	19,674	17.4	77.8	83.5	69.4
Federal Government	12,372	19.7	13,022	11.4	12,728	11.2	72.4	71.2	71.0
State and Local Government	11,585	18.5	17,799	15.6	21,130	18.7	62.6	60.9	57.7
Miscellaneous	52	.1	217	.2	712	.6	26	19.0	98.9

¹ Figures may not total correctly because of averaging and disclosure limitations on data.

Source: Alaska Department of Labor. Statistical Quarterly. Juneau, AK. (various issues)

exception of construction. These differences are to be expected considering that seafood processing and wood products firms (main components of manufacturing) are dispersed along the coasts and in Southeast Alaska, and many mining operations occur outside of Impact Area 3. This structure is highlighted in the regional share figures.

Table 4.2-25 presents employment data for Anchorage, including regional share figures relative to Impact Area 3 and the state that clearly illustrate Anchorage's dominance. Not surprisingly then, general trends for Anchorage are similar to those for the region and state.

In the Anchorage region, the relative shares of employment held by the components of the region have been relatively stable as shown in Tables 4.2-26 and 4.2-27. The Municipality of Anchorage has generally represented between 87 and 90 percent of regional employment. Kenai on average accounted for 7 percent, Mat-Su for 3 percent and Seward for 1.5 percent.

(ii) Baseline Forecast

As shown in Table 4.2-28, employment in Impact Area 3 is projected to rise from 142,162 in 1981 to 266,835 in 2005. The Anchorage Region will continue to dominate the Area's employment, but will grow, along with the Fairbanks Region, at an average annual rate of about three percent. In contrast, the Valdez-Cordova Region's employment will grow at an average annual rate of about four percent.

To be able to compare impact forecasts for the Fairbanks-North Star Borough and Southeast Fairbanks

TABLE 4.2-25

ANCHORAGE ANNUAL NONAGRICULTURAL EMPLOYMENT BY SECTOR

							PERCENT OF IMPACT AREA 3			PERCENT OF STATE		
	1970		1975		1979		1970	1975	1979	1970	1975	1979
	<u>Total</u>	<u>%</u>	<u>Total</u>	<u>%</u>	<u>Total</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
<u>TOTAL¹ - Nonagricultural Industries</u>	41,995	100.0	69,561	100.0	77,569	100.0	67.0	61.1	68.5	45.4	43.0	46.6
Mining	958	2.3	1,300	1.9	1,984	2.6	59.5	58.0	70.3	31.9	34.3	34.4
Construction	3,514	8.4	6,913	9.9	5,735	7.6	66.8	42.3	69.5	50.9	26.9	56.8
Manufacturing	1,018	2.4	1,572	2.3	1,735	2.3	55.0	60.6	46.8	13.0	16.3	13.5
Transportation - Communication & Utilities	3,907	9.3	7,343	10.6	7,998	10.6	64.9	60.7	66.3	42.9	44.6	47.9
Wholesale Trade			4,076	5.9	4,012	5.3		76.0	78.9		69.0	72.8
Retail Trade	8,617	20.5	10,852	15.6	13,130	17.4	71.2	68.0	71.7	56.3	53.5	55.0
Finance-Insurance and Real Estate	1,980	4.7	3,615	5.2	4,894	6.5	78.6	77.0	79.7	63.9	60.0	60.9
Services	6,403	15.2	13,188	19.0	13,306	17.6	72.2	62.8	67.6	56.2	52.5	49.9
Federal Government	9,509	22.6	10,176	14.6	9,758	12.9	76.9	80.0	76.7	55.6	55.6	54.5
State and Local Government	6,037	14.4	10,416	15.0	12,403	16.4	52.1	58.5	58.7	32.6	35.6	33.9
Miscellaneous	52	.1	110	.2	614	.8	100	50.7	51.9	26	9.6	61.0

¹ Figures may not total correctly because of averaging.

Source: Alaska Department of Labor. Statistical Quarterly. Juneau, AK. (various issues)

TABLE 4.2-26

EMPLOYMENT IN THE ANCHORAGE REGION, BY PLACE OF EMPLOYMENT, 1964-1980
(number of employed)

	<u>Anchorage</u>	<u>Kenai</u>	<u>Mat-Su</u>	<u>Seward</u>	<u>Total Anchorage Region</u>
1964	28,071	1,397	1,136	661	31,265
1965	30,678	1,754	1,082	623	34,137
1966	31,520	2,462	1,138	641	35,761
1967	32,936	3,677	1,071	638	38,322
1968	34,019	4,470	987	600	40,076
1969	37,786	4,153	1,001	639	43,579
1970	41,995	3,576	1,145	692	47,408
1971	45,452	3,453	1,414	773	51,092
1972	48,252	3,822	1,445	810	54,329
1973	50,627	4,049	1,607	874	57,157
1974	58,713	4,487	1,784	935	65,919
1975	69,608	5,586	2,020	1,152	78,366
1976	73,096	6,465	2,269	1,137	82,967
1977	76,988	7,332	2,524	1,155	87,999
1978	76,893	6,556	2,954	1,226	87,629
1979	77,502	6,779	3,078	1,359	88,718
1980 I-III	78,273	7,064	3,224	1,354	89,915

Sources: Alaska Department of Labor. Unemployment Insurance Records; and
Statistical Quarterly, various issues.

TABLE 4.2-27

EMPLOYMENT IN THE ANCHORAGE, KENAI-COOK INLET, MAT-SUI, AND SEWARD
CENSUS DIVISIONS AS A PERCENT OF TOTAL ANCHORAGE REGION EMPLOYMENT,
BY PLACE OF EMPLOYMENT, 1964-1980
(percent)

	<u>Anchorage</u>	<u>Kenai</u>	<u>Mat-Su</u>	<u>Seward</u>	<u>Total Anchorage Region</u>
1964	89.7	4.4	3.6	2.1	100.0
1965	89.8	5.1	3.2	1.8	100.0
1966	88.1	6.9	3.2	1.8	100.0
1967	85.9	9.5	2.8	1.7	100.0
1968	84.9	11.2	2.5	1.5	100.0
1969	86.7	9.5	2.3	1.5	100.0
1970	88.6	7.6	2.4	1.5	100.0
1971	89.0	6.8	2.8	1.5	100.0
1972	88.8	7.0	2.7	1.5	100.0
1973	88.6	7.1	2.8	1.5	100.0
1974	89.0	6.8	2.7	1.4	100.0
1975	88.8	7.1	2.6	1.5	100.0
1976	88.1	7.8	2.7	1.4	100.0
1977	87.5	8.3	2.9	1.3	100.0
1978	87.7	7.5	3.4	1.4	100.0
1979	87.4	7.6	3.5	1.5	100.0
1980 I-III	<u>87.1</u>	<u>7.9</u>	<u>3.6</u>	<u>1.5</u>	<u>100.0</u>
Average 1964-1979	88.0	7.5	2.9	1.6	100.0

Sums of individual items may not equal totals due to independent rounding.

Sources: Alaska Department of Labor. Unemployment Insurance Records; and
Statistical Quarterly, various issues.

TABLE 4.2-28

BASELINE FORECAST OF EMPLOYMENT
IN IMPACT AREA 3, 1981-2005

	<u>Anchorage Region</u>	<u>Fairbanks Region</u>	<u>Valdez- Cordova Region</u>	<u>Total Impact Area 3</u>
1981	108,754	30,539	2,869	142,162
1982	112,680	31,683	3,148	147,511
1983	117,477	32,994	4,168	154,639
1984	123,630	35,553	4,313	163,496
1985	134,702	40,443	4,492	179,636
1986	144,678	45,285	4,249	194,212
1987	151,021	45,077	4,512	200,610
1988	154,080	42,189	4,643	200,912
1989	155,868	42,061	4,667	202,596
1990	153,987	41,481	4,644	200,111
1991	155,788	41,662	4,678	202,128
1992	156,231	41,874	4,741	202,846
1993	158,615	42,443	4,814	205,872
1994	160,956	42,949	4,886	208,791
1995	163,479	43,596	4,975	212,050
1996	167,051	44,444	5,080	216,576
1997	170,989	45,377	5,196	221,561
1998	174,806	46,416	5,326	226,547
1999	179,337	47,519	5,455	232,311
2000	183,627	48,596	5,589	237,812
2001	187,960	49,663	5,721	243,344
2002	192,399	50,753	5,855	249,007
2003	196,947	51,867	5,993	254,808
2004	201,608	53,006	6,134	260,749
2005	206,386	54,170	6,279	266,835

Source: 1980-2000: Institute of Social and Economic Research's MAP model projections, October, 1981.

2001-2005: FO&A, Inc. Forecasts. The average annual rate of change was calculated for 1996-2000. This rate was applied to the year 2000 employment estimate to obtain the year 2001 estimate. This same rate was applied to the year 2001 estimate to obtain the year 2002 estimate. This procedure was repeated to obtain estimates for 2003-2005.

Census Division, with baseline forecasts, it was necessary to develop baseline forecasts for this Borough and Census Division. These forecasts are shown in Table 4.2-29. Employment projections for the Fairbanks region were divided between the Fairbanks-North Star Borough and the Southeast Fairbanks Census Division by calculating each area's average share of the region during 1975 and 1976-80 and applying this share to the Fairbanks region projections.

(g) Income

(i) Baseline

Annual personal income, on a per capita basis, rose from \$4,940 in 1970 to \$11,245 in 1976, and has remained close to that level since that time. Per capita personal income in the Railbelt in 1978 averaged \$11,522. In real terms, per capita income rose by 36 percent between 1970 and 1978.

In Anchorage, per capita personal income, in current dollars, rose from \$4,997 in 1970 to \$11,839 in 1978, an increase of 137 percent. The largest increases occurred between 1973 and 1975. In real dollars, per capita personal income rose by 39 percent during 1970 and 1978.

(h) Commercial Salmon Fisheries

There are Cook Inlet commercial fisheries for all five species of salmon harvested in Alaska, king salmon, coho salmon, red salmon, pink salmon and chum salmon.

In 1981, a total of 6,655,600 salmon were harvested commercially in Cook Inlet. Salmon were harvested by set gillnet, drift

TABLE 4.2-29

BASELINE FORECAST OF EMPLOYMENT IN THE
FAIRBANKS REGION, BY CENSUS DIVISION, 1981-2005

<u>Year</u>	<u>Fairbanks-North Star Borough^(a)</u>	<u>Southeast Fairbanks^(b)</u>	<u>Total Fairbanks Region</u>
1981	29,153	1,386	30,539
1982	30,245	1,438	31,683
1983	31,496	1,498	32,994
1984	33,938	1,615	35,553
1985	38,606	1,836	40,443
1986	43,229	2,055	45,285
1987	43,030	2,046	45,077
1988	40,273	1,915	42,189
1989	40,151	1,909	42,061
1990	39,597	1,883	41,481
1991	39,770	1,891	41,662
1992	39,972	1,901	41,874
1993	40,516	1,926	42,443
1994	40,999	1,949	42,949
1995	41,616	1,979	43,596
1996	42,426	2,017	44,444
1997	43,316	2,060	45,377
1998	44,308	2,107	46,416
1999	45,361	2,157	47,519
2000	46,389	2,206	48,596
2001	47,408	2,255	49,663
2002	48,449	2,304	50,753
2003	49,513	2,355	51,867
2004	50,600	2,406	53,006
2005	51,710	2,459	54,170

(a) Based on an average share of .9546 of total region.

(b) Based on an average share of .0454 of total region.

Note: Summing columns may exceed total for the region due to rounding.

gillnet and seine. Table 4.2-30 shows salmon catches by area and gear type.

Exvessel salmon prices in Cook Inlet in 1981 ranged from an average of \$.40 per pound for pink salmon to an average of \$1.48 per pound for king salmon. Average fish weights ranged from 3.5 pounds for pink salmon to 15 pounds for king salmon. Table 4.2-31 shows average weight by species, total catch by species in pounds, and value by species based upon average exvessel prices.

Total exvessel value of commercially harvested salmon in Cook Inlet in 1981 totalled \$26.6 million.

Based upon average annual Cook Inlet salmon harvests, the approximate contributions of Susitna River salmon stocks are as follows:

Sockeye salmon	20%
Chum salmon	90%
Coho salmon	70%
Pink salmon (odd years)	85%

TABLE 4.2-30
1981 COOK INLET COMMERCIAL SALMON HARVEST
(1000's of fish)

	<u>King</u>	<u>Red</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
UPPER COOK INLET						
Northern District						
Set Gillnet	.8	249.5	133.1	53.5	46.1	482.8
Central District						
Set Gillnet	9.3	559.8	125.9	20.2	36.6	
Drift Gillnet	1.5	634.0	235.1	54.4	758.6	
Seine		(minimal landings)			1.6	2,437.0
LOWER COOK INLET						
Southern District						
Set Gillnet	.3	54.2	7.0	68.5	8.8	
Seine	(minimal)	24.6	7.2	1,405.3	15.3	1,585.2
Kamishak						
Seine		4.5	1.8	53.4	60.1	119.9
Outer District						
Seine	.1	17.8	1.0	1,723.7	262.2	1,967.9
Eastern District						
Seine		9.3	.5*	49.9	3.2	62.9
Total	12.0	1,553.7	504.7	3,428.7	1,156.5	6,655.6

*Trolled in the Seward salmon Derby.

TABLE 4.2-31
1981 COOK INLET SALMON EX-VESSEL VALUES
(1000's of fish)

<u>Species</u>	<u>Average Weight (lbs.)</u>	<u>Average Price (\$1/lb.)</u>	<u>Total lbs. (000's)</u>	<u>Total</u>
King Salmon	15.0	\$ 1.48	180.0	\$ 266,400
Red Salmon	6.1	1.25	9,477.6	11,847,000
Coho Salmon	8.0	.90	4,037.6	3,633,800
Pink Salmon	3.5	.40	12,000.5	4,800,000
Chum Salmon	8.1	.65	9,367.7	<u>6,089,000</u>
Total			35,063.4	\$26,636,200

4.3 - State-Impact Area 4

Baseline and baseline forecast conditions of key socioeconomic variables in the State are described in the sections below. Additional discussion of the forecast methodologies used can be found in Section 11.2.

(a) Population

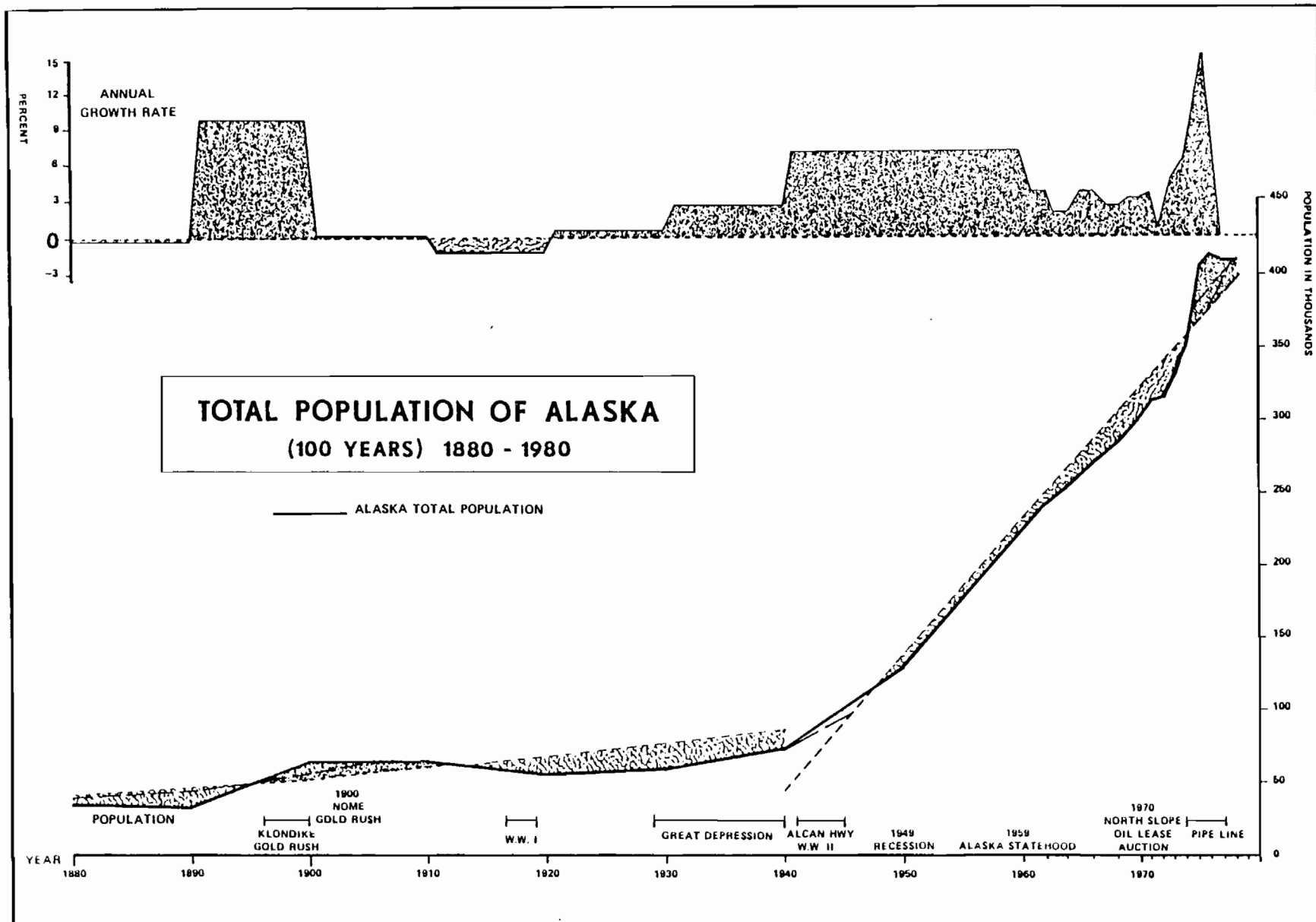
(i) Baseline

Alaska is characterized as a land of extremes. It encompasses more land than any other state in the United States, yet, with an estimated 1980 population of 400,331, it is the least populated. Most of the population is concentrated in the Southcentral-Fairbanks region (the Railbelt), and approximately half reside in Anchorage.

Alaska's history has been shaped by the existence of abundant natural resources and man's attempts to realize the benefits associated with these resources. The result has been a series of boom-bust periods, as the fluctuation in the level of population over the years indicates. Construction in the mid-1970's of the trans-Alaska pipeline (TAPS) was the latest in a line of boom developments that included the Klondike Gold Rush, World War II, and construction of the Al-Can Highway.

Population in the State has risen steadily since the 1940's (see Figure 4.3-1). The population size increased by 32 percent between 1970 and 1980 and jumped by 50,000 between 1975 and 1976, alone.

FIGURE 4.3-1



Source: Alaska Department of Labor. December 1979. Alaska Population Overview. Juneau, AK. p. 7.

(ii) Baseline Forecast

As displayed in Table 4.3-1, the population of Alaska is projected to rise to 562,400 in 1990 and 675,000 in the year 2000. Average annual population growth will equal 4.5 percent between 1981 and 1987; little growth is expected between 1987 and 1990, and in the 1990's average annual population growth is expected to be about two percent.

(b) Economic Base

(i) Introduction

This section will present general descriptions of the major components of the Alaska economy. It is organized by general industry groups which are in turn loosely grouped together into a productive sector and service/ support sector. This approach approximates a basic/ induced classification which will be utilized in the forecast and impact analysis sections of the study where an economic base model is used.

(ii) Mining

- Oil and Gas

The sector which provides the greatest impetus for the contemporary Alaskan economy is the mining sector. Within this sector the major industry is oil and gas. Table 4.3-2 shows the historical trends of output for various mineral products. Based on preliminary figures for 1979, crude petroleum and natural gas comprise 97 percent of the total value of mineral

TABLE 4.3-1
 BASELINE FORECAST OF ALASKA POPULATION
 1981-2005

<u>Year</u>	<u>Projected Alaska Population</u>
1981	412,400
1982	428,200
1983	444,500
1984	463,900
1985	498,100
1986	531,900
1987	545,300
1988	547,700
1989	558,200
1990	562,400
1991	572,700
1992	579,300
1993	588,000
1994	598,500
1995	608,900
1996	621,100
1997	634,500
1998	646,900
1999	660,900
2000	675,000
2001	689,000
2002	703,000
2003	718,000
2004	732,900
2005	748,200

Source: Institute of Social and Economic Research, University of Alaska.
 September, 1981. Moderate Scenario MAP Model Projection.

TABLE 4.3-2

VALUE OF ALASKA'S MINERAL PRODUCTS: 1959 - 1979
(thousands of dollars)

Year	Crude Petroleum ^a	Natural Gas ^b	Sand & Gravel	Gold	Other Minerals ^c	Total
1959.....	\$ 295	\$ 16	\$ 5,265	\$ 6,262	\$ 8,673	\$ 20,511
1960.....	1,230	30	5,483	5,887	9,230	21,860
1961.....	17,652	129	4,185	3,998	8,789	34,753
1962.....	31,187	467	5,355	5,784	11,399	54,192
1963.....	32,650	1,111	22,005	3,485	8,589	67,840
1964.....	33,627	1,719	18,488	2,045	10,068	65,947
1965.....	34,073	1,799	34,467	1,479	11,637	83,455
1966.....	44,083	6,335	21,793	956	13,133	86,300
1967.....	88,187	7,268	27,683	910	13,099	137,147
1968.....	186,695	4,388	20,366	835	9,416	221,700
1969.....	214,464	12,665	18,615	881	11,018	257,643
1970.....	232,829	18,164	41,092	1,265	16,782	310,132
1971.....	234,337	17,972	32,806	537	14,044	299,696
1972.....	221,747	17,989	15,214	506	16,293	271,749
1973.....	239,574	19,482	19,913	695	26,821	306,485
1974.....	347,408	22,505	52,788	1,461	14,861	439,023
1975.....	364,626	42,786	25,780	2,419	39,514	475,125
1976.....	318,788	60,455	204,738	2,868	34,191	621,040
1977.....	988,874	66,605	134,251	2,812	33,443	1,225,985
1978.....	2,701,522	89,626	145,300	3,610	14,752	2,954,810
1979 ^P	5,493,596	91,533	150,000	W	17,543	5,752,672

a/ Value figures for Prudhoe Bay oil are values at the point where the oil enters the trans-Alaska pipeline. Consequently, value figures shown above do not include pipeline transportation charges.

b/ All natural gas values shown above include values of both dry and liquid gas, including casing head gas.

c/ Included are values symbolized by a W (withheld).

Source: Bureau of Mines, U.S. Department of the Interior; Alaska Oil and Gas Conservation Commission, Office of the Governor.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. B-3.

production in the state. This trend is expected to continue as the federal leasing program progresses through 1985.

The impact of the oil and gas industry pervades all areas of Alaska's economy. In fiscal year 1980, it was estimated that the industry would contribute \$1,233 million to the state's coffers. According to the State Department of Revenue, the industry actually paid approximately \$2.5 billion in various taxes to the State in 1980. This constituted about 86 percent of gross revenues to the State. In 1981, the Department estimates the industry will provide \$3.28 billion (90 percent) in unrestricted revenue. The advent of this revenue directly led to abolition of the state income tax in 1980. Table 4.3-3 summarizes the trend in petroleum revenues since 1971. In addition to revenue impacts, the industry employs substantial numbers of workers and creates employment and output in virtually all other sectors of the Alaskan economy. Oil companies plan to spend approximately \$15 billion on field development in Prudhoe Bay alone in the future to maintain production at close to 1.5 million barrels per day.

The overwhelming majority of crude oil production is shipped out of state to Northwest and California refineries. In Alaska, primary production of oil and gas has spawned several major projects which are serving or may serve as support facilities or purchasers/ processors of oil and gas products. The trans-Alaska oil pipeline is the largest of this type of project. Constructed between 1974 and 1977, the pipeline employed thousands of workers during its

TABLE 4.3-3

GROSS UNRESTRICTED* AND PETROLEUM REVENUES
(In Millions of Dollars)
Alaska
Fiscal Years 1971-1982**

<u>Fiscal Year</u>	<u>Gross Unrestricted Revenues</u>	<u>--Gross Petroleum Revenues-- Amount</u>	<u>% of Unrestricted Revenues</u>
1971	\$ 220.4	\$ 46.2	21%
1972	219.2	47.1	21%
1973	208.1	49.3	24%
1974	255.1	79.3	31%
1975	333.3	87.6	26%
1976	709.7	386.1	54%
1977	874.1	472.5	54%
1978	787.4	430.3	55%
1979	1,178.5	819.0	69%
1980***	2,632.0	2,253.5	86%
1981****	3,641.5	3,279.6	90%
1982****	4,936.4	4,572.4	93%

* Incoming revenue which has not been designated for a specific purpose (excludes federal grants).

** The state's fiscal year runs from July 1 of the preceding year through June 30 of the year listed.

*** Preliminary.

**** Estimated.

Source: Revenue Sources FY1980-1982, Alaska Department of Revenue; compiled by the CRC.

From: Fairbanks North Star Borough, Community Research Center. Winter 1980, Vol. III, No. 4. Community Research Quarterly, A Socio-Economic Review. Fairbanks, AK. p. 31.

peak period and cost approximately \$12 billion. The growth-inducing impacts from the project were ubiquitous, but especially dramatic in Fairbanks and Valdez, the terminus of the pipeline. Anchorage experienced substantial economic growth as well.

Several major projects are currently in the planning stages. The largest of these is the Northwest Alaska Gas Pipeline which would run from Prudhoe Bay to the Midwestern United States. The 1979 estimates set the price tag for the Alaskan portion at \$6 to \$8 billion. Another possible project is a liquified natural gas plant located on the Kenai Peninsula. The Pacific Alaska Company predicts the plant would handle up to 430 million cubic feet of gas per day for shipment to California.

The Dow-Shell Group completed a set of feasibility studies concerning development of a petrochemical industry in Alaska in September, 1981. The studies indicated that development of a worldscale petrochemical complex in Alaska would be dependent on a real price of \$38 per barrel for crude oil, growth in the Pacific Rim markets, completed construction of the Alaska Natural Gas pipeline and infrastructure development in Alaska. Potential sites which are under consideration include: Fairbanks, Seward, Valdez, the Kenai Peninsula, and Point McKenzie in the Matanuska-Susitna Borough. In addition, Doyon Corporation has recently proposed an alternative project for the transport and use of natural gas liquids.

- Hard Minerals

The history of hard mineral production in Alaska is characterized by "rushes" and "retreats." Overall, the potential for a growing mineral extraction industry is bright, based on rising world prices and the uncertainties and risks inherent in reliance on foreign supplies. Geologically, Alaska's potential is enormous; economically, however, constraints exist which will require substantial investment to overcome.

The primary hard minerals mined in Alaska are gold, sand and gravel, coal, stone, and tin. Also mined are small quantities of copper, silver, lead, gemstones, molybdenum, and barite. The value of all non-petroleum minerals in 1979 was roughly \$170 million.

This component of the mining industry is different from oil and gas in that most output is consumed in Alaska. Table 4.3-2 indicates that the value of sand and gravel production is second only to petroleum. This commodity has been used almost exclusively for local construction. Similarly, coal, until quite recently, was used entirely for local energy production.

The hard mineral industry is characterized by few large scale operations and numerous small ones. Mining employment plays an important role in rural Alaska. Most mining activity in Alaska occurs in the Yukon region, Cook Inlet/Mat-Su area, and on the Seward Peninsula, in that order. Based on output,

the Yukon region leads, followed by Kuskokwim, Seward Peninsula, and the Cook Inlet/Mat-Su area.

Two additional mineral projects are scheduled for development in Southeast Alaska by 1990. U.S. Borax is developing a large molybdenum deposit at Quartz Hill, east of Ketchikan, and a high grade deposit of lead, zinc, copper, silver and gold at Greens Creek is being explored southwest of Juneau by Noranda Exploration. The high grade characteristics of these deposits assure competitiveness of the output, and the sites' proximity to tidewater will help avoid some of the costly access problems that are stalling mineral development in other parts of the State. All of the production of these projects would be for consumption outside of Alaska.

The Alaska National Interest Lands Conservation Act, which resolved the status of the D-2 lands, should help to encourage the development of Alaska's mineral resources.

Alaska's extensive coal deposits have attracted attention recently, as the Pacific Rim countries have begun to convert from oil to coal fired generating facilities. Currently, there is only one operating coal mine which is near Healy and supplies coal for the generation of heat and electricity for the Fairbanks area. Supplies recoverable with current coal technology, are estimated to exceed 100 billion tons. Substantial deposits are also located in the Beluga coal fields near Cook Inlet, and studies are being conducted to determine the marketability of Beluga coal in Pacific Rim markets.

The mining industry in Alaska is constrained by several major factors. Access to areas of mineral potential is restricted by ownership and/or land status. Access and development are also difficult due to lack of surface transportation routes. Each of these factors, as well as Alaska's climate, topography, and location relative to other markets, contributes to the high cost of mineral exploration and extraction. In addition, environmental regulations add to the costs associated with developing mineral resources.

(ii) Construction

Apart from the seafood industry, the construction industry is the most seasonal industry in Alaska. As elsewhere it is also a highly cyclical industry depending upon general economic conditions. More importantly, the industry in Alaska is extremely dependent upon impetus in the form of major projects, usually related to natural resource and energy developments.

Construction is both a basic and non-basic industry in that it is determined in part by demand generated externally and in part by internally generated demand. Table 4.3-4 presents the trends in construction activity during the 1974 - 1979 period for the major urban areas. The impact of the trans-Alaska pipeline is apparent in both residential and non-residential categories. Dramatic increases occurred in Anchorage and Fairbanks beginning in 1975. However, in both Anchorage and Fairbanks 1979 permit valuation is actually lower than in 1974. These

TABLE 4.3-4

VALUATION OF RESIDENTIAL, NONRESIDENTIAL AND TOTAL BUILDING
INCLUDED IN BUILDING PERMITS ISSUED IN SELECTED
AREAS OF ALASKA: 1974 - 1979
(in thousands of dollars)

	Annual					
	1974	1975	1976	1977	1978	1979
Anchorage:						
Residential	\$ 88,171.3	\$125,022.5	\$101,094.0	\$156,852.5	\$145,691.5	\$ 73,565.8
Nonresidential	72,467.3	117,744.5	117,269.7	204,299.6	69,435.7	45,190.6
Total	\$160,638.6	\$242,767.0	\$218,363.7	\$361,152.1	\$215,127.3	\$118,756.4
Fairbanks:						
Residential	\$ 20,515.0	\$ 44,043.4	\$ 44,624.8	\$ 52,279.9	\$ 33,139.7	\$ 22,800.1
Nonresidential	26,293.8	93,734.0	94,336.7	31,379.4	17,448.2	17,356.7
Total	\$ 46,808.8	\$137,777.4	\$138,961.5	\$ 83,659.3	\$50,587.9	\$ 40,156.8
Juneau:						
Residential	\$ 4,330.3	\$ 7,468.4	\$ 15,311.9	\$ 22,293.1	\$ 18,066.3	\$ 17,774.4
Nonresidential	10,818.3	3,469.9	7,834.2	8,261.2	13,019.4	15,622.3
Total	\$ 15,148.6	\$ 10,938.3	\$ 23,146.1	\$ 30,554.3	\$ 31,085.7	\$ 33,396.7
Total All Areas:						
Residential	\$113,016.6	\$176,534.3	\$161,030.7	\$231,425.5	\$196,897.5	\$114,140.3
Nonresidential	109,579.4	214,948.4	219,440.6	243,940.2	99,903.3	78,169.6
Total	\$222,596.0	\$391,482.7	\$380,471.3	\$475,365.7	\$296,800.9	\$192,309.9

Source: City and Borough Building Officials.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise.
June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. 6-1.

figures accurately reflect the boom/bust cycle created by the pipeline construction.

The construction industry picked up strength in 1981. Numerous public projects are being spawned by the wealth accruing to the state government. These projects include highway, airport, harbor, school, public works, and cultural facilities throughout the state. Coupled with planned major private sector projects, primarily relating to oil and gas, continued strong construction activity appears likely.

(iv) Manufacturing

The manufacturing industry in Alaska consists of two major components; food processing (mainly seafood) and forest products. These two components accounted for 72 percent of average manufacturing employment in 1979. Each of these is discussed below.

- Seafood Processing

Since the passage of the Fishery Conservation and Management Act of 1976, commonly referred to as the "200-mile limit", the Alaskan fishing industry has been in a state of flux. Fortunately, the overall impact from the law has been quite favorable to the industry. The trend in terms of both volume and value of the catch has been steadily increasing. Tables 4.3-5 and 4.3-6 show this trend for both domestic and foreign fisheries. Underlying these figures is a transferring of catch in high valued species such as salmon and crab from the foreign to the domestic fleet. The fishing effort of the

TABLE 4.3-5

DOMESTIC FISHERIES OF ALASKA
Catch Landed in Alaska, Payments to Fishermen, and Wholesale (Processed) Value

		1974	1975	1976	1977	1978	1979
SALMON	Catch (000 000 lbs)	132	140	246	307	408 ^P	459 ^P
	Payments to Fishermen (\$000 000).	66	56	118	171	238 ^P	317 ^P
	Wholesale Value (\$000 000).	137	134	245	380 ^P	528 ^P	704 ^P
OTHER FIN FISH	Catch (000 000 lbs)	60	58	54	45	64 ^P	89 ^P
	Payments to Fishermen (\$000 000).	16	19	24	21	33 ^P	58 ^P
	Wholesale Value (\$000 000).	22	27	29	27 ^P	43 ^P	75 ^P
SHELLFISH	Catch (000 000 lbs)	272	247	317	312	334 ^P	341 ^P
	Payments to Fishermen (\$000 000).	66	55	97	157	272 ^P	231 ^P
	Wholesale Value (\$000 000).	95	132	179	316 ^P	547 ^P	464 ^P
GRAND TOTALS	Catch (000 000 lbs)	464	445	617	664	806 ^P	889 ^P
	Payments to Fishermen (\$000 000).	148	130	240	349	543 ^P	606 ^P
	Wholesale Value (\$000 000).	254	293	452	723 ^P	1,118 ^P	1,243 ^P
WHOLESALE VALUE INDEX (Dollar Value in 1974 = 1.00)		1.00	1.15	1.78	2.85	4.40	4.89
REAL VALUE INDEX (Wholesale Dollar Value Adjusted by Changes in U.S. Consumer Price Index: 1974 = 1.00)		1.00	1.06	1.54	2.32	3.33	3.32

P Preliminary.

SOURCE: Alaska Department of Fish and Game, National Marine Fisheries Service, and Alaska Department of Commerce and Economic Development.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise.
June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. B-16.

TABLE 4.3-6

CATCH & VALUE FROM ALASKA'S DOMESTIC & FOREIGN FISHERIES

	1977	1978	1979
CATCH LANDED IN ALASKA (DOMESTIC FISHERIES CATCH) ¹			
Catch (000 000 lbs)	664	806 ^P	889 ^P
Ex Vessel Values (\$000 000)	349 ^P	543 ^P	606 ^P
Wholesale Values (\$000 000)	723 ^P	1,118 ^P	1,243 ^P
FOREIGN CATCH FROM ALASKA FCZ²			
Catch (000 000 lbs)	3,033	3,457	3,177 ^P
Ex Vessel Values (\$000 000) ³	178 ^P	352 ^P	330 ^P
Wholesale Values (\$000 000) ⁴	979 ^P	1,936 ^P	1,815 ^P
ALL FISHERIES COMBINED			
Catch (000 000 lbs)	3,697	4,263 ^P	4,066 ^P
Ex Vessel Values (\$000 000)	527 ^P	895 ^P	936 ^P
Wholesale Values (\$000 000)	1,702 ^P	3,054 ^P	3,058 ^P

P Preliminary.

1/ The domestic catch (fish caught by U.S. citizens) very nearly coincides with amounts landed and processed in Alaska.

2/ FCZ = U.S. Fishery Conservation Zone (Area between 3 and 200 miles from shore).

3/ Ex Vessel values indicated for foreign catch are pounds of fish, per specie, multiplied by prices paid to fishermen in U.S. ports.

4/ Wholesale values for foreign catch are estimates of what the values would have been if these fish had been landed by U.S. fishermen.

SOURCE: Alaska Department of Fish and Game, National Marine Fisheries Service, and Alaska Department of Commerce and Economic Development.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK p. B-16.

foreign fleet has adjusted to this by targeting on other species such as groundfish. Regardless of who catches the product, a substantial portion of it is exported out of the state, with a large share destined for Japan.

The domestic industry is characterized by numerous private participants in the harvesting sector and relatively fewer processing companies with large domestic and foreign corporate involvement. Different species are concentrated upon in different regions of Alaska. The processing industry employs close to 15,000 workers during the height of the season in July. Average monthly employment was about 7,000 during 1979.

Opportunities for growth in the industry exist in fisheries for groundfish and other underutilized species. It has been estimated that only eight percent of the total allowable domestic catch is being utilized. However, major economic problems impede development, including transportation costs, high input costs, and low margins.

- Forest Products

The Alaskan forest products industry centers upon the resources of two national forests, the Chugach in Southcentral Alaska and the Tongass in Southeastern Alaska. These two forests are the largest in the United States and account for roughly 93 percent of the annual Alaskan timber harvest. Table 4.3-7 presents the historical timber harvest from public lands by ownership. From the table it can be seen that the

TABLE 4.3-7

Alaska Timber Harvest (in thousand board feet, Scribner scale) on Public Lands,
By Ownership, 1959-1979

Year	State	Bureau of Indian Affairs	Bureau of Land Management			National Forest			Total
			Free Use	Cut	Total	Tongass	Chugach	Total	
1959	0	0	2,499	8,666	11,165	266,591	7,596	274,187	285,352
1960	210	0	1,588	14,289	15,877	347,496	3,613	351,109	367,196
1961	1,987	0	4,683	11,342	16,025	338,206	7,117	345,323	363,335
1962	6,872	0	8,049	5,936	13,985	366,275	7,157	373,432	394,289
1963	10,633	0	7,535	3,620	11,155	395,143	3,847	398,990	420,778
1964	18,144	0	5,524	5,666	11,190	443,736	1,373	445,109	474,443
1965	24,161	2,990	5,045	3,263	8,308	397,610	6,888	404,498	439,957
1966	31,220	1,650	5,349	848	6,197	474,277	1,217	475,494	514,561
1967	45,816	9,067	2,587	572	3,159	474,337	2,479	476,816	534,858
1968	47,974	8,192	612	491	1,103	529,496	3,807	533,303	590,572
1969	49,018	8,684	79	280	359	519,344	3,997	523,341	581,402
1970	53,568	12,855	81	493	574	560,081	895	560,976	627,973
1971	43,190	1,870	113	346	459	527,740	1,680	529,420	574,939
1972	50,591	5,070	17	28	45	547,500	3,021	550,521	606,227
1973	35,356	28,795	11	145	156	588,491	3,109	591,600	655,907
1974	51,241	12,083	39	114	153	544,025	5,608	549,633	613,110
1975	33,540	52	50	930	980	408,371	4,683	413,054	447,626
1976	41,714	1,011	844	295	1,139	462,776	9,402	472,178	516,042
1977	60,251	7,835	325	29	354	NA	NA	455,700	524,140
1978	30,301	1,799	1,862	149	2,011	398,701	9,873	408,574	442,685
1979	32,381	480	159	121	280	NA	NA	459,507	492,648

Source: Respective agencies. For the Bureau of Land Management, the 1979 figures are for the fiscal year ended September 30. For the Bureau of Indian Affairs, figures for 1977, 1978, and 1979 are for the fiscal years ended September 30. Other figures are for the calendar years.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p.B-8.

Tongass National Forest accounts for about 90 percent of the Alaskan timber harvest. The industry is concentrated in the Southeast, and the principal products of the industry are pulp, cant lumber (cut on at least two sides), and round logs. In the past, 50 percent of Alaska's forest products have been exported to foreign countries, principally Japan. Most of the remainder is shipped to the Lower-48.

The transfer of lands to native corporations is expected to increase the availability of timber resources, especially round logs. In general, the industry is quite cyclical, depending upon housing construction patterns in the United States and abroad.

(v) Agriculture

Agriculture is an emerging industry in Alaska. Land in production increased from 7,000 acres in 1978 to 34,000 acres in 1981. Studies have identified nearly 20 million acres suitable for growing crops.

Table 4.3-8 shows total land in farms and the number of farms. Most land in farms consists of grazing lands leased from the State or the U.S. Government. Approximately 138,000 acres of land is in farms exclusive of these grazing leases.

As of January 1, 1981, there were an estimated 380 farms in Alaska, up from 290 in 1974. As of July, 1980, there were 960 persons working on farms, either as family members or hired workers.

TABLE 4.3-8

LAND IN FARMS AND FARM NUMBERS - ALASKA 1960-81

Year	Land	Total	Number of Farms				
	In Farms	All Farms	Cattle	Dairy	Chickens	Hogs	Sheep
(000 Acres)							
1960	1,635	420	210	150	NA	NA	NA
1965	1,900	370	190	110	80	30	NA
1970	1,710	320	160	90	70	40	20
1971	1,710	320	160	90	70	40	20
1972	1,700	320	150	80	70	40	20
1973	1,700	320	140	70	70	40	20
1974	1,680	290	140	70	70	40	20
1975 <u>1/</u>	1,670	300	140	60	80	40	10
1976	1,670	310	140	60	80	40	10
1977	1,670	330	140	60	80	40	10
1978	1,600	350	140	60	80	50	20
1979	1,500	360	140	60	90	50	20
1980	1,520	370	150	60	100	60	20
1981 <u>2/</u>	1,520	380					

1/ Farm redefined: Farms and ranches with annual sales of \$1,000 or more.

2/ Preliminary.

Source: Alaska Crop and Livestock Reporting Service. 1981. Alaska Agricultural Statistics. Palmer, AK.

Alaska's major farm product production area, both for crops and livestock, is the Matanuska-Susitna Valley, where value of production in 1980 totalled \$3,467,000 in crops and \$2,973,000 in livestock and poultry. This is equivalent to 67 percent of the value of total state agricultural production. Table 4.3-9 shows value of production by area in Alaska for selected years.

Of growing importance in Alaskan agricultural production is the Tanana Valley, site of the Delta Agricultural Project. The first phase of this project, which began in 1978 with the distribution of nearly 60,000 acres of land to 22 individuals, is scheduled to have land clearing completed during 1982. Distribution of land for a second phase of the Delta Project (Delta II) is tentatively scheduled for 1982. Acreage in this phase of the project is to total 55,000.

Other agricultural projects planned by the state include the Nenana project, which could bring 175,000 acres into production, and the Pt. McKenzie project, a 15,000 acre project designed to revitalize the state's dairy industry, to increase vegetable production and to increase livestock production in support of a meat processing industry.

Long-range plans for agriculture in Alaska call for 500,000 acres of agricultural land to be in production by 1990. Expectations are that production of barley will lead to both export trade with the Orient and, by promoting availability of animal feed, to an enhanced livestock industry in various areas of Alaska.

At present, production of barley is increasing in Alaska, while production of other commodities has

TABLE 4.3-9

VALUE OF PRODUCTION BY AREAS - ALASKA (Selected Years) (a)

Year	Tanana Valley	Matanuska Valley	Kenai Penin.	South- East	South- West	State Total
----- dollars -----						
<u>CROPS</u>						
1960	560,100	1,672,600	132,100	32,300	18,900	2,416,000
1965	638,600	1,285,200	124,500	20,800	17,900	2,087,000
1975	1,389,900	3,501,500	434,600	-	13,000	5,339,000
1976	1,071,500	3,163,500	297,000	-	14,000	4,546,000
1977	1,109,500	3,883,500	499,000	-	14,000	5,506,000
1978	1,404,500	3,433,500	377,000	-	14,000	5,229,000
1979	1,285,000	3,543,000	286,000	-	22,000	5,136,000
1980	1,889,500	3,467,000	371,000	-	60,000	5,787,500
<u>LIVESTOCK AND POULTRY</u>						
1960	448,500	2,116,800	177,500	264,400	140,200	3,147,400
1965	357,200	2,115,300	403,400	114,800	221,300	3,212,000
1975	400,800	3,100,900	71,500	9,900	302,900	3,886,000
1976	460,500	3,324,600	110,200	9,400	353,300	4,258,000
1977	492,800	3,421,400	102,200	12,200	255,400	4,284,000
1978	476,400	3,147,000	117,300	16,500	283,800	4,041,000
1979	494,500	3,072,400	197,100	21,600	316,400	4,102,000
1980	354,900	2,973,000	231,700	16,200	296,200	3,872,000
<u>TOTAL</u>						
1960	1,008,600	3,789,400	309,600	296,700	159,100	5,563,400
1965	995,800	3,400,500	527,900	135,600	239,200	5,299,000
1975	1,790,700	6,602,400	506,100	9,900	315,900	9,225,000
1976	1,532,000	6,488,100	407,200	9,400	367,300	8,804,000
1977	1,602,300	7,304,900	601,200	12,200	269,400	9,790,000
1978	1,880,900	6,580,500	494,300	16,500	297,800	9,270,000
1979	1,779,500	6,615,400	483,100	21,600	338,400	9,238,000
1980	2,244,400	6,440,000	602,700	16,200	356,200	9,659,500

(a) Includes only selected crop and livestock commodities.

Source: Alaska Crop and Livestock Reporting Service. 1981. Alaska Agricultural Statistics. Palmer, AK.

remained steady or fallen in recent years. Table 4.3-10 shows agricultural commodities produced in Alaska in selected years.

Alaska imports well over 90 percent of the food consumed in the State. Even with the high cost of transportation from the lower 48 states, imported foodstuffs are still generally cheaper than those produced in Alaska.

(vi) Tourism

Tourism is not an industry in itself, but is usually described and analyzed in terms of those sectors affected by travel expenditures. Tourism mainly affects the support and service sectors of the economy, although the resources upon which it is based are primarily the natural resources of Alaska. In some ways, tourism represents a "basic component" of the Alaskan economy in that there is externally generated demand for Alaskan products and services.

During the winter and summer (1976 - 1977) 505,007 individuals were projected to have visited Alaska. Table 4.3-11 summarizes the reasons given for visiting Alaska and estimated expenditures for the winter, summer, and combined periods. Not surprisingly, the Table illustrates the seasonal nature of visitor trips to Alaska, especially regarding pleasure trips. On the other hand, it is interesting to note that fewer business trips are made in the summer than in the winter, the reasons for which are unclear.

Visitor expenditures by type are presented in Table 4.3-12 on a per capita basis and as a percentage of all

TABLE 4.3-10

AGRICULTURAL COMMODITIES PRODUCED - ALASKA (Selected Years)

Commodity		1960	1965	1970	1975	1979	1980
- - - - - thousand units - - - - -							
<u>CROP PRODUCTION</u>							
OATS FOR GRAIN	Bu.	79.8	42.0	22.5	16.8	15.6	26.1
BARLEY FOR GRAIN	Bu.	87.4	67.2	46.5	70.0	287.0	339.0
ALL SILAGE	Tons	20.2	21.7	13.6	15.2	12.4	12.4
GRAIN SILAGE	Tons	15.8	17.7	7.4	4.8	4.2	4.7
GRASS SILAGE	Tons	4.4	4.0	6.2	10.4	8.2	7.7
ALL HAY	Tons	10.5	8.8	9.4	21.4	15.8	15.0
GRAIN HAY	Tons	2.5	2.2	1.5	7.1	1.6	2.7
GRASS HAY	Tons	8.0	6.6	7.9	14.3	14.2	12.3
POTATOES	Cwt.	131.4	131.0	106.8	108.7	85.0	77.0
CABBAGE	Cwt.	3.6	3.0	3.5	3.0	4.0	4.1
LETTUCE	Cwt.	6.2	6.5	7.9	9.5	13.6	11.3
CARROTS	Cwt.	7.6	2.9	1.5	2.0	2.4	3.3
OTHER VEGETABLES	Cwt.	2.8	2.1	3.0	1.8	3.5	4.6
<u>LIVESTOCK AND POULTRY PRODUCTS</u>							
EGGS	Doz.	529.8	766.7	408.0	417.0	558.0	367.0
POULTRY	Lbs.	55.0	89.0	73.0	167.0	170.0	172.0
BEEF	Lbs.	357.0	824.0	963.0	664.0	748.0	767.0
PORK	Lbs.	151.0	205.0	135.0	150.0	221.0	232.0
MUTTON	Lbs.	12.0	28.0	52.0	30.0	24.0	18.0
WOOL	Lbs.	125.0	209.0	239.0	67.0	32.0	38.0
REINDEER	Lbs.	450.0	637.0	615.0	345.0	NA	NA
- - - - - million units - - - - -							
MILK	Lbs.	20.4	20.7	18.6	16.8	13.0	12.5

Source: Alaska Crop and Livestock Reporting Service. 1981. Alaska Agricultural Statistics. Palmer, AK.

TABLE 4.3-11

VISITOR AND EXPENDITURE PROJECTIONS

Purpose of Trip	Winter, 1976-1977			Summer, 1977			Combined Winter/Summer		
	Total Number of Visitors	Per Capita Expenditure	Total Dollar Projections	Total Number of Visitors	Per Capita Expenditure	Total Dollar Projections	Total Number of Visitors	Per Capita Expenditure	Total Dollar Projections
			(000)			(000)			(000)
Pleasure only	56,579	\$ 432.	24,442.1	221,476	\$ 760.	168,321.8	278,055	\$ 693.	\$192,763.9
Mostly pleasure/ some business	10,082	513.	5,172.1	16,049	741.	11,892.3	26,131	653.	17,064.4
Half pleasure/half business	11,925	583.	6,952.3	16,049	675.	10,833.1	27,974	636.	17,785.4
Mostly business/some pleasure	30,894	1004.	31,017.6	25,678	938.	24,086.0	56,572	974.	55,103.6
Business only	74,548	792.	59,042.0	41,727	764.	31,879.4	116,275	782.	90,921.4

Source: State of Alaska, Division of Economic Enterprise, Department of Commerce and Economic Development. Visitor Census & Expenditure Survey, Summer 1977. March 1978; p. 12.

TABLE 4.3-12

VISITOR EXPENDITURES

	<u>Winter Total</u>		<u>Summer Total</u>	
	<u>Per Capita</u>	<u>Share Of</u>	<u>Per Capita</u>	<u>Share Of</u>
	<u>Expenditures</u>	<u>All Visitors</u>	<u>Expenditures</u>	<u>All Visitors</u>
	<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>
<u>Transportation to and</u>				
<u>from Alaska</u>	<u>331.</u>	<u>50</u>	<u>177.</u>	<u>29</u>
Air	299.	45	131.	22
Ship	9.	1	25.	4
Automobile	22.	3	18.	3
Bus	1.	*	1.	*
Railroad	-	-	2.	*
Organized tours	8.	1	266.	45
Food/meals	70.	10	35.	6
Lodging	83.	13	27.	5
Retail purchases	53.	8	27.	5
Entertainment/recreation	49.	7	18.	3
Auto expense (within the State)	35.	5	14.	2
Other transportation (within the State)	15.	2	13.	2
Miscellaneous/other	20.	3	12.	2
<u>TOTALS</u>	<u>\$664.</u>	<u>100%</u>	<u>\$589.</u>	<u>100%</u>

*Less than 0.5%

Source: State of Alaska, Division of Economic Enterprise, Department of Commerce and Economic Development. Visitor Census & Expenditure Survey, Summer 1977. March 1978; p. 43.

visitor expenditures. Cities and areas visited are presented in Table 4.3-13. Anchorage, by far, receives more visitors than any other city in Alaska. This points to the fact that Anchorage is the business center of Alaska as well as the "gateway" to the state. Table 4.3-14 presents information concerning visitor-related firms' sales. The table shows the substantial contribution made to the Alaskan economy by the visitor-related industry. The numbers presented are for 1975 and therefore are probably somewhat low (Division of Economic Enterprise of the Alaska Department of Commerce and Economic Development).

(vii) Service and Support Components

This sector of the Alaskan economy has experienced substantial growth and diversification in the past decade. The growth in this sector is in part attributable to the demand created by expansion of the basic sector of the economy, and in part by the maturation process of the Alaskan economy in general. The growth in the non-basic sector parallels the general trend of the nation, yet reflects as well the fact that Alaska has passed the threshold level of economic activity at which substantial demand for goods and services is generated locally or internally.

Table 4.3-15 shows employment growth rates for selected industries over various periods. The total support group has consistently grown faster than that of the total economy. Dramatic growth has occurred in many of the more service oriented categories, i.e., finance, insurance, real estate, and services. Growth in wholesale trade reflects the demand for goods and services

TABLE 4.3-13

	<u>CITIES/AREAS VISITED</u>					
	<u>Winter</u>	<u>Summer</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>Sept.</u>
	<u>Total*</u>	<u>Total</u>				
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
Anchorage	76	68	65	67	66	76
Fairbanks	23	41	41	51	39	34
Juneau	15	38	46	36	39	27
Ketchikan	10	29	41	22	29	24
Kenai	8	12	11	14	13	11
Sitka	7	21	25	23	23	9
Soldotna	6	9	9	9	9	8
Mt. McKinley Nat'l. Park	6	34	36	41	34	26
Haines	4	9	13	5	12	6
Valdez	4	6	6	6	6	7
Kodiak	4	2	2	2	3	3
Homer/Seldovia	3	5	5	6	5	5
Prudhoe Bay	3	2	1	2	2	3
Nome	3	8	9	9	8	8
Skagway	2	33	43	33	30	26
Glacier Bay	2	25	29	27	23	20
Kotzebue	2	9	9	9	9	8
Seward	2	4	4	5	4	4
Barrow	2	3	3	4	3	2

* Columns refer to percentage of total visitors in the time period who visited that city. Figures include multiple city visits.

Source: State of Alaska, Division of Economic Enterprise, Department of Commerce and Economic Development. Visitor Census & Expenditure Survey, Summer 1977. March 1978, p. 19.

TABLE 4.3-14

TOTAL SALES OF VISITOR INDUSTRY FIRMS IN ALASKA
AND TOTAL SALES TO VISITORS
 for the year 1975

	<u>Total Sales</u>	<u>Sales to Visitors</u>	<u>% Sales to Visitors</u>
Hotels, motels and lodges	\$ 92,233,498	\$ 54,606,135	59.2%
Gift, souvenir and jewelry shops	128,377,694	2,626,480	2.0
Travel agencies	24,298,150	963,250	4.0
Air taxis and air charters	39,169,272	8,438,536	21.5
Bus Co. (tour and airport)	3,800,656	3,545,339	93.3
Railroads	48,055,908	1,561,596	3.2
Tour wholesalers and operators	505,509	505,509	100.0
Restaurants	39,178,071	10,953,684	28.0
Guides	2,489,825	2,405,490	96.6
Car rentals	5,223,382	3,760,835	82.0
Hunting and fishing camps	666,550	595,850	89.4
Boat charters	975,430	864,290	88.6
Airlines	187,677,308	38,173,643	20.3
Cruise ships	169,060	169,060	100.0
General stores	14,666,640	1,395,147	9.5
Marine Highway System	15,164,782	7,885,687	52.0
Department of Fish & Game*	1,682,711	1,682,711	100.0
Other	5,450,604	431,454	7.9
TOTALS	<u>\$609,785,050</u>	<u>\$140,564,696</u>	<u>23.1%</u>

* To non-residents

Source: State of Alaska, Division of Economic Enterprise, Department of Commerce and Economic Development. Impact of Visitor Expenditures upon Alaska's Economy, For the Year 1975. February 1978; p. 23.

TABLE 4.3-15

EMPLOYMENT GROWTH
ANNUAL AVERAGE RATES
SELECTED ALASKA INDUSTRIES

(Percent)

	1960 to <u>1963</u>	1964 to <u>1969</u>	1969 to <u>1973</u>	1973 to <u>1978</u>
Wholesale Trade	3.6	11.4	3.9	11.7
Retail Trade	3.6	9.1	7.8	8.6
Services	4.4	8.8	9.7	12.5
Transportation	-3.6	6.9	1.7	9.3
Communications	11.3	-0.7	11.0	7.1
Public Utilities	12.0	5.6	14.7	5.0
Finance Ins., Real Estate	8.1	6.1	12.4	14.2
Total Support	3.3	7.9	7.6	11.0
Total Nonagricultural	1.1	5.8	6.1	8.0

Note: Prior to 1964, only jobs covered by unemployment insurance were included in the reported data. Thus, the pre-1964 period is not strictly comparable with the period beginning in 1964.

Source: Compiled from data in "Statistical Quarterly," (Alaska Department of Labor).

From State of Alaska, Division of Economic Enterprise, Department of Commerce and Economic Development. The Performance Report of the Alaska Economy in 1979. Vol. Eight. p. 25.

generated from other sector activity which is being met by local Alaskan firms.

The figures shown in Table 4.3-15 tend to mask the effects of the post-pipeline economic slowdown. Recent employment figures however, indicate some contractions occurred in many categories. This trend is apparent upon visual inspection of many of the communities in the Railbelt area, especially in the Anchorage, Mat-Su and Fairbanks areas. Numerous vacant stores and half completed developments are scattered throughout these areas.

The dip in economic activity after the pipeline boom is an expected occurrence. More surprising is the apparent resilience of certain sectors or industries. The slowdown as recorded by employment figures did not occur until several years after the pipeline construction period ended. Reasons for this are indeterminate and may be related to economic behavior or perhaps measurement techniques. Nonetheless the overall trend is for continued expansion of the non-basic sector.

Another emerging characteristic of these sectors is seasonal variation. The trend is discernible comparing the ratio of first quarter employment to third quarter employment. Table 4.3-16 presents this series. Only the services and public utilities sections did not show decreasing seasonality. Brief discussions of most service and support industries are presented below.

TABLE 4.3-16

STATE OF ALASKA INDEX OF EMPLOYMENT SEASONALITY,
SELECTED INDUSTRIES (a)

	<u>1960</u>	<u>1970</u>	<u>1978</u>
Trade	.826	.869	.899
Services	.770	.937	.874
Transportation	.784	.854	.871
Communications	.876	.899	.939
Public Utilities	.835	.885	.847
Finance, Insurance, Real Estate	.888	.793	1.012
Total Support	.810	.881	.898

(a) Ratio of-January, February and March nonagricultural employment to July, August and September nonagricultural employment.

Source: Compiled from data published by the Alaska Department of Labor in the "Statistical Quarterly."

From State of Alaska, Division of Economic Enterprise, Department of Commerce and Economic Development. The Performance Report of the Alaska Economy in 1979. Vol. Eight. p.26.

- Wholesale Trade

According to the 1977 Industry Census, there were 649 firms engaged in wholesale trade in Alaska with sales of \$1.563 billion. The largest component of sales was petroleum and related products, constituting \$532 million or 34.1 percent of total wholesale sales. Groceries and related products accounted for \$270 million or 17.3% of the total. Machinery, equipment and supplies accounted for \$262 million or 16.8 percent of the total.

Wholesale trade could be considered non-basic now because with recent rapid population growth, especially in the Anchorage area, and the expansion of the oil and gas industry, it has become cost-effective for local, as opposed to Seattle-based wholesalers, to serve the growing local retail trade.

- Retail Trade

According to the 1977 Industry Census, there were 3,781 retail establishments in Alaska with sales of \$1.831 billion. Grocery stores accounted for the largest share of sales, \$410 million or 22.4 percent. Eating and drinking establishments accounted for \$254 million or 13.9 percent of total retail sales. Automotive dealers accounted for \$241 million or 13.2 percent of the total, and general merchandise stores had \$227 million or 12.4 percent.

Retail trade has grown as a function of other local changes which reflect expansion of demand in the state. Economies of scale resulting from a larger

market apparently have assisted development of retail outlets.

- Finance, Insurance, and Real Estate

Recent trends and activity in this sector of the economy in Alaska are comparable to what has occurred in the U.S. in general. High, widely fluctuating interest rates and restricted credit have created an air of uncertainty and business caution. Consequently, lending activity has slacked off. This impact is presented in Table 4.3-17 which shows combined indicators for financial institutions. A noteworthy distinction between Alaska and most of the U.S. in general is that the state can offset the restrictive policies of the Federal Reserve Board by depositing large funds in state financial institutions. Thus the outlook and financial climate may be more favorable in Alaska than elsewhere.

Real estate activity in Alaska has ridden a seesaw over the past decade corresponding to the boom/bust cycle of the pipeline project. In addition, recent record high interest rates have limited existing activity. Excess capacity, mainly in retail space and housing stocks left over from the pipeline period, has gradually been filled. This has been the case in Anchorage and Fairbanks especially. Certain communities have fared better than the state in general. Demand for commercial office, industrial, and warehouse space fared better than non-commercial real estate but has been relatively flat since the pipeline period.

TABLE 4.3-17

COMBINED INDICATORS FOR BANKING,
SAVINGS & LOAN ASSOCIATIONS,
FEDERAL CREDIT UNIONS, AND
SMALL LOAN LICENSEE ACTIVITY: 1976-1979

(in millions of dollars)

<u>End of Year</u>	<u>Total Number of Institutions</u>	<u>Combined Value of All Loans</u>	<u>Combined Total Assets</u>
1976	65	\$ 1,455	\$ 2,357
1977	64	1,784	2,674
1978	60	1,935	2,912
1979	60	1,833	3,013

Source: Division of Banking, Securities, Small Loans and Corporations, and the Division of Economic Enterprise, Alaska Department of Commerce and Economic Development.

From State of Alaska, Department of Commerce and Economic Development, Division of Economic Enterprise. Alaska Statistical Review and General Information. June 1980; p. L-1.

Table 4.3-18 shows housing permits issued in various cities. The table shows a slowdown beginning in 1978. It also shows clearly the fact that Anchorage accounts for roughly half of all home construction activity.

Activity in the insurance industry usually follows the general trend set by other sectors. Table 4.3-19 shows the value of total insurance premiums written from 1959-1979. Since 1966, the total value has steadily increased. This reflects the general economic growth occurring in Alaska over the time period, and also the effects of inflation on the industry. Adjusted for increases due to inflation, the total would show a downward trend from 1977-1979.

- Services

The services industry has experienced significant growth over the past decade as measured by employment figures. As is the case for the United States, the service industry is characterized by numerous small establishments. This category includes such professional services as doctors, lawyers, accountants, and economists. Due to the expanding economy this group is experiencing substantial growth. The industry serves almost exclusively locally generated demand.

(ix) Government

The role of the public sector has been an important one throughout Alaska's history. The trend over the past decade has been one of a declining share for government

TABLE 4.3-18

TOTAL NUMBER OF FAMILY DWELLING UNITS INCLUDED IN BUILDING PERMITS ISSUED
IN SELECTED URBAN AREAS OF ALASKA, 1970 - 1979

Year	Anchorage	Fairbanks	Homer	Kenai	Palmer	Seldovia	Seward	Soldotna	Valdez	Total
1970	3,000	444	6	17	19	1	8	11	1	3,507
1971	3,050	348	12	23	15	3	8	4	0	3,463
1972	2,951	439	11	22	9	1	39	16	6	3,494
1973	2,086	446	17	13	2	8	1	11	6	2,590
1974	2,822	594	35	25	7	7	4	37	161	3,692
1975	4,010	1,051	13	100	8	5	3	87	85	5,362
1976	3,938	998	60	161	72	13	11	138	39	5,430
1977	4,877	1,561	117	267	75	8	39	177	33	7,154
1978	3,289	806	92	160	125	9	36	69	14	4,600
1979	1,469	431	130	47	68	22	50	40	29	2,286

Source: City and Borough building officials, and the U.S. Department of Housing and Urban Development.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980.
The Alaska Statistical Review. 1980. Juneau, AK. pp. G-2, G-3.

TABLE 4.3-19

ALASKA INSURANCE BUSINESS
Total Insurance Premiums Written: 1959 - 1979
(in millions of dollars)

Year	Total Insurance
1959.....	\$ 30.0
1960.....	34.2
1961.....	36.9
1962.....	40.1
1963.....	42.9
1964.....	74.6
1965.....	58.6
1966.....	64.7
1967.....	70.2
1968.....	79.8
1969.....	93.9
1970.....	113.2
1971.....	131.5
1972.....	146.0
1973.....	155.8
1974.....	189.6
1975.....	206.2
1976.....	356.5
1977.....	452.5
1978.....	473.7
1979.....	488.7

Source: Alaska Department of Commerce and Economic Development, Division of Insurance.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. M-1.

bodies in terms of total wages paid, especially during the pipeline period. This has been the result of significant expansion in the private sectors of the economy. Nonetheless, government in Alaska accounted for 41 percent of all jobs, and the federal government, including military personnel, remains the single largest employer in the state.

Table 4.3-20 presents data for total wages paid for the government sectors and shows government wages as a percentage of total wages paid in the state. The most striking trend is the growth in the state and local component. Also noteworthy is the relatively small increase in military wages. This is due to the fact that military employment has consistently decreased over the past decade, although total wages paid have generally increased.

Table 4.3-21 presents government expenditures broken down by federal, state, and local components. In 1979 the federal government spent about \$1.5 billion in Alaska. The State spent nearly one billion, and local governments spent an estimated \$662 million. Total government expenditures in Alaska are estimated at over \$3 billion per year. Federal government spending and employment should be considered basic components because they are exogenously determined for the most part. State and local government, on the other hand, should be considered non-basic. Growth in this sector is largely attributable to the increases in state revenues and expenditures. Eventually its growth will be constrained by demands for services of Alaska residents and Alaska's overall population growth rate.

TABLE 4.3-20

Alaska Public Sector Wages*
Compared to All Wages Received
in Selected Years
(in Millions of Dollars)

	1960	1965	1970	1975	1976
Total Wages	\$586	\$772	\$1251	\$2860	\$3294
Government	287	376	594	973	1054
Federal Civilian	108	138	195	295	318
Federal Military	138	144	226	261	268
State and Local	42	94	173	417	467
Government Wages as Percentage of Total					
Alaska	49.0	48.7	47.5	34.0	32.0
U.S.	14.8	16.0	18.3	19.2	19.0

*Total Labor and Proprietor's Income by Place of Residence — BEA Personal Income Series.

Source: Alaska Department of Commerce and Economic Development. July 1978. Jobs and Power for Alaskans, A Program for Power and Economic Development. Juneau, AK. p. 33.

TABLE 4.3-21

**TOTAL FEDERAL GOVERNMENT OBLIGATIONS IN ALASKA^a
PLUS STATE AND LOCAL GOVERNMENT GENERAL EXPENDITURES^b
AND NET DOLLAR EXCHANGES AMONG LEVELS OF GOVERNMENT**
(in millions of dollars)

Fiscal Year Ending June 30	FEDERAL OBLIGATIONS		STATE OF ALASKA GENERAL EXPENDITURES					LOCAL GOVT GENERAL EXPENDITURES				TOTAL GOVERNMENT SPENDING IN ALASKA
	Total	Total Minus State-Local Govt Grants	Total	By Source of Funds		By Type of Expenditure		Total	From Own Sources	From State	From Federal Govt	
				From Own Sources	Federal Funds	Direct Expenditures	Awarded to Local Govt Units					
1973	1,011	807	622	433	189	499	123	286	148	123	15	1,592
1974	1,107	887	662	474	188	519	143	324	149	143	32	1,730
1975	1,279	1,021	786	552	234	619	167	360	169	167	24	2,000
1976	1,358	1,050	956	675	281	750	206	426	193	206	27	2,226
1977	1,501	1,190	1,029	756	273	794	234	539	267	234	38	2,524
1978	1,701	1,356	1,157	863	294	893	264	596	281	264	51	2,845
1979	1,887	1,506 ^E	1,279 ^E	964 ^E	315 ^E	979 ^E	300 ^E	662 ^E	296 ^E	300 ^E	66 ^E	3,147 ^E

E Estimated by the Division of Economic Enterprise, Alaska Department of Commerce and Economic Development.

a/ Total Federal government obligations include all amounts set aside for direct spending by Federal agencies and also include grants and loans to the State of Alaska, to local government units, or to other organizations or individuals in Alaska. Figures for fiscal years ending June 30 are interpolated from published figures for Federal fiscal years ending September 30.

b/ General expenditures of State and local governments include all expenditures except those from trust funds (including retirement funds and the unemployment insurance benefit fund) and expenditures by publicly owned utilities supported by service fees.

Source: Community Services Administration, U.S. Department of Health, Education, and Welfare; Bureau of the Census, U.S. Department of Commerce; and the Division of Economic Enterprise, Alaska Department of Commerce and Economic Development.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. E-1.

Table 4.3-22 breaks down state government expenditures by function, including amounts awarded to local governments. Table 4.3-23 presents revenues by source for the State government through 1979. Recent trends include the abolition of the state income tax in 1980 and a substantial rise in revenues from oil and gas taxes.

(c) Employment

(i) Baseline

Alaska's economy has been historically dependent upon development of its natural resources, primarily fisheries, minerals, and timber. Employment as a result has been oriented towards these extractive industries. In addition, the military has played a major role since World War II. In 1965, approximately 37 percent of Alaska's work force were military employees.

Beginning in the 1960's significant shifts in employment began, paralleling the trends for the nation in general. Table 4.3-24 presents Alaska's nonagricultural wage and salary employment, categorized by major industry sector, for the years 1970, 1975, and 1979. The table presents both levels and percent of total for each industry group. The most notable shift occurred in federal government employment. From 1970 to 1979, total civilian federal employment grew slightly while State total employment rose 80 percent. Thus, the proportion of federal government employment fell from 18.5 percent of total employment in 1970 to 10.8 percent in 1979.

The sector with the largest absolute gain is State and local government employment. From 1970 to 1979, this

TABLE 4.3-22

ALASKA STATE GOVERNMENT

EXPENDITURES BY FUNCTION
(thousands of dollars)

4-280	Fiscal Years Ending June 30	Education	Social Services	Health	Natural Resources & Environmental Conservation	Public Protection	Administration of Justice	Development	Transportation	General Government	Total All Functions
	1970	\$ 98,592	\$ 15,262	\$11,114	\$16,330	\$ 3,967	\$14,914	\$ 13,514	\$ 97,391	\$ 25,293	\$ 296,377
	1971	150,393	25,525	17,841	19,776	5,547	19,573	22,480	106,621	38,491	406,247
	1972	177,509	31,855	19,714	22,104	5,284	23,529	225,904	119,797	47,206	672,902
	1973	172,255	49,689	23,929	24,305	7,028	31,281	24,414	145,735	64,398	543,034
	1974	184,637	51,887	29,611	27,233	7,925	35,341	30,623	166,376	63,113	596,746
	1975	251,653	65,192	31,101	35,362	12,953	43,669	42,237	194,964	74,762	751,893
	1976	307,800	79,872	39,198	49,764	18,383	54,579	46,995	235,755	89,202	921,548
	1977	358,790	91,736	53,823	81,792	20,430	67,989	54,657	253,121	104,412	1,086,750
	1978	378,816	102,084	64,000	86,046	24,453	70,641	50,168	265,922	106,144	1,148,274
	1979	422,087	118,371	74,585	96,592	28,221	81,189	68,383	249,483	140,443	1,279,354
	% of FY 1979 Expenditures By Function	33.0%	9.3%	5.8%	7.6%	2.2%	6.3%	5.3%	19.5%	11.0%	100.0%

Note: Included in the above figures are State funds awarded to local units of government for the functions indicated. Not included in the above figures are expenditures from trust funds, including retirement funds and the unemployment insurance benefit fund.

Source: Division of Finance, Alaska Department of Administration.

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. E-3.

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TABLE 4.3-23

STATE OF ALASKA
REVENUES BY SOURCE
LAST TEN FISCAL YEARS
(thousands of dollars)

Fiscal Year	Taxes	Licenses & Permits	Intergovernmental Revenue	Charges For Services	Fines & Forfeitures	Miscellaneous Revenue
1970	\$ 76,265	\$10,015	\$ 93,579	\$12,293	\$ 574	\$964,232 ^a
1971	85,546	10,551	133,099	12,165	662	110,142
1972	91,154	10,794	145,874	14,677	708	106,366
1973	98,465	11,420	167,440	19,090	814	80,038
1974	109,401	11,113	173,708	33,399	953	95,250
1975	187,980	24,052	205,297	28,493	3,956	102,803
1976	578,023	16,641	319,908	19,343	3,353	80,566
1977	751,703	17,897	312,210	21,805	2,132	80,794
1978	541,549	19,099	312,794	21,258	2,307	179,224
1979	798,680	19,772	313,373	24,925	2,177	266,652

a/ \$900,041,605 was Oil Lease Sale.

TAX REVENUES BY SOURCE
LAST TEN FISCAL YEARS
(thousands of dollars)

Fiscal Year	Income Tax	Business & License Tax	Fuel Tax	Disaster Tax School Tax	Conservation Tax Oil-Gas Production Tax & Severance Tax	Cigarette Tax	Property Tax	Other Taxes
1970	\$ 37,294	\$14,912	\$10,372	\$2,097	\$ 8,249	\$2,711	\$	\$
1971	41,718	17,909	10,958	1,466	10,527	2,967		
1972	45,724	17,909	11,402	1,493	11,401	3,224		
1973	50,400	18,813	12,404	1,576	12,028	3,224		
1974	57,617	20,353	13,743	1,643	14,760	3,430		
1975	104,320	29,724	25,214	2,151	29,424	3,311	6,480	263
1976	177,328	19,071	24,403	2,637	31,189	4,617	306,429	15,232
1977	246,243	23,252	20,418	2,589	30,189	4,851	409,768	17,426
1978	179,332	21,675	23,287	2,401	116,143	4,627	177,031	19,939
1979	374,731	28,158	22,323	2,530	185,823	4,410	163,448	20,013

Source: Alaska Department of Administration, Division of Finance. (Table first published in **State of Alaska Annual Financial Report Year Ending June 30, 1979.**)

From: Alaska Department of Commerce and Economic Development, Division of Economic Enterprise. June 1980. The Alaska Statistical Review. 1980. Juneau, AK. p. E-4.

TABLE 4.3-24

STATE ANNUAL NONAGRICULTURAL EMPLOYMENT BY SECTOR

	1970		1975		1979	
	<u>Total</u>	<u>%</u>	<u>Total</u>	<u>%</u>	<u>Total</u>	<u>%</u>
<u>TOTAL¹ - Nonagricultural Industries</u>	92,400	100.0	161,689	100.0	166,406	100.0
Mining	3,000	3.2	3,790	2.3	5,773	3.5
Construction	6,900	7.5	25,735	15.9	10,092	6.1
Manufacturing	7,800	8.4	9,639	6.0	12,818	7.7
Transportation - Communication & Utilities	9,100	9.8	16,473	10.2	16,704	10.0
Wholesale Trade	3,200	3.5	5,908	3.7	5,511	3.3
Retail Trade	12,100	13.1	20,300	12.6	23,877	14.3
Finance-Insurance and Real Estate	3,100	3.3	6,030	3.7	8,035	4.8
Services	11,400	12.3	25,136	15.5	28,345	17.0
Federal Government	17,100	18.5	18,288	11.3	17,915	10.8
State and Local Government	18,500	20.0	29,247	18.1	36,617	22.0
Miscellaneous	200	.2	1,143	.7	720	.4

¹ Figures may not total correctly because of averaging.

Source: Alaska Department of Labor. Statistical Quarterly. Juneau, AK.
(various issues)

sector employed an additional 18,000 persons. The sector's share increased slightly over the period to 22 percent of total employment. This trend reflects the increasing role of state and local governments in providing services to residents. As petroleum-based revenues accrue to the State and if these are passed on to state and local governments, then this trend will probably continue.

Total government employment in Alaska accounted for 32.8 percent of total employment. This represents a decline from 1970 when government employed 38.5 percent of the total. Nevertheless, government still accounts for more employment in Alaska than any other sector.

Another discernible trend over the period is the growth in the service and support sectors. The industry share for services rose by 4.7 percent over the period. This was the largest increase in percentage terms of any sector. Transportation, communications, and utilities (TCU); retail trade; and finance, insurance, and real estate (FIRE) all showed increases in industry share. This reflects the "maturation" of the Alaskan economy as it becomes large enough to support these sectors.

Ironically, perhaps, the role of the "producing" sectors which provide the economic base of the State's economy, is not as important in terms of overall direct employment. With the exception of mining, the producing sectors show a decline in industry share of employment during 1970 to 1979.

The impact created by the construction of the trans-Alaska pipeline is evident in figures on

employment. Construction employment almost quadrupled from 1970 to 1975. Wholesale trade as well as construction reached higher levels of employment in 1975 than in 1979. The project employed thousands of construction workers between 1974 and 1977. Wholesale trade employment surged during the same period as large quantities of sand, gravel, and machinery were required. The total employment figures indicate that the state experienced a spurt of growth in employment over the period tabulated between 1970 and 1975 when employment increased by 75 percent to 161,689. In contrast, total employment increased by only 5 percent between 1975 and 1980.

(ii) Baseline Forecast

Alaska's employment was projected by ISER to rise from 214,200 in 1981 to 351,700 in 2000 (Table 4.3-25). This growth will be caused by a moderate rate of development in oil, fisheries, agriculture and timber processing. Manufacturing will grow more slowly, and the capital will not move to Willow. Additionally, State government spending will increase at the rate of growth in real per capita income. (See Section 11.2(a) for further discussion of ISER's assumptions).

Projections for 2001-2005 were made by calculating the average annual rate of change in employment for 1996-2000 and applying this rate to the year 2000 employment estimate to obtain the year 2001 estimate. This same rate was applied to the year 2001 estimate to obtain the year 2002 estimate. This procedure was repeated to obtain estimates for 2003-2005. As Table 4.3-25 shows, employment is projected to be 391,200 in 2005.

TABLE 4.3-25

BASELINE FORECAST OF EMPLOYMENT FOR
THE STATE OF ALASKA, 1981-2005

<u>Year</u>	<u>Baseline Forecast Of Alaska Employment</u>
1981	214,200
1982	223,000
1983	233,500
1984	244,800
1985	268,700
1986	291,000
1987	299,100
1988	298,100
1989	301,100
1990	299,000
1991	303,000
1992	303,700
1993	306,900
1994	311,600
1995	316,200
1996	322,500
1997	329,800
1998	336,100
1999	343,900
2000	351,700
2001	359,000
2002	367,000
2003	374,900
2004	382,900
2005	391,200

Source: Institute of Social and Economic Research, University of Alaska,
September 1981. Moderate Scenario MAP Model Projection.

(d) Income

The average nominal per capita personal income in the state rose from \$4,638 in 1970 to \$10,254 in 1976. The pace of increase has slowed since completion of the pipeline. Per capita income in the state averaged \$11,150 in 1979. After discounting for inflation (as measured by the CPI-U), the real increase in per capita personal income during the period was 27 percent.

5 - OUTCOMES OF THE PROJECT

5.1 - Work Force Manpower Requirements and Timing: Direct, Operations and Indirect/Induced

(a) Manpower Requirements

Table 5.1-1 displays the projected total number and labor classification of on-site construction and operations manpower for Watana and Devil Canyon dams from 1983-2005. For the construction work force, manpower has been divided into the categories of laborers, semi-skilled/skilled, and engineering/administrative. As displayed in Table 5.1-1, the peak construction year occurs in 1990 with an estimated construction work force of 3,498. Table 5.1-2 delineates the staging of the operations work force and distribution between the facilities.

Total secondary or indirect/induced employment to accrue to Impact Area 3 is derived by applying an aggregate employment multiplier to the direct construction work force. Employment multipliers are commonly utilized to estimate the total employment impact upon an area. Such multipliers translate the effect of a change in the number of newly created direct jobs associated with a project into their implications for total jobs created within a region. Indirect jobs are those created in local industries as a result of local project procurement and induced jobs are those created by the consumption expenditures of workers. Relative to construction of the Susitna hydroelectric facility, the multiplier utilized for Impact Area 3 in 1990 is .82, meaning for every 100 direct construction jobs, 82 secondary jobs will be generated. The multiplier increases to .89 in 1999 due to import substitution, time lags in the expenditure of direct construction work force income and

TABLE 5.1-1: ON-SITE CONSTRUCTION AND OPERATIONS MANPOWER REQUIREMENTS, 1983-2005^(a)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CONSTRUCTION																							
LABORERS	140	55	562	843	1279	1693	1897	2369	2202	1723	894	549	338	539	844	1076	1144	1002	507	105			
SEMI-SKILLED/SKILLED	120	139	148	323	355	448	502	627	583	422	220	136	92	148	230	295	312	308	234	24			
ADMINISTRATIVE/ENGINEER.	40	106	390	184	268	359	402	502	467	355	185	115	71	115	176	229	243	187	159	22			
SUB-TOTAL CONSTRUCTION	300	300	1100	1350	1902	2500	2801	3498	3252	2500	1299	800	501	802	1250	1600	1699	1497	900	151			
OPERATIONS AND MAINTENANCE																							
ALL LABOR CATEGORIES											70	145	145	145	145	145	145	145	145	170	170	170	170
TOTAL	300	300	1100	1350	1902	2500	2801	3498	3252	2500	1369	945	646	947	1395	1745	1844	1642	1045	321	170	170	170
(S)05																							

(a) Supplied by Acres American, Inc.

TABLE 5.1-2: OPERATIONS WORK FORCE: 1993-2005

<u>YEAR</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
<u>Activity</u>													
Watana (680 MW)	30	60	60	60	60	60	60	60	60	60	60	60	60
Watana (340 MW)		45	45	45	45	45	45	45	45	45	45	45	45
Devil Canyon (600 MW)										25	25	25	25
Dispatch Control	40	40	40	40	40	40	40	40	40	40	40	40	40
Total	70	145	145	145	145	145	145	145	145	170	170	170	170

Source: Acres American, Inc.

other such factors that reflect a maturing economy. Based on the direct construction employment forecasts outlined above, these multipliers translate into the creation of approximately 2,900 secondary jobs in Impact Area 3 by 1990. Because the construction work force declines, between 1990 and 1999, approximately one-half of these secondary jobs are lost by 1999. The distribution of these jobs among the various Census Divisions is discussed in the next section.

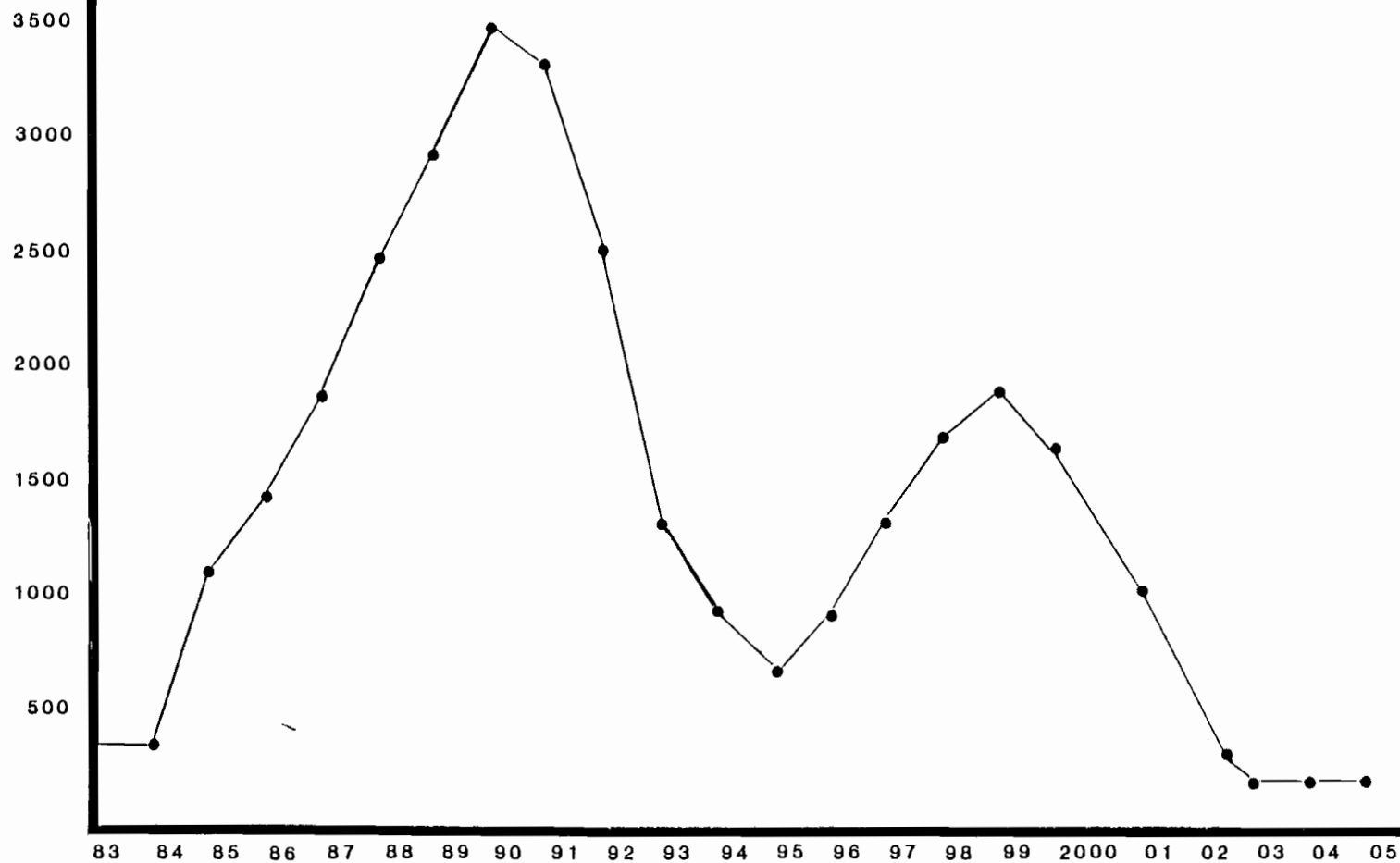
(b) Timing

The Watana dam will be constructed in two phases providing an ultimate generating capacity of 1,020 megawatts (MW). The first installment of 680 MW's will be completed in 1993, at which time operations manpower will total 70 persons. The additional generating capacity will reach completion in the following year, 1994, and will result in a total operations work force of 145. Analysis of construction manpower requirements for the 600 MW Devil Canyon dam is based on construction beginning in 1994, with this facility coming on-line in the year 2002. The total on-site operations work force for both dams will equal 170 during the year 2002 and thereafter. Construction of the Watana and Devil Canyon dam facilities entails an overlap of one year in construction.

As can be seen in Figure 5.1-1, the first phase of the Watana dam requires a significantly greater number of workers than both the second phase of Watana and Devil Canyon combined. This difference can be attributed to the additional labor requirements in the initial years for the construction of the work camps, villages, and access road and to the more labor intensive nature of a gravel fill dam (Watana) than a concrete thin arch dam (Devil Canyon). Dramatic decreases in work force requirements (relative to the preceding years) occur between 1991 and 1996.

5-5

WORK FORCE REQUIREMENTS



ON-SITE CONSTRUCTION AND OPERATIONS WORK FORCE REQUIREMENTS

PREPARED BY TES/FRANK ORTH & ASSOCIATES, INC

Figure 5.1-1



5.2 - Population Influx: Direct, Operations and Indirect/Induced

The level of impact of the proposed Susitna hydroelectric facility on the communities surrounding the project is determined primarily by the degree of population influx which is proportional to the size of the immigrant work force related to direct project employment and subsequent indirect and induced employment. This population increase creates the short-term, peak demand for services that has the most significant impact. The size of the immigrant work force depends on the extent of the primary local labor supply, that is the availability of craft and professional labor currently residing in the area from which the labor force could be drawn (Impact Areas 1, 2 and 3). This section of the report addresses the issue of work force origin, relocation, and population influx associated with direct, operations and indirect/induced work force and is divided into two sections: local availability of work force; and work force immigration and associated population influx.

(a) Local Availability of Work Force

Labor supply is highly idiosyncratic, and the amount of available labor from the immediate labor pool depends upon the projected size and craft mix of the future labor force, labor force participation rates, number of unemployed persons in the region, demands placed upon the labor force from other projects, the match of craft labor available to craft labor required by the Susitna project, and the differing policies and geographic spheres of each craft. In addition, the supply and demand conditions will vary from craft to craft. All of these variables make it difficult to project the number of locally available direct construction, operations, and indirect/induced workers who will become employed on or in relation to the Susitna Hydroelectric Project.

"Local" versus "non-local" labor supply is the common terminology used in literature referring to the origin of a work

force. The use of "local" in this sense is not to be confused with impact area definitions and the "local impact area."

Given that there are no union hiring halls in Mat-Su Borough (Impact Area 2), manual craft labor for the construction and operations work forces will likely be acquired through a combination of both the Anchorage and Fairbanks union hiring halls. Based on this and observations of current construction worker commuting practices in Alaska, the immediate or "local" labor pool is defined as that residing in Impact Area 3 (seven census divisions: Anchorage, Fairbanks, S.E. Fairbanks, Mat-Su Borough, Kenai-Cook Inlet, Valdez, and Seward).

(i) Direct and Operations Work Force

As noted earlier, preliminary estimates of manpower requirements for construction and operations of both the Watana and Devil Canyon dams indicate that there will be a total peak on-site construction work force of 3,498 in 1990. Requirements for operations and maintenance manpower commence in 1993 at 70 workers and increase to 170 in the year 2002 and thereafter.

The local availability of construction labor is analyzed according to the total manpower requirements, which have been divided into the categories of laborers, semi-skilled/ skilled, and engineering/administrative. The percentage of jobs which can be filled by the local available work force varies with each classification. In general, a greater portion of laborers than engineers and administrators will be supplied "locally."

The basic assumptions for the on-site construction work force are displayed in Table 5.2-1. In summary, the

TABLE 5.2-1: ON-SITE CONSTRUCTION WORKFORCE: LOCAL, ALASKA NON-LOCAL, AND OUT-OF-STATE, 1983-2000

LOCAL	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
LABORERS (85Z)	119	47	478	717	1087	1439	1612	2014	1872	1465	760	467	287	458	717	915	972	852	431	89
SEMI-SKILLED/ SKILLED (80Z)	96	112	118	258	284	359	402	502	466	337	176	109	74	118	184	236	250	246	187	19
ADMINISTRATIVE/ ENGINEERING (65Z)	26	69	254	120	174	233	261	326	304	231	120	75	46	75	114	149	158	122	103	14
SUBTOTAL LOCAL	241	227	850	1094	1545	2031	2276	2842	2642	2033	1056	650	407	651	1016	1299	1380	1220	722	122
NON-LOCAL																				
ALASKA NON-LOCAL																				
LABORERS (15Z)	7	3	28	42	64	85	95	118	110	86	45	27	17	27	42	54	57	50	25	5
SEMI-SKILLED/ SKILLED (15Z)	6	7	7	16	18	22	25	31	29	21	11	7	5	7	11	15	16	15	12	1
ADMINISTRATIVE/ ENGINEERING (15Z)	2	5	20	9	13	18	20	25	23	18	9	6	4	6	9	11	12	9	8	1
SUB-TOTAL ALASKA NON-LOCAL	15	15	55	67	95	125	140	175	163	125	65	40	25	40	62	80	85	75	45	7
OUT-OF-STATE																				
LABORERS (10Z)	14	6	56	84	128	169	190	237	220	172	89	55	34	54	84	108	114	100	51	11
SEMI-SKILLED/ SKILLED (15Z)	18	21	22	48	53	67	75	94	87	63	33	20	14	22	34	44	47	46	35	4
ADMINISTRATIVE/ ENGINEERING (30Z)	12	32	117	55	80	108	121	151	140	107	56	35	21	35	53	69	73	56	48	7
SUB-TOTAL OUT-OF-STATE	44	58	195	188	262	344	386	482	448	342	178	110	69	111	172	221	234	202	134	21
TOTAL NON-LOCAL	59	73	250	255	357	469	526	656	610	467	243	150	94	151	234	301	319	277	179	28
TOTAL	300	300	1100	1350	1902	2500	2801	3498	3252	2500	1299	800	501	802	1250	1600	1699	1497	900	151

table shows: 85 percent of laborers will be supplied locally, five percent from other areas of the state, and 10 percent will originate from out-of-state; 80 percent of semi-skilled/skilled workers will be supplied from Impact Area 3, five percent from other areas of the state, and 15 percent from out-of-state; and for the administrative/engineering category, 65 percent will come from Impact Area 3, five percent will come from other areas of the state, and 30 percent will be from out-of-state.

The allocation of the construction work force's residences among the various census divisions and within Mat-Su Borough communities is initially based on a calculation of the total current proportion of workers, by classification and census division, to total construction work force in Impact Area 3. The percentage distributions so derived are then applied to the projected Susitna manpower requirements to determine the likely residence distribution of the work force at the beginning of the project. These percentage distributions are adjusted to reflect proximity to the project site, and the percentages change over time as certain areas become more attractive as places to reside, and work force migration occurs.

Table 5.2-2 displays the residence distribution of the on-site construction work force within Impact Area 3 prior to factoring in immigration and relocation.

(ii) Indirect and Induced Work Force

The determination of the total number of indirect/induced jobs to be created as a result of direct

TABLE 5.2-2: ON-SITE CONSTRUCTION WORK FORCE: PROJECT EMPLOYMENT AND RESIDENCE OF INDIVIDUALS CURRENTLY RESIDING IN IMPACT AREA 3

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	241	227	850	1094	1545	2631	2276	2842	2642	2033	1056	650	407	651	1016	1299	1380	1220	722	122
ANCHORAGE REGION	178	168	627	808	1141	1499	1679	2097	1949	1500	779	480	300	480	750	959	1019	900	532	90
ANCHORAGE	135	127	475	612	864	1135	1272	1588	1477	1136	590	363	228	364	568	726	772	682	403	68
KAT-SU	16	15	58	74	104	137	153	191	178	137	71	44	27	44	68	87	93	82	49	8
KFNAI-COO. INLET	27	25	94	121	172	225	253	315	293	226	117	72	45	72	113	144	153	135	80	14
SEWARD	0	0	2	2	3	4	5	6	5	4	2	1	1	1	2	3	3	2	1	0
FAIRBANKS	57	54	202	260	368	483	542	676	629	484	251	155	97	155	242	309	329	290	172	29
SE FAIRBANKS	0	0	2	2	3	4	5	6	5	4	2	1	1	1	2	3	3	2	1	0
VALDEZ-CHITINA-WHITTIER	5	5	18	23	32	43	48	60	55	43	22	14	9	14	21	27	29	26	15	3
KAT-SU COMMUNITIES																				
PAIMLR	2	2	6	7	10	14	15	19	18	14	7	4	3	4	7	9	9	8	5	1
WASILLA	1	1	5	6	8	11	12	15	14	11	6	4	2	4	5	7	7	7	4	1
HONSTON	0	0	2	2	3	4	5	6	5	4	2	1	1	1	2	3	3	2	1	0
TRAPPER CREEK	0	0	1	1	1	1	2	2	2	1	1	0	0	0	1	1	1	1	1	0
TALECTNA	1	1	2	3	4	5	6	8	7	5	3	2	1	2	3	4	4	3	2	0
OTHER	12	11	42	54	77	101	113	141	131	101	52	32	20	32	50	65	69	61	36	6

construction activity is based on the use of a multiplier as previously discussed, with the results being displayed in Table 5.2-3. Just as with the direct construction work force, it is assumed that a certain percentage of the indirect/induced jobs will be filled by immigrants. The percentage of immigrants relative to the total ranges from zero in Seward to 45 percent in the Mat-Su Borough. For Anchorage, the percentage is approximately 25 percent. Table 5.2-4 outlines the various percentage assumptions for each Census Division in Impact Area 3 and for select communities in the Mat-Su Borough. Applying these assumptions to the total indirect/induced manpower requirements as outlined in Table 5.2-3, results in an estimate of the locally available work force by residence (Table 5.2-5).

The sum of local available direct and indirect/induced employment by residence is displayed in Table 5.2-6. This total is a combination of Tables 5.2-2 and 5.2-5.

(b) Work Force Immigration and Associated Population Influx

As indicated earlier, the amount of work force immigration is directly responsible for the degree of impacts on the various communities in Impact Area 3. Tables 5.2-2 and 5.2-5 in the previous section displayed the numbers and residence of the locally available direct and indirect/induced work force associated with construction of the project. Based on the assumptions of locally available direct on-site construction and indirect/induced work force outlined earlier, estimates can be made of the number of immigrants necessary to fulfill the projected total manpower requirements. Table 5.2-7 displays the results of these assumptions for on-site construction and Table 5.2-8 shows similar information for indirect/ induced

TABLE 5.2-3

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INDIRECT AND INDUCED EMPLOYMENT ASSOCIATED WITH THE CONSTRUCTION WORK FORCE

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	215	204	806	1035	1451	2048	2295	2865	2752	2117	1101	678	426	679	1114	1424	1513	1381	819	141
ANCHORAGE REGION	183	173	693	890	1260	1798	2015	2516	2366	1820	946	582	365	583	964	1234	1310	1170	694	118
ANCHORAGE	153	145	590	758	992	1410	1579	1970	1832	1411	736	456	288	457	763	974	1034	914	544	98
MAT-SU	18	18	64	82	205	304	342	428	398	304	155	93	56	93	149	193	205	180	105	13
KENAI-COOK INLET	11	10	38	49	63	83	93	116	135	104	54	33	21	33	52	66	70	74	44	7
SEWARD	0	0	1	1	1	1	1	2	2	1	1	0	0	0	1	1	1	1	1	0
FAIRBANKS	31	29	108	138	180	236	265	330	368	284	148	92	58	92	142	182	193	199	119	21
SE FAIRBANKS	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	1	1	1	0	0
VALDEZ-CHITINA-WHITTIER	2	1	5	7	10	13	14	18	17	13	7	4	3	4	6	8	9	10	6	1
MAT-SU COMMUNITIES																				
PALMER	2	1	5	7	13	20	22	27	25	20	10	6	4	6	10	12	13	12	7	1
WASILLA	1	1	5	6	13	19	21	27	25	19	10	6	4	6	9	12	13	11	7	1
HOUSTON	1	1	2	3	7	11	12	15	14	11	6	3	2	3	5	7	7	6	4	0
TRAPPER CREEK	1	2	5	6	31	47	52	66	61	47	24	14	8	14	23	29	31	27	16	1
TALKEETNA	2	2	6	8	34	50	57	71	66	50	25	15	9	15	24	32	34	30	17	2
OTHER	12	11	41	52	106	158	177	222	206	158	81	49	30	49	78	100	107	94	55	7

(23)05

TABLE 5.2-4
PERCENTAGE OF JOBS FILLED
BY IMMIGRANTS: INDIRECT/INDUCED EMPLOYMENT

<u>Census Division</u>	<u>Percentage</u>
Anchorage	25%
Mat-Su	45%
Kenai-Cook Inlet	15%
Seward	0%
Fairbanks	15%
S.E. Fairbanks	0%
Valdez	5%

TABLE 5.2-5

LOCAL INDIRECT AND INDUCED EMPLOYMENT ASSOCIATED WITH THE CONSTRUCTION WORK FORCE

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	167	158	625	802	1119	1578	1768	2207	2127	1637	851	524	329	525	860	1099	1168	1069	634	109
ANCHORAGE REGION	140	133	529	680	959	1367	1532	1913	1801	1386	720	444	278	444	734	939	997	892	529	90
ANCHORAGE	115	109	442	569	744	1058	1184	1478	1374	1058	552	342	216	342	572	731	776	686	408	74
MAT-SU	15	15	54	68	160	238	268	335	311	238	122	73	44	73	117	151	161	141	83	10
KENAI-COOK INLET	9	9	33	42	54	70	79	99	115	88	46	28	17	28	44	56	60	63	37	6
SEWARD	0	0	1	1	1	1	1	2	2	1	1	0	0	0	1	1	1	1	1	0
FAIRBANKS	26	25	92	118	153	201	225	281	313	241	126	78	49	78	121	155	164	169	101	18
SE FAIRBANKS	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0
VALDEZ-CHITINA-WHITTIER	1	1	4	5	7	9	10	13	12	9	5	3	2	3	4	6	6	7	4	1
MAT-SU COMMUNITIES																				
PALMER	1	1	5	6	12	18	20	25	23	18	9	5	3	5	9	11	12	10	6	1
WASILLA	1	1	4	5	11	17	19	24	22	17	9	5	3	5	8	11	12	10	6	1
HOUSTON	1	1	2	2	7	10	11	14	13	10	5	3	2	3	5	6	7	6	3	0
TRAPPER CREEK	0	0	2	2	9	14	16	20	18	14	7	4	2	4	7	9	9	8	5	0
TALKEETNA	1	1	5	6	25	38	42	53	49	38	19	11	7	11	18	24	25	22	13	1
OTHER	10	10	37	47	96	142	159	200	185	142	73	44	27	44	70	90	96	85	50	7

(19)06

TABLE 5.2-6: TOTAL LOCAL IMPACT AREA 3 EMPLOYMENT: ON-SITE CONSTRUCTION, INDIRECT AND INDUCED

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	408	386	1475	1897	2564	3609	4043	5049	4768	3669	1907	1175	736	1176	1875	2399	2548	2288	1356	232
ANCHORAGE REGION	318	300	1156	1487	2099	2866	3212	4010	3751	2886	1499	923	579	925	1483	1897	2016	1792	1061	181
ANCHORAGE	250	236	917	1180	1608	2193	2456	3066	2851	2194	1142	705	444	706	1140	1457	1547	1368	812	142
MAT-SU	32	30	111	142	264	375	421	526	489	375	193	117	72	117	185	239	254	224	131	18
LENAI-COOK INLET	36	34	127	163	225	296	332	414	408	314	163	100	63	100	157	200	213	199	117	20
SEWARD	1	1	2	3	4	5	6	7	7	5	3	2	1	2	3	3	4	3	2	0
FAIRBANKS	83	79	294	378	521	684	766	957	942	725	377	233	146	233	363	464	493	460	273	47
SE FAIRBANKS	1	1	2	3	4	5	5	7	6	5	2	2	1	2	2	3	3	3	2	0
VALDEZ-CHITINA-WHITTIER	6	6	22	28	39	52	58	72	67	52	27	17	10	17	26	33	35	33	19	3
MAT-SU COMMUNITIES																				
PAI MEK	3	3	10	13	22	31	35	44	41	31	16	10	6	10	15	20	21	19	11	2
MASILLA	2	2	9	11	20	28	31	39	37	28	14	9	5	9	14	18	19	17	10	1
HOUSTON	1	1	4	5	10	14	16	20	18	14	7	4	3	4	7	9	9	8	5	1
TKAFPER CREEK	1	1	2	3	10	15	17	22	20	15	8	5	3	5	7	10	10	9	5	0
TALVEETNA	2	2	7	9	29	43	49	61	57	43	22	13	8	13	21	27	29	26	15	2
OTHER	22	21	79	101	172	243	272	341	317	243	125	76	47	77	120	155	165	145	85	13

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employment. Table 5.2-7 displays some outmigration from certain Census Divisions which is in response to workers choosing to relocate within Impact Area 3 to areas closer to the project site.

Table 5.2-9 shows the total immigration to Impact Area 3 and various Census Divisions and communities as a result of direct and indirect/induced employment. Immigration into Impact Area 3 at the peak of construction activity will represent 13 percent of the total direct construction, indirect and induced work force of 6,365. When considering only direct on-site construction work force at the peak (3,500 in 1990) the percentage of immigrants to total is even lower, representing approximately 5 percent. This low percentage of immigration of on-site construction workers is directly related to the availability of local labor, the remote location of the dam sites and the provision of temporary camp and family village facilities.

During the peak of construction activities, 828 immigrant employees, associated with direct, indirect and induced employment, will be living in Impact Area 3. Of this total, 170 workers are related to direct on-site construction employment. About 50 percent of the immigrant employees whose employment on the project is completed after 1990 are expected to remain in the area. After construction activity peaks at the Watana site in 1990, immigration subsides until 1997-2000 at which time construction activity peaks at the Devil Canyon site.

As construction activity is completed in the year 2002, approximately 12 percent of immigrants to Impact Area 3 are expected to remain. For the Mat-Su Borough, the figure is much higher with approximately 60 percent of the immigrants remaining. The majority of the immigration to the Borough consists of workers originating from Anchorage, Kenai-Cook Inlet and Fairbanks

TABLE 5.297: ON-SITE CONSTRUCTION WORK FORCE: IMMIGRATION AND PLACE OF RELOCATION IN IMPACT AREA 3

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL IMPACT AREA 3	16	16	54	67	93	122	137	170	158	140	111	98	91	91	91	100	102	98	84	65
ANCHORAGE REGION	12	12	41	51	99	131	147	184	175	160	137	128	122	122	122	129	131	127	116	101
ANCHORAGE	5	5	17	20	-37	-51	-57	-73	-76	-80	-86	-89	-91	-91	-91	-89	-88	-89	-92	-97
MAI-SU	7	7	23	29	152	202	227	285	279	269	253	247	243	243	243	248	249	246	239	229
KENAI-COOK INLET	0	0	1	2	-14	-18	-20	-25	-26	-26	-27	-28	-28	-28	-28	-28	-28	-28	-28	-29
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	4	4	13	16	-8	-11	-12	-16	-19	-23	-29	-31	-33	-33	-33	-31	-30	-32	-34	-39
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WITTIER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAI-SU COMMUNITIES																				
PALMER	0	0	1	1	6	8	9	11	11	11	10	10	10	10	10	10	10	10	10	9
WASILLA	0	0	1	1	8	10	11	14	14	13	13	12	12	12	12	12	12	12	12	11
HOUSTON	0	0	1	1	6	8	9	11	11	11	10	10	10	10	10	10	10	10	10	9
TRAPPER CREEK	2	2	6	7	38	50	57	71	70	67	63	62	61	61	61	62	62	62	60	57
TALYEETNA	2	2	6	7	38	50	57	71	70	67	63	62	61	61	61	62	62	62	60	57
OTHER	2	3	9	11	56	75	84	105	103	99	94	91	90	90	90	92	92	91	88	85

(23)02

TABLE 5.2-8

	IMMIGRANT INDIRECT AND INDUCED EMPLOYMENT ASSOCIATED WITH THE CONSTRUCTION WORK FORCE																			
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	48	46	181	233	332	470	527	658	625	481	250	154	96	154	254	325	345	312	185	31
ANCHORAGE REGION	43	41	164	210	302	431	483	603	565	434	226	139	87	139	231	295	313	279	165	28
ANCHORAGE	38	36	147	190	248	353	395	493	458	353	184	114	72	114	191	244	259	229	136	25
MAT-SU	3	3	10	13	44	66	74	93	86	66	33	20	12	20	32	42	44	39	23	2
KENAI-COOK INLET	2	2	6	7	9	12	14	17	20	16	8	5	3	5	8	10	11	11	7	1
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	5	4	16	21	27	35	40	50	55	43	22	14	9	14	21	27	29	30	18	3
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	0	0	2	2	3	4	4	5	5	4	2	1	1	1	2	2	3	3	2	0
MAT-SU COMMUNITIES																				
PALMER	0	0	1	1	1	2	2	3	3	2	1	1	0	1	1	1	1	1	1	0
WASILLA	0	0	0	1	1	2	2	3	2	2	1	1	0	1	1	1	1	1	1	0
HOUSTON	0	0	0	0	1	1	1	2	1	1	1	0	0	0	1	1	1	1	0	0
TRAPPER CREEK	1	1	4	4	22	33	37	46	43	33	16	10	6	10	16	21	22	19	11	1
TALKEETNA	0	0	2	2	8	13	14	18	16	13	6	4	2	4	6	8	8	7	4	0
OTHER	1	1	4	5	11	16	18	22	21	16	8	5	3	5	8	10	11	9	6	1

(23)05

TABLE 5.2-9: TOTAL IMMIGRATION INTO IMPACT AREA 3: ON-SITE CONSTRUCTION, INDIRECT AND INDUCED

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	64	62	236	300	425	592	664	828	783	621	361	252	188	245	345	425	448	409	269	96
ANCHORAGE REGION	55	53	205	261	401	562	630	787	739	594	363	267	209	261	353	424	444	406	281	129
ANCHORAGE	43	41	164	210	211	302	337	419	382	273	98	25	-19	24	100	155	170	139	44	-72
MAT-SU	10	10	34	42	196	268	301	378	365	335	287	267	255	263	275	289	293	285	262	231
YENAI-COOK INLET	2	2	7	9	-5	-6	-6	-8	-6	-11	-19	-23	-25	-23	-20	-18	-17	-17	-22	28
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	8	8	30	37	19	25	27	33	37	20	-7	-18	-24	-19	-11	-4	-2	-2	-17	-35
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	0	0	2	2	3	4	4	5	5	4	2	1	1	1	2	2	3	3	2	0
MAT-SU COMMUNITIES																				
PALMER	0	0	1	2	7	10	11	14	14	13	11	10	10	10	11	11	11	11	10	9
MASILLA	0	0	2	2	9	12	13	17	16	15	14	13	13	13	13	14	14	13	13	12
HOUSTON	0	0	1	1	7	9	10	13	13	12	11	10	10	10	10	11	11	11	10	9
TRAPPER CREEK	3	3	9	12	60	83	93	117	112	100	80	71	67	71	77	82	84	81	71	58
TALIEETNA	2	2	7	9	46	63	71	89	86	80	70	65	63	65	67	70	71	69	64	58
OTHER	4	4	13	16	67	90	102	128	124	115	102	96	93	95	98	102	103	101	94	85

(30)02

Census Divisions; it is assumed that 100 percent of these individuals who move to the Borough will remain even after their work on the project is completed. When considering Impact Area 3 in its entirety, the percentage of workers that remain is much smaller, since Alaska non-local and out-of-state workers make up a large percentage of the total. It is assumed that the majority of these workers will not remain in the area after their work on the project is completed. Consequently only 12 percent of total immigrants to Impact Area 3 remain after 2002.

Within the Mat-Su Borough, the settlement of immigrants is expected to contrast sharply from the settlement patterns of the existing population. Accordingly, immigrants will establish residence in the communities of Talkeetna and Trapper Creek with greater frequency. A great deal of settlement will also occur in "other" areas of the Borough, which corresponds to the areas outside of designated cities or communities, such as Montana Creek, Caswell and Willow. At the peak of construction activity, approximately 89 on-site construction, indirect and induced workers will immigrate to Talkeetna, 117 to Trapper Creek, and 128 to other areas of the Borough (Table 5.2-9).

Table 5.2-10 contains data on the total population influx into Impact Area 3, by Census Division and for selected Mat-Su Borough Communities, precipitated by direct, indirect and induced employment. These projections are based on assumptions that, for the direct construction work force, 95 percent of immigrants will be accompanied by dependents and that an average of 2.11 dependents will come with each immigrant worker who is accompanied (Table 5.2-11). For the indirect and induced work force, the Alaska State average number of persons per household figure was used to calculate population influx (Table 5.2-12). Total population influx into Impact Area 3 during the peak period (1990) equals 2,324. Of the total population influx

TABLE 5.2-10

TOTAL POPULATION INFUX INTO IMPACT AREA 3; DIRECT, INDIRECT AND INDUCED

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
IMPACT AREA 3	182	178	672	852	1203	1671	1867	2324	2191	1735	1014	714	535	690	957	1170	1228	1122	743	278	179	179	179
ANCHORAGE REGION	157	152	583	739	1139	1589	1777	2214	2075	1669	1027	761	602	742	986	1177	1229	1122	788	378	297	297	297
ANCHORAGE	122	117	463	590	578	826	919	1137	1030	725	242	42	-77	35	240	385	425	339	84	-225	-292	-292	-292
MAT-SU	28	29	99	123	580	789	886	1112	1074	988	852	796	763	784	817	856	866	844	778	694	676	676	676
KENAI COOK INLET	6	6	21	26	-16	-20	-23	-28	-22	-37	-60	-70	-76	-71	-64	-57	-55	-54	-68	-85	-87	-87	-87
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	24	24	85	107	52	66	72	88	96	49	-26	-57	-75	-62	-41	-20	-14	-15	-56	-107	-117	-117	-117
SE FAIRBANKS	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	1	1	5	6	8	11	12	15	14	11	5	3	2	3	5	7	7	8	5	1	0	0	0
MAT-SU COMMUNITIES																							
PALMER	1	1	4	5	22	30	33	42	40	38	33	31	30	31	32	33	33	33	31	28	27	27	27
WASILLA	1	1	5	6	26	36	40	50	49	46	41	39	37	38	39	40	41	40	38	35	34	34	34
HOUSTON	1	1	3	4	20	27	31	38	37	35	32	31	30	30	31	32	32	31	30	28	27	27	27
TRAPPER CREEK	8	8	27	34	175	242	272	341	327	291	235	212	198	209	225	241	245	236	209	175	169	169	169
TALKEETNA	6	7	22	27	138	186	209	263	254	236	208	196	189	193	199	207	210	205	191	173	169	169	169
OTHER	11	11	37	46	199	268	301	378	366	342	304	288	278	284	291	302	305	299	280	257	250	250	250

(23)06

TABLE 5.2-11

TOTAL POPULATION INFLUX INTO IMPACT AREA 3 ASSOCIATED WITH THE DIRECT CONSTRUCTION WORKFORCE

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TOTAL IMPACT AREA 3	47	49	163	201	279	366	410	511	476	420	333	296	274	274	274	301	308	293	251	194	179	179	179
ANCHORAGE REGION	36	38	124	152	299	394	442	553	525	481	413	384	367	367	367	388	393	382	348	303	297	297	297
ANCHORAGE	14	15	50	60	-112	-152	-172	-219	-227	-240	-259	-267	-272	-272	-272	-266	-265	-268	-277	-290	-292	-292	-292
MAT-SU	20	21	70	86	457	606	681	856	837	807	761	742	731	731	731	744	748	740	718	688	676	676	676
KENAI COOK INLET	1	1	4	6	-42	-55	-61	-76	-77	-79	-82	-84	-85	-85	-85	-84	-83	-84	-85	-87	-87	-87	-87
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	11	12	40	49	-23	-33	-37	-48	-56	-68	-86	-94	-99	-99	-99	-93	-92	-95	-104	-116	-117	-117	-117
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAT-SU COMMUNITIES																							
PALMER	1	1	3	3	18	24	27	34	33	32	30	30	29	29	29	30	30	30	29	28	0	27	27
WASILLA	1	1	3	4	23	30	34	43	42	40	38	37	37	37	37	37	37	37	36	34	34	34	34
HOUSTON	1	1	3	3	18	24	27	34	33	32	30	30	29	29	29	30	30	30	29	28	27	27	27
TRAPPER CREEK	5	5	17	22	114	152	170	214	209	202	190	185	183	183	183	186	187	185	180	172	169	169	169
JALYEEINA	5	5	17	22	114	152	170	214	209	202	190	185	183	183	183	186	187	185	180	172	169	169	169
OTHER	7	8	26	32	169	224	252	317	310	299	282	274	270	270	270	275	277	274	266	255	250	250	250

NOTE: THIS TABLE ASSUMES THAT 951 OF IMMIGRANTS ARE ACCOMPANIED BY DEPENDENTS.

(23)02

TABLE 5.2-12

255255	POPULATION INFLUX ASSOCIATED WITH THE INDIRECT AND INDUCED WORK FORCE																			
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
IMPACT AREA 3	136	128	509	651	924	1305	1457	1813	1715	1315	681	418	261	415	682	870	920	829	492	84
ANCHORAGE REGION	121	115	459	587	840	1195	1335	1661	1550	1188	615	377	235	375	619	790	836	741	439	74
ANCHORAGE	108	102	413	529	690	978	1091	1357	1257	965	502	309	195	308	512	652	690	607	362	65
NAT-SU	8	8	29	37	123	183	205	256	237	180	91	54	32	54	86	111	118	104	60	6
KENAI-COOK INLET	5	4	16	21	26	34	39	48	56	43	22	13	8	13	21	27	28	30	17	3
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	13	12	45	58	75	98	110	136	152	116	60	37	23	37	57	73	77	79	47	8
SE FAIRBANKS	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	1	1	5	6	8	11	12	15	14	11	5	3	2	3	5	7	7	8	5	1
NAT-SU COMMUNITIES																				
PALMER	0	0	1	2	4	5	6	8	7	5	3	2	1	2	3	3	4	3	2	0
WASILLA	0	0	1	2	4	5	6	7	7	5	3	2	1	2	3	3	3	3	2	0
HOUSTON	0	0	1	1	2	3	3	4	4	3	2	1	1	1	1	2	2	2	1	0
TRAPPER CREEK	3	3	10	12	61	91	102	127	117	89	45	26	15	26	42	55	58	51	30	3
TALKEETNA	1	1	5	6	23	35	39	49	45	34	17	10	6	10	16	21	22	20	11	1
OTHER	3	3	11	15	30	44	49	61	57	43	22	13	8	13	21	27	28	25	15	2

(23)05

associated with direct, indirect and induced employment in 1990, 2,214 or 95 percent, will relocate to the Anchorage Region. The remainder is expected to relocate to the Fairbanks-North Star Borough, especially to the City of Fairbanks, and to the Valdez-Chitina-Whittier Census Division.

Within the Anchorage Region, it is projected that Kenai-Cook Inlet, Anchorage, and Fairbanks will experience a slight net outmigration of population during various stages of construction activity as project-induced outmigration to the Mat-Su Borough exceeds project-induced immigration from other areas. The total project-induced net outmigration from these areas increases as the project ends. This is as a result of a portion of the immigrant workers and their families returning to other areas of Alaska and to out-of-state locations.

During the peak construction period at Watana (1990), the total project-induced population increase to the Mat-Su Borough totals 1,112, which accounts for 48 percent of the total project-induced population influx to Impact Area 3. Of this total, 694 are expected to remain in the Borough at the end of construction in 2002.

In 1990, Talkeetna, Trapper Creek and "other" areas of the Borough experience 89 percent of the total population influx to the Mat-Su Borough: Trapper Creek 31 percent; Talkeetna 24 percent and; "other" areas 34 percent. These projections represent considerable population increases relative to the baseline forecasts for each of these areas. Conversely, Palmer, Wasilla and Houston will experience only moderate increases in population. At the conclusion of the project, total permanent increases to Trapper Creek, Talkeetna and "other" equal 175, 173 and 257 respectively.

TABLE 5.2-13

(a)

TOTAL SCHOOL-AGE CHILDREN ACCOMPANYING IMMIGRANT WORKERS: ON-SITE CONSTRUCTION, INDIRECT AND INDUCED

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TOTAL IMPACT AREA 3	44	43	160	203	286	400	449	562	533	426	253	181	138	176	242	297	313	287	191	74	52	52	52
ANCHORAGE REGION	37	36	138	175	273	382	430	538	507	412	259	195	157	191	252	300	315	289	205	101	83	83	83
ANCHORAGE	29	27	108	137	127	183	206	257	234	163	49	2	-27	1	52	89	99	79	15	-63	-83	-83	-83
MAT-SU	7	8	26	32	152	207	233	292	283	262	229	215	206	212	220	230	233	227	210	189	176	176	176
KENAI COOK INLET	1	1	5	6	-5	-7	-8	-10	-8	-12	-17	-20	-21	-20	-18	-16	-16	-15	-19	-23	-25	-25	-25
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	6	6	21	27	11	14	15	19	20	9	-9	-17	-21	-18	-13	-7	-6	-6	-16	-29	-34	-34	-34
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	0	0	1	1	2	2	3	3	3	2	1	1	1	1	1	2	2	2	1	0	0	0	0
MAT-SU COMMUNITIES																							
PALMER	0	0	1	1	6	8	9	11	11	10	9	8	8	8	9	9	9	9	8	8	7	7	7
WASILLA	0	0	1	2	7	9	11	13	13	12	11	10	10	10	11	11	11	11	10	9	8	8	8
HOUSTON	0	0	1	1	5	7	8	10	10	9	9	8	8	8	8	9	9	8	8	7	7	7	7
TRAPPER CREEK	2	2	7	9	45	62	70	88	85	76	62	57	53	56	60	64	65	63	56	47	44	44	44
TALKEETNA	2	2	6	7	36	49	55	70	68	63	56	53	51	52	54	56	56	55	52	47	44	44	44
OTHER	3	3	10	12	53	71	80	100	97	91	82	78	75	77	79	82	82	81	76	70	66	66	66

(30)03

(a) Calculated by applying a ratio of .86 school age children per accompanied immigrant worker to the number of accompanied immigrants; these data assume that 95 percent of immigrant workers are accompanied.

TABLE 5.2-14

(a)

TOTAL PRIMARY SCHOOL-AGE CHILDREN ACCOMPANYING IMMIGRANT WORKERS INTO IMPACT AREA 3: ON-SITE CONSTRUCTION, INDIRECT AND INDUCED

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TOTAL IMPACT AREA 3	24	23	87	110	155	216	243	304	289	231	137	98	75	95	131	161	169	155	104	40	28	28	28
ANCHORAGE REGION	20	20	75	95	148	207	233	292	275	223	140	106	85	104	137	163	171	157	111	55	45	45	45
ANCHORAGE	15	15	58	74	68	99	111	138	126	88	26	0	-15	0	27	47	53	42	8	-34	-45	-45	-45
MAT-SU	4	4	14	17	83	113	127	159	154	143	125	117	113	116	120	125	127	124	115	103	96	96	96
KENAI COOK INLET	1	1	3	3	-3	-4	-4	-5	-4	-6	-9	-11	-11	-11	-10	-9	-9	-8	-10	-13	-14	-14	-14
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	3	3	12	14	6	7	8	10	11	5	-5	-9	-12	-10	-7	-4	-3	-3	-9	-16	-19	-19	-19
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	0	0	1	1	1	1	1	2	2	1	1	0	0	0	1	1	1	1	1	0	0	0	0
MAT-SU COMMUNITIES																							
PALMER	0	0	1	1	3	4	5	6	6	5	5	5	4	5	5	5	5	5	5	4	4	4	4
WASILLA	0	0	1	1	4	5	6	7	7	7	6	6	6	6	6	6	6	6	6	5	4	4	4
HOUSTON	0	0	0	1	3	4	4	6	5	5	5	5	4	4	5	5	5	5	4	4	4	4	4
TRAPPER CREEK	1	1	4	5	24	34	38	48	46	41	34	31	29	31	33	35	36	34	31	26	24	24	24
TALKEETNA	1	1	3	4	20	27	30	38	37	34	31	29	28	28	29	30	31	30	28	26	24	24	24
OTHER	2	2	5	7	29	39	44	55	53	50	45	43	41	42	43	45	45	44	41	38	36	36	36

(30)03

(a) Calculated by applying a ratio of .47 primary school-age children per accompanied worker to the number of accompanied immigrants; these data assume 95 percent of immigrant workers are accompanied.

TABLE 5.2-15

(a)

TOTAL SECONDARY SCHOOL-AGE CHILDREN ACCOMPANYING IMMIGRANT WORKERS INTO IMPACT AREA 3: ON-SITE CONSTRUCTION, INDIRECT AND INDUCED

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
TOTAL IMPACT AREA 3	20	20	74	93	131	183	206	258	244	195	116	83	63	80	111	136	143	131	87	34	24	24	24
ANCHORAGE REGION	17	17	63	80	125	175	197	247	232	189	118	89	71	87	115	138	144	132	93	46	38	38	38
ANCHORAGE	13	13	49	63	59	85	95	119	108	76	23	1	-12	1	24	41	46	37	7	-28	-38	-38	-38
MAT-SU	3	3	12	14	69	94	106	133	129	119	104	97	94	96	100	104	106	103	95	86	80	80	80
KENAI COOK INLET	1	1	2	3	-2	-3	-3	-4	-4	-5	-8	-9	-9	-9	-8	-7	-7	-7	-9	-10	-11	-11	-11
SEWARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	3	3	10	12	5	6	7	9	10	4	-4	-7	-10	-8	-6	-3	-2	-3	-7	-13	-15	-15	-15
SE FAIRBANKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VALDEZ-CHITINA-WHITTIER	0	0	0	1	1	1	1	2	1	1	1	0	0	0	1	1	1	1	1	0	0	0	0
MAT-SU COMMUNITIES																							
PALMER	0	0	0	1	3	4	4	5	5	5	4	4	4	4	4	4	4	4	4	3	3	3	3
WASILLA	0	0	1	1	3	4	5	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4
HOUSTON	0	0	0	1	2	3	4	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3
TRAPPER CREEK	1	1	3	4	20	28	32	40	39	35	28	26	24	25	27	29	30	29	26	22	20	20	20
TALKEETNA	1	1	3	3	17	22	25	32	31	29	25	24	23	24	24	25	26	25	23	21	20	20	20
OTHER	1	1	4	5	24	32	36	46	44	42	37	35	34	35	36	37	37	37	34	32	30	30	30

130105

(a) Calculated by applying a ratio of .39 secondary school-age children per accompanied worker to the number of accompanied immigrants; these data assume 95 percent of immigrant workers are accompanied.

The number of school age children accompanying immigrant direct, indirect and induced workers into Impact Area 3 will total 562 by 1990, the peak year of construction. Of this total, 304 will be primary school age and 258 will be of secondary school age. Tables 5.2-13, 5.2-14 and 5.2-15 display data on the projected timing and geographic distribution of school age children accompanying immigrant workers. The calculation of the number of school-age children accompanying indirect and induced work force was derived from Mat-Su Borough Planning standards, and for the direct work force, historical construction work force data was used.

5.3 - Income: Direct On-Site Construction and Operations and Indirect/Induced Employment

(a) Direct and Operations Work Force

Total payroll is an important consideration in that it defines the parameters of monetary impacts resulting from direct on-site construction and operations work force expenditures. Based on the on-site construction and operations requirements outlined in Section 5.1, the total yearly project payroll from 1983-2005 was derived and is displayed in Table 5.3-1. These totals were derived by matching wage figures to the respective trades, assuming that for construction workers there are 1,825 worker hours in the year (54 hours per week and an average of 29 weeks per year) and for the operations work force there are 2,496 working hours in the year (48 hours per week and 52 weeks per year). The payroll in 1990, the peak year, totals \$97.8 million.

Tables 5.3-2 and 5.3-3 display estimates of construction and operations work force spending patterns in the various Census Divisions of Impact Area 3. Using the total construction and

TABLE 5.3-1

TOTAL PAYROLL FOR ON-SITE CONSTRUCTION AND OPERATIONS MANPOWER, 1983-2005
(IN THOUSANDS OF DOLLARS)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CONSTRUCTION (a)																							
LABORERS	3895	1258	16847	25323	38319	50739	56863	70984	65985	51529	26806	16543	10186	16141	25433	32211	34255	29892	14950	3114			
SEMI-SKILLED/ SKILLED	2607	3468	3671	9162	9441	11750	13169	16440	15282	10643	5475	3389	2383	3871	5952	7725	8188	8182	6438	574			
ADMINISTRATIVE/ ENGINEER	940	2342	8159	3810	5555	7436	8334	10404	9671	7362	3842	2378	1465	2374	3655	4737	5038	3946	3289	492			
SUBTOTAL CONSTRUCTION	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	36123	22310	14034	22386	35040	44673	47482	42020	24677	4180			
OPERATIONS (b)																							
ALL LABOR CATEGORIES											2684	5559	5559	5559	5559	5559	5559	5559	5559	6517	6517	6517	6517
TOTAL PAYROLL (7)02	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	38807	27869	19593	27945	40599	50232	53041	47579	30236	10697	6517	6517	6517

(a) Based on 1,825 working hours in the year.

(b) Based on 2,496 working hours in the year.

TABLE 5.3-2: TOTAL ON-SITE CONSTRUCTION WORK FORCE PAYROLL EXPENDITURE PATTERN^(a)
(IN THOUSANDS OF DOLLARS)

PLACE OF EXPENDITURE	YEARS																			
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL PAYROLL ^(b)	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	36123	22310	14034	22386	35040	44673	47482	42020	24677	4180
EXPENDABLE INCOME ^(c)	4149	3886	15760	21385	29757	39020	43729	54589	50746	38803	20157	12457	7838	12499	19553	25583	27789	26109	15517	2603
IMPACT AREA 3	3658	3282	13452	18946	26383	34588	38763	48390	44982	34417	17877	11046	6949	11079	17337	22750	24779	23495	13854	2339
ANCHORAGE REGION	2796	2509	10282	14480	20548	26947	30202	37709	35052	26815	13916	8588	5394	8613	13494	17715	19296	18293	10771	1793
ANCHORAGE	2045	1833	7525	10596	14104	18475	20698	25825	24010	18185	9576	5938	3756	5955	9289	12169	13250	12565	7429	1308
KAT-SUE REGION	433	399	1607	2228	4353	5728	6428	8042	7471	5696	2924	1778	1092	1784	2833	3741	4078	3856	2251	307
KENAI-COOK INLET	313	272	1130	1627	2051	2692	3017	3768	3502	2681	1389	856	536	858	1346	1770	1931	1836	1070	177
SEWARD	6	5	20	29	40	53	59	74	69	53	27	17	11	17	26	35	38	36	21	4
FAIRBANKS	796	716	2930	4119	5352	7008	7851	9794	9106	6971	3633	2255	1429	2262	3526	4618	5028	4769	2829	501
SE FAIRBANKS	5	4	18	25	36	47	52	65	61	46	24	15	9	15	23	31	33	32	19	3
VALDEZ-CHITINA-WHITTIER	62	54	223	321	447	587	657	821	763	584	303	187	118	188	294	386	421	401	235	40

(a) Table shows total expenditures by construction work force in Impact Area 3.

(b) Total construction payroll, all labor categories.

(c) Gross payroll minus 30 percent for taxes (federal, F.I.C.A., and unemployment/workman's compensation with self and one dependent) minus 10 percent for net income saved.

TABLE 5.3-3: TOTAL OPERATIONS WORK FORCE PAYROLL EXPENDITURE PATTERN^(a)
In Thousands of Dollars

Place of Expenditure ^(b)	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Total Payroll ^(c)	2,684	5,559	5,559	5,559	5,559	5,559	5,559	5,559	5,559	6,517	6,517	6,517	6,517
Expendable Income ^(d)	1,691	3,502	3,502	3,502	3,502	3,502	3,502	3,502	3,502	4,106	4,106	4,106	4,106
Village	1,015	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,464	2,464	2,464	2,464
Anchorage	338	700	700	700	700	700	700	700	700	821	821	821	821
Fairbanks	85	175	175	175	175	175	175	175	175	205	205	205	205
Mat-Su	253	526	526	526	526	526	526	526	526	616	616	616	616

(a) Table shows total expenditures by operations work force in selected areas.

(b) Assumed that 60 percent of payroll to be spent at Village; 15 percent in the Mat-Su Borough; 20 percent in Anchorage; and 5 percent in Fairbanks.

(c) Total Operations Payroll.

(d) Gross payroll minus 30 percent for taxes (federal, FICA, and unemployment/workman's compensation with self and one dependent) minus 10 percent for net income saved.

operations payroll figures calculated above, taxes and savings were subtracted and estimates were made concerning the amounts of income that would be spent in different areas of Impact Area 3. The methodology for determining spending patterns is built upon the basic premise that place of residence is the primary factor determining where income is spent.

Tables 5.3-4 and 5.3-5 are estimates of construction work force spending patterns in the various Census Divisions and out-of-state. These tables are a primary source of input for determining work force expenditure patterns. As displayed in the tables, workers residing in all Census Divisions spend at least 5 percent of their income in the Mat-Su Borough, and the greatest percentage is spent in the Census Division in which they reside. More so than any other Census Division, Mat-Su residents tend to spend a greater percentage of total expendable income out of the Census Division. This is due to the Borough's close proximity to a major urban area (Anchorage) and the existing close business and economic ties. A similar phenomenon is observable in the S.E. Fairbanks spending pattern due to proximity to Fairbanks and dependence on services.

Table 5.3-5 reflects assumptions regarding spending patterns by Alaska non-Impact Area 3 and out-of-state work force (residing at the construction camp/village and not relocating to Impact Area 3). These percentages reflect different patterns from those of Impact Area 3 residents because the Alaska Non-Impact Area 3 and out-of-state workers do not relocate within Impact Area 3. Alaska non-Impact Area 3 workers are assumed to return to their place of residence more often during time off and therefore spend less of their income in Impact Area 3. Workers originating from out-of-state are assumed to spend 70 percent of income outside of Alaska. This explains why expenditures in the State is less than total expendable in each year.

TABLE 5.3-4

LOCAL AND IMPACT AREA 3 IMMIGRANT CONSTRUCTION
WORK FORCE PROPENSITY TO SPEND BY AREA

<u>RESIDENCE</u>	<u>PROPENSITY TO SPEND IN AREA</u> (a)						
	ANCHORAGE	FAIRBANKS	KENAI	SEWARD	S.E. FAIRBANKS	VALDEZ	MAT-SU
Anchorage	.95	--	--	--	--	--	.05
Fairbanks	.05	.90	--	--	--	--	.05
Kenai	.10	--	.85	--	--	--	.05
Seward	.10	--	--	.85	--	--	.05
S.E. Fairbanks	.05	.15	--	--	.75	--	.05
Valdez	.05	--	--	--	--	.90	.05
Mat-Su	.25	.10		--	--	--	.65

(a) assumed percentage of local and Impact Area 3 immigrant income spent in such Census Division.

TABLE 5.3-5

ALASKA NON-LOCAL AND OUT-OF-STATE CONSTRUCTION
WORK FORCE (RESIDING AT BASE CAMP) PROPENSITY
TO SPEND BY AREA

PROPENSITY TO SPEND IN AREA (a)

<u>RESIDENCE</u>	OUT-OF-STATE	AK. NON-LOCAL	ANCHORAGE	FAIRBANKS	KENAI	SEWARD	S.E. FAIRBANKS	VALDEZ	MAT-SU
Alaska Non- Impact Area 3 ^(b)	--	.80	.10	.05	--	--	--	--	.05
Out-of-State ^(b)	.70	--	.18	.07	--	--	--	--	.05

(a) Assumed percentage of Alaska non-local out-of-state income spent out of State, in Alaska non-Impact Area 3, and in Impact Area 3 Census Divisions.

(b) Area originating from and not relocating to Impact Area 3 (resides at construction camp/village).

(b) Indirect/Induced Work Force

Income to accrue to indirect work force associated with the construction of the Sustina hydroelectric project is largely dependent upon the degree to which supplies (i.e., raw materials) for construction are provided from within Alaska versus out-of-state. Until decisions have been made on the sources of such supplies, income associated with indirect work force can not be determined accurately. In addition, as the direct work force associated with the construction project create demands for services, income will accrue to the induced work force.

6 - IMPACTS OF THE PROJECT

6.1- Impact Area 1

(a) Displaced Businesses and Residences

(i) Residences

The best available information indicates that no permanent or temporary residences will be inundated or otherwise totally displaced by the project. Six structures, all cabins used sporadically for fishing, boating and other activities, will be inundated by the creation of the Watana impoundment. Four cabins, used sporadically for fishing, boating, and other activities, will be inundated by the creation of the Devil Canyon impoundment.

(ii) Businesses

Business activities in Impact Area 1, with the exception of mining, are directly or indirectly dependent upon the abundance, availability and location of fish and game species in the upper Susitna basin. These activities include guiding, lodging, trapping, salmon fishing, and recreation and related business activities. Many of these activities will be partially displaced in the short-term by the project. The long term displacement effects are not predictable at present.

- Guiding

Some of the guides who operate in Impact Area 1 have exclusive areas; these and other guides also operate in non-exclusive areas. The construction and operation of the dams and ancillary facilities will

disrupt guiding because the abundance and location of fish and game will change until a new equilibrium is established. It is not anticipated that any of the guides will be totally displaced, but the potential for partial displacement is great. As animal behavior and movement patterns change, guides with exclusive areas will have to learn these new patterns and to relocate some of their physical assets such as airstrips, cabins, etc. in response to these new patterns. Those guides without exclusive areas will also have to adjust to the new movement patterns and will have few if any major physical assets to move.

Short-term changes in guiding income are difficult to predict. When more information is available regarding changes in fish and game numbers and locations, then it may be possible, with the cooperation of the guides, to estimate these income effects.

The long term effect on guides is uncertain. It depends upon the levels at which fish and game populations stabilize and the new locations of fish and game. It also depends upon state policy regarding public access to Impact Area 1. Increased public access could make the Area less suitable for guided hunts and fishing outings. This could reduce demand for guided outings, and thus reduce guiding income. This could be offset, in whole or in part, by increased public benefits resulting from increased access.

In both the short and long term, it will be very important for guides to identify new fish and game locations. Unless populations of fish and game fall significantly, and public access is made easier, the only losses that would accrue to guides are: (1) the

time it takes to identify new locations; (2) the cost of moving physical assets; and (3) the possibility of increased competition between guides due to the dam and its ancillary facilities taking away some of the area.

- Lodging

Currently there are three lodges in the Area: High Lake Lodge, near Devil Canyon, and Stephan Lake and Tsusena Lodges near the Watana dam site. The High Lake Lodge is leased for the feasibility study, and its future use status is unknown. If it were to revert to a hunting and fishing lodge, it would encounter the same problems as the guides above. In response to changes in fish and game numbers and locations, it could offer different services or change the emphasis of its services. For example, it might focus more on remote-site cross-country skiing, photography, business conferences, fresh water fishing, etc. The attractiveness of this option, of course, depends upon the amount of public access to the area.

The Stephan Lake and Tsusena Lodges face the same problems as the High Lake Lodge. However, because these lodges are farther than High Lake Lodge from construction sites and the access road, they will probably encounter fewer disruptions. In any case, the hydroelectric project could partially displace current activities and services at both of the lodges in both the short and long terms. The extent of this displacement cannot be predicted at this time. Whether these lodges maintain their income flows depends upon their ability to adjust to the changing conditions and to recognize and exploit new opportunities.

- Trapping

Trappers will be affected through the loss of habitat for pine marten, mink and river otters, particularly as the Watana reservoir will impound several secondary drainages. In the short term, the numbers and locations of these and other furbearers will change. Trappers will have to identify these changes in order to be as successful as they were previously. The amount of displacement is significant in both the short and long term. The effect of this displacement on trappers' income is unknown.

- Salmon Fishing

Spawning and rearing areas for Cook Inlet salmon might be affected. This could cause changes in the numbers and relative species mix of salmon returning to the Susitna River. When the impact of the dams on the salmon has been predicted, it will be possible to estimate the short and long term impact on revenues in the Cook Inlet commercial fishery. It will also be possible to consider the impact on recreational and other user groups.

- Recreation

It is certain that sections of the Susitna River will no longer be suitable for white-water kayaking. There will be little if any displacement of any other recreational activity currently going on in the upper Susitna basin. With the access road, there is great potential for opening the area up to many more people who cannot now afford to charter a plane, river boat or other means of transportation to get into the Area. If more of the public is allowed to and does

enter the area, the remote nature of the recreation experience will be changed. The policy issue becomes: Is it better to have more people recreating in a more congested area? Or is it better to have fewer people recreating in a less congested area? The answer to this issue will have a profound effect on all businesses that derive income from recreation activities in the area.

Businesses that cater to recreational activities include air transport companies, riverboat enterprises, outfitters, fish and tackle stores, etc. If the public does use the area more, it is quite likely that these recreation-support businesses will experience growth. Increased access is likely to induce cross-country skiing; kayaking; boating, including riverboat services and drop camps; photography and snowmachining. The services supporting these activities are likely to increase commercial and residential land values and increase local receipts.

Existing residents who choose not to adapt to the increased activity in the area and the concomittant changes in lifestyle will most likely choose to seek new wilderness areas, thereby causing some voluntary but permanent displacement. Residents of the "railroad communities" are most likely to move.

- Mining

Mining currently consists of intermittent activity on 36 mining sites within a portion of the Upper Susitna Basin, i.e., Talkeetna Mountains, Mining Claims, Map KX-76. There are 543 lode claims and 84 placer claims on these 36 sites. Three sites are within the

impoundment area (contour line 2000'): #35, and #129 being currently inactive and #69 currently active. It is anticipated that #69 and #129 will be totally displaced; the former located between Devil Canyon Dam and Watana Dam, the latter situated east of Watana Dam. #35 may be partially displaced; this site is located north of Devil Canyon Dam. Aside from the above displacements, the project could have a beneficial impact on mining. The access road, if usable by miners, will allow current claims to be worked more profitably and will aid in the discovery of new deposits. This applies especially to the Susitna-Chulitna portion of the Yentna Mining District where molybdenum, gold, copper, lead, silver and antimony are scattered over a distance of several tens of miles.

6.2 - Impact Area 2

It is anticipated that the impacts of the project on socioeconomic conditions in Impact Area 2 will be greatest on the communities of Trapper Creek, Talkeetna, Cantwell and the "railroad communities" in this area, due to their proximity to the project sites and their relatively small size. Accordingly, the impacts of the project on the Matanuska-Susitna Borough as a whole and each of these communities will be discussed separately. Magnitudes of impacts during both the construction and operation phases of the Susitna project are addressed.

(a) Matanuska-Susitna Borough

Table 6.2-1 presents an overview of impacts of the project on the Borough as a whole. Impacts on the incorporated communities of Palmer, Wasilla, and Houston are summarized in Tables 6.2-2, 6.2-3 and 6.2-4.

(i) Population

The population increase related to a large project can be the determinant behind a large number of impacts of a project. Most of the analysis that follows will focus on the impacts of the immigrant population that resettles in communities of the Borough (and excludes workers and their families that live only at the work camp/village). The work camp and family village at the work sites will provide extensive provision of housing and key facilities and services for inhabitants; thus, it is likely that this portion of the new population in the Borough will have little impact on housing conditions, facility and service needs or fiscal conditions in existing Matanuska-Susitna Borough communities. Table 6.2-5 displays projected population in the Borough without and with the project, for the years 1981-2005.

- Construction Phase

As a result of the construction of the Susitna project, the population of the Matanuska-Susitna Borough is expected to increase by up to 4,700 in 1990, including both new on-site and off-site residents. About 1,110 will resettle in communities in the Borough (off-site). These figures include direct and indirect/ induced workers and their dependents. The

TABLE 6.2-1: SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON MATANUSKA-SUSITNA BOROUGH

Socioeconomic Variable	Present Conditions		Watana Construction Peak				Devil Canyon Peak			
	1981 Capacity	1981 Amount/Usage	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	N.A.	22,285	42,964	44,076 ^(a)	1,112 ^(a)	2.6 ^(a)	66,338	67,204 ^(a)	866 ^(a)	1.3 ^(a)
Employment ^(b)	N.A.	4,002	6,914	10,842	3,928	56.8	9,505	11,554	2,049	21.6
Housing Demand (no. of units)	8,582	6,810	14,417	14,791	374	2.6	24,670	24,992	322	1.3
Water (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Solid Waste Disposal (acres per year)	617	2.5	6.7	6.9	0.2	2.5	13.6	13.8	0.2	1.3
Sewage Treatment (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Police	20	20	38	42	4	10.5	60	62	2	3.3
Education (primary students)	3,136	2,388	5,406	5,565	159	2.9	8,884	9,011	127	1.4
(secondary students)	3,380	2,141	4,605	4,738	133	2.9	7,568	7,674	106	1.4
Hospital Beds	23	20	60	61	1	1.7	109	110	1	0.9
Community Parks (acres) ^(c)	0	-	80	82	2	2.4	133	135	2	1.5

N.A. - Not Applicable

(a) Population increase refers to population influx in Mat-Su Borough communities, and does not include population residing only at work camp/village.

(b) By place of employment.

(c) Community parks generally contain facilities such as tennis courts, ball diamonds, play apparatus, basketball courts, nature walks, and swimming pools.

Source: Forecasts by Frank Orth & Associates, Inc.

(136)1.3163

TABLE 6.2-2: SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON THE CITY OF PALMER

Socioeconomic Variable	Present Conditions		Watana Construction Peak				Devil Canyon Peak			
	1981 Capacity	1981 Amount/ Usage	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	N.A.	2,567	4,525	4,567	42	0.9	6,167	6,200	33	0.5
Employment ^(a)	N.A.	— ^(b)	— ^(b)	— ^(b)	27	— ^(b)	— ^(b)	— ^(b)	13	— ^(b)
Housing Demand (no. of units)	872	783	1,551	1,563	12	0.8	2,299	2,311	12	0.5
Water (gallons per day)	1,368,000	300,000	608,000	614,000	6,000	1.0	918,000	923,000	5,000	0.5
Sewage Treatment (gallons per day)	500,000	300,000	543,000	548,000	5,000	0.9	740,000	744,000	4,000	0.5
Police	8	8	8	8	0	0	9	9	0	0.0
Education (primary students)	800 ^(c)	685 ^(c)	569	580	11	1.9	826	830	4	0.5
(secondary students)	1,400 ^(c)	951 ^(c)	485	490	5	1.0	704	708	4	0.6
Hospital Beds	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. - Not Applicable

(a) By place of employment

(b) Data not available

(c) School service areas do not correspond exactly to city limits. 1981 enrollment may include a service area that extends beyond city boundaries, whereas projections for 1990 and 1999 refer only to school children living in Palmer

Source: Forecasts by Frank Orth & Associates, Inc.

(135)1.3157

TABLE 6.2-3: SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON WASILLA

Socioeconomic Variable	Present Conditions		Watana Construction Peak				Devil Canyon Peak			
	1981 Capacity	1981 Amount/ Usage	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	N.A.	2,168	4,157	4,207	50	1.2	7,969	8,010	41	0.5
Employment ^(a)	N.A.	(b)	(b)	(b)	(b)	(b)	(b)	(b)	13	(b)
Housing Demand (no. of units)	718	670	1,404	1,421	17	1.2	2,965	2,980	15	0.5
Water (gallons per day)	864,000	(b)	559,000	565,000	6,000	1.1	1,186,000	1,192,000	6,000	0.5
Sewage Treatment (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Police	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Education (primary st	1,170	959 ^(c)	523	530	7	1.3	1,067	1,073	6	0.6
(secondary students)	1,800 ^(c)	1,068 ^(c)	446	452	6	1.3	909	914	5	0.6
Hospital Beds	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. - Not Applicable

(a) By place of employment

(b) Data not available

(c) Planned capacity of 150

Source: Forecasts by Frank Orth & Associates, Inc.

(135)1.3522

TABLE 6.2-4 SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON HOUSTON

Socioeconomic Variable	Present Conditions		Watana Construction Peak				Devil Canyon Peak			
	1981 Capacity	1981 Amount/ Usage	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	N.A.	600	1,415	1,453	38	2.7	3,335	3,367	32	1.0
Employment (a)	N.A.	(b)	(b)	(b)	15	(b)	(b)	(b)	7	(b)
Housing Demand (no. of units)	229	207	508	522	14	2.8	1,249	1,261	12	1.0
Water (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sewage Treatment (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Police	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Education (primary students)	0 (c)	0 (c)	178	184	6	3.4	447	451	4	0.9
(secondary students)	0 (c)	0 (c)	152	156	4	2.6	380	384	4	1.1
Hospital Beds	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. - Not Applicable

(a) By place of employment

(b) Data not available

(c) School service areas do not correspond to city limits. Children in Houston currently attend schools outside of the city.
A secondary school initially accommodating 300 students is planned.

Source: Forecasts by Frank Orth & Associates, Inc.

(136)1.3159

TABLE 6.2-5
IMPACT OF THE PROJECT ON POPULATION
IN THE MATANUSKA-SUSITNA BOROUGH,
1981-2005

	<u>Baseline Forecast of Population</u>	<u>Cumulative Project- Related Popu- lation Influx^(a)</u>	<u>Forecast with Project</u>
1981	22,285	0	22,285
1982	23,982	0	23,982
1983	25,982	28	26,010
1984	28,075	29	28,104
1985	31,202	99	31,301
1986	33,950	123	34,073
1987	36,894	580	37,474
1988	39,323	789	40,112
1989	41,543	886	42,429
1990	42,964	1,112	44,076
1991	45,263	1,074	46,337
1992	47,112	988	48,100
1993	49,734	852	50,586
1994	51,988	796	52,784
1995	54,607	763	55,370
1996	57,191	784	57,975
1997	60,272	817	61,089
1998	63,000	856	63,856
1999	66,338	866	67,204
2000	69,334	844	70,178
2001	72,731	778	73,509
2002	76,295	694	76,989
2003	80,034	676	80,710
2004	83,955	676	84,631
2005	88,069	676	88,745

(a) Population influx refers to workers and their families which immigrate into Borough communities, outside of the work camp and village. Indirect and induced population influx is included.

Source: Forecasts by Frank Orth & Associates, Inc.

new off-site population would represent an increase of 2.6 percent over the baseline forecast level of population in 1990, and would result in a total Borough population of 44,076 in that year (excluding the work camp/village). Over 90 percent of this project-induced population influx will occur between 1986 and 1990, and over 40 percent in 1987 alone.

The Susitna project would be only one of several factors contributing to the Borough's rapid growth between 1982 and 1990. With construction of the project, population in the Borough will increase by approximately 19,000, of which almost 18,000 will be related to baseline forecast growth and 1,100 will be project-related. As mentioned in the baseline forecast section (Section 4.1(a)(ii)), spillover growth from Anchorage is expected to be one of the most important factors behind the rapid increase in Mat-Su population.

After 1990, the construction work force will decline substantially, and some immigrant families (both direct and indirect/induced) will leave the Borough. Between 1990 and 1995, almost 350 people are expected to leave. Overall, Borough population will continue to increase during this time period, as a result of baseline forecast growth.

Project-induced population will not increase significantly in the late 1990's as the construction of Devil Canyon picks up. It has been assumed that the available work force in the Railbelt will be able to fill the new direct jobs. The immigration that does occur in that period represents several secondary

workers and their families. Since population of the Borough will continue to increase as a result of natural growth factors implicit in the baseline forecast, the relative size of the project-induced off-site population will be far smaller during the Devil Canyon peak. In 1999, project-induced population (866) will account for only one percent of total Borough population.

The population influx into the incorporated communities is expected to be small; between 1983 and 1990, the project will result in an increase of approximately 40 people in Palmer and Houston, each, and 50 in Wasilla. Over 50 percent of the immigrant population in the Borough is expected to settle in or near Trapper Creek and Talkeetna and the remainder will probably establish homes in the Willow-Montana Creek area, the suburban area surrounding Palmer and Wasilla, and possibly in the newly available Indian River subdivision (near Hurricane).

In addition to this increase in population in Mat-Su Borough communities, there will be an additional peak amount of 1,464 people from out-of-state and other areas of Alaska who will be living at the work camp/village full-time in 1990 and 2,124 workers who will commute back and forth to permanent homes outside of the Borough. This segment of the population influx is expected to have a limited effect on conditions in the Borough, as a result of the planned provision of housing and other facilities and services by the construction contractor. Their major impact will be related to the stimulative effect of expenditures made in Trapper Creek, Talkeetna, and

other Borough communities on business activity and employment (significant expenditures will also be made in Anchorage and Fairbanks by these workers).

(ii) Housing

- Construction Phase

The majority of construction workers on the project will live in housing provided by the project at the work sites. These workers will have no impact on the housing market in the Mat-Su Borough.

As shown in Table 6.2-6, a total of approximately 374 project-induced households are expected to settle in Mat-Su Borough communities between 1983 and 1990, the height of construction activity at the Watana site. Most of the housing demand will occur between 1987 and 1990. Based upon an average five percent vacancy rate, there will be a projected 2,336 vacant housing units in the Borough in 1990, or about six times as many units as immigrant households. Thus, the immigration is not likely to cause any dislocations in the Borough's housing market as a whole.

Between 1990 and 1995, there will be an estimated 28 percent decline in demand for housing by project-related households. However, due to baseline forecast growth, the overall number of households in the Borough will continue to increase during this period.

At the height of activity in the Devil Canyon portion of the project, 322 of the immigrant households associated with the project will remain, representing one percent of total Borough households.

TABLE 6.2-6

IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT
ON HOUSING DEMAND IN THE MATANUSKA-
SUSITNA BOROUGH, 1981-2005

	<u>Projected Housing Stock</u>	<u>Baseline Forecast of Households</u>	<u>Project-Induced Influx of Households</u>	<u>Total Housing Demand</u>
1981	8,582	6,810	0	6,810
1982	8,790	7,402	0	7,402
1983	9,595	8,099	9	8,108
1984	10,462	8,843	9	8,852
1985	11,730	9,927	32	9,959
1986	12,868	10,916	40	10,956
1987	14,094	11,986	189	12,175
1988	15,121	12,910	259	13,169
1989	16,092	13,788	294	14,082
1990	16,754	14,417	374	14,791
1991	17,728	15,354	364	15,718
1992	18,574	16,156	339	16,495
1993	19,761	17,245	295	17,540
1994	20,821	18,235	279	18,514
1995	22,043	19,371	271	19,642
1996	23,278	20,528	282	20,810
1997	24,719	21,885	297	22,182
1998	26,048	23,145	314	23,459
1999	27,672	24,670	322	24,992
2000	29,207	26,095	317	26,412
2001	30,626	27,373	271	27,644
2002	32,115	28,715	259	28,974
2003	33,675	30,122	254	30,376
2004	35,310	31,598	254	31,852
2005	37,023	33,146	254	33,400

Source: Forecasts by Frank Orth & Associates, Inc.

The majority of housing demand by project-related immigrants will be concentrated in the northern part of the Borough; in that area, demand is expected to exceed supply causing rapid construction and some inflation in land and housing prices (see Sections 6.2 (b), (c), (d) and (e) for detail on specific communities). As Tables 6.2-2, 6.2-3 and 6.2-4 display, the impact of the project on housing conditions in Palmer, Wasilla and Houston will be negligible.

- Operations Phase

As construction of the Devil Canyon facilities is completed, the outmigration of population will result in a further decline of an estimated 68 project-related households residing in the Borough (between 1999 and 2003). Over 250 of the original 374 project-related households will remain. This decline will be counteracted by a continued increase in households due to baseline forecast growth.

Operations phase workers are assumed to be residents of Impact Area 2 and will live at the dam site village. There will be no impacts on Borough housing.

(iii) Public Facilities and Services

Public facility and service impacts have been estimated using the following approach: (1) Appropriate per capita standards were developed, based upon an extensive literature review and the input of local officials; (2) the adequacy of existing facilities and services

were assessed; and (3) estimates of future needs related to natural growth and to project-induced population influx have been compared with present and planned capacity.

With the exception of Trapper Creek and Talkeetna, substantial increases in public facilities and services will be needed to accommodate baseline forecast growth, and population influx related to the project will only add slightly to these needs. In contrast, the large proportional increase of population in Trapper Creek and to a lesser extent Talkeetna will have substantial impacts on the needs for public facilities and services.

The major impacts of the project on public facilities and services will occur during the construction phase of the project. Impacts during the operations phase of the project will be minimal.

- Water Supply

The water supply needs of the project and of the work force and families living at the Watana and Devil Canyon sites will be provided for by the contractors. There will be no impact on public facilities in the Mat-Su Borough.

The population influx associated with the project will have only a slight impact on the public water systems in the Borough. In Palmer, average daily water consumption at the peak of construction at the Watana site (1990) will rise one percent over the baseline forecast level of 608,000 gallons per day; water consumption attributable to the population

influx during the Devil Canyon site construction peak (1999) will represent a 0.5 percent increase over the baseline level of approximately 918,000 gallons per day (see Table 6.2-7).

In Wasilla, water consumption is expected to increase by 1.1 and 0.5 percent during the two construction peaks, over the baseline forecast consumption levels during those years. This increase in population will not have major impacts on the Wasilla water system; however, it may contribute slightly to the population density in Wasilla, and thereby to the need for an expansion of the water system (the present system currently serves only the downtown area). Table 6.2-7 presents water requirements of Wasilla with and without the project, based on total city population.

No impacts on the water supply systems in the Borough are expected during the operations phase of the project. Water supply needs of operations staff will be provided by the work village.

- Sewage

The sewage treatment needs of the work force and of families living at the construction sites will be provided for at the work camp and family village. No impacts on the local public facilities are expected.

Table 6.2-8 displays the impact of the project on sewage treatment requirements in Palmer and Wasilla if a central sewage system were to be constructed. Population influx into Palmer will result in an increase in sewage treatment requirements of approxi-

TABLE 6.2-7

IMPACT OF THE SUSITNA PROJECT ON
WATER REQUIREMENTS IN PALMER AND WASILLA, 1981-2005
(in gallons per day)

Year	PALMER		WASILLA	
	Baseline Forecast Water Requirements	"With Project" Daily Water Requirements	Baseline Forecast Water Requirements	"With Project" Daily Water Requirements
1981	308,040	308,040	260,160	260,160
1982	332,454	322,454	283,450	283,450
1983	358,758	358,909	308,616	308,785
1984	387,005	387,160	336,086	336,261
1985	417,373	417,912	365,928	366,530
1986	450,176	450,860	398,336	399,097
1987	485,482	488,325	433,642	437,063
1988	523,357	527,247	471,926	476,591
1989	564,134	568,557	513,538	518,843
1990	608,160	613,774	588,701	565,436
1991	636,888	642,390	607,648	614,262
1992	666,947	672,125	660,893	667,161
1993	698,366	702,985	718,829	724,495
1994	713,174	735,585	781,581	787,027
1995	765,258	769,562	849,701	855,039
1996	800,928	805,372	923,760	929,248
1997	838,219	842,851	1,004,058	1,009,741
1998	877,165	882,037	1,091,194	1,097,146
1999	917,650	922,626	1,185,787	1,191,861
2000	957,450	962,356	1,271,100	1,277,102
2001	990,961	995,250	1,363,890	1,369,350
2002	1,025,644	1,029,900	1,463,454	1,468,500
2003	1,061,542	1,065,600	1,570,286	1,575,450
2004	1,098,696	1,102,800	1,684,917	1,690,050
2005	1,137,150	1,141,200	1,807,916	1,813,050

Source: Forecasts by Frank Orth & Associates, Inc.

TABLE 6.2-8
IMPACT OF THE SUSITNA PROJECT ON SEWAGE TREATMENT
IN PALMER AND WASILLA, 1981-2005
(in gallons per day)

Year	PALMER		WASILLA	
	Baseline Forecast	Forecast With Project	Baseline Forecast	Forecast With Project
1981	308,040	308,040	260,160	260,160
1982	328,080	328,080	279,720	279,720
1983	349,440	349,587	300,600	300,764
1984	372,120	372,269	323,160	323,328
1985	396,240	396,752	347,400	347,972
1986	422,040	422,681	373,440	374,154
1987	449,520	452,152	401,520	404,688
1988	478,680	482,238	431,640	435,907
1989	509,760	513,757	464,040	468,834
1990	543,000	548,012	498,840	504,854
1991	561,960	566,815	536,160	541,996
1992	581,640	586,156	576,360	581,826
1993	602,040	606,021	619,680	624,564
1994	623,160	626,919	666,120	670,762
1995	644,880	648,507	716,040	720,539
1996	667,440	671,144	769,800	774,373
1997	690,840	694,657	827,520	832,204
1998	715,080	719,052	889,560	894,413
1999	740,040	744,053	956,280	961,178
2000	765,960	769,885	1,016,880	1,021,682
2001	792,769	796,200	1,091,112	1,095,480
2002	820,516	823,920	1,170,763	1,174,800
2003	849,234	852,480	1,256,229	1,260,360
2004	878,957	882,240	1,347,934	1,352,040
2005	909,720	912,960	1,446,333	1,450,440

Source: Forecasts by Frank Orth & Associates, Inc.

mately 5,000 gallons per day (0.9 percent) above the 1990 baseline forecast level and about 4,000 gallons per day (0.5 percent) over the 1999 baseline forecast level. The population influx during 1983-1990 will occur at a time when existing facilities are already reaching their limits, and a third sewage treatment cell will be required (with or without the project).

Sewage treatment requirements in Wasilla are currently handled by individual septic tanks, but as the city population grows, a city-wide system will be needed with or without dam construction.

- Solid Waste

The solid waste requirements of personnel and dependents living at the construction work sites will be provided for at the camp and village, and will have no significant impacts on public facilities in the Mat-Su Borough.

The population influx into the Borough communities associated with the project will increase the annual landfill needs of the Borough by .069 hectares (ha) (.17 acres) in 1990 and .073 ha (.18 acres) in 1999. This represents 2.5 percent and 1.3 percent increases over the baseline forecast levels in those years. This population increase may contribute to a slight advance in requirements for additional landfill acreage, which is expected to be needed under the baseline forecast conditions around 1994-1995. Table 6.2-9 displays cumulative landfill requirements in the Borough for the 1981-2005 period, with and without the project.

TABLE 6.2-9
 IMPACT OF THE PROJECT ON LANDFILL REQUIREMENTS IN THE
 MATANUSKA-SUSITNA BOROUGH, 1981-2005
 (in number of acres)

	<u>Cumulative Baseline Forecast Requirements</u>	<u>Cumulative Requirements, With Project</u>
1981	2.5	2.5
1982	5.2	5.2
1983	8.4	8.4
1984	11.9	11.9
1985	16.0	16.0
1986	20.6	20.6
1987	25.8	26.0
1988	31.6	31.9
1989	37.9	38.3
1990	44.7	45.2
1991	52.1	52.8
1992	60.0	60.9
1993	68.6	69.6
1994	77.8	79.0
1995	87.9	89.2
1996	98.7	100.1
1997	110.4	112.0
1998	122.9	124.7
1999	136.5	138.5
2000	151.1	153.2
2001	166.3	168.6
2002	182.4	184.8
2003	199.2	201.8
2004	216.8	219.5
2005	235.3	238.2

(a) Calculated on the basis of a 1981 standard of .11 acres per thousand population, increasing to .21 acres per thousand population in 2000.

Source: Forecasts by Frank Orth & Associates, Inc.

By 2003, the number of project-related households that remain in the Borough will be very small as a percentage of total, and their effect on solid waste disposal needs will be minimal.

- Law Enforcement

A comparison of State Trooper requirements in the Mat-Su Borough with and without the project are displayed in Table 6.2-10.

The population influx into Mat-Su Borough communities that is associated with the project will increase the requirements of State Troopers by one to two officers over the baseline forecast need of 38 in 1990, the year of peak construction activity.

In addition, though the project construction contractors will provide for security around the dam sites, it is expected that the State Trooper force in Trapper Creek may be enlarged somewhat to reflect the growing population in the northern part of the Borough during the construction phase of the project. Altogether, an increased need for four Troopers can be expected at the peak of construction.

- Fire Protection

Fire protection planning in rural areas such as the Mat-Su Borough is more dependent on the distance of facilities from population centers and the willingness of the residents to form fire service areas than on the size of population. It is possible that project-induced new population in the Borough

TABLE 6.2-10

IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT
ON REQUIREMENTS FOR STATE TROOPERS(a) IN THE
MATANUSKA-SUSITNA BOROUGH, 1981-2005

	<u>Baseline Forecast</u>	<u>Forecast with Project</u>
1981	20	20
1982	21	21
1983	23	23
1984	25	25
1985	28	28
1986	30	31
1987	33	34
1988	35	37
1989	37	40
1990	38	42
1991	41	45
1992	42	45
1993	45	48
1994	47	50
1995	49	51
1996	52	54
1997	55	57
1998	57	59
1999	60	62
2000	63	65
2001	66	67
2002	69	71
2003	73	75
2004	77	81
2005	80	81

(a) Based upon a standard of 1.0 policemen per
thousand population.

Source: Forecasts by Frank Orth & Associates, Inc.

along with baseline growth may contribute to the feasibility of providing fire service to additional areas of the Borough. The revenue from fire service areas is used to pay for equipment and building expenses. Firefighters will continue to be, for the most part, volunteers.

The project facilities and work camp/family village will be protected by firefighting equipment and services at the work sites; there will be little impact on the existing governmental facilities and services.

- Health Care

The work camp/family village at the construction site will provide facilities for health care, including a 20-bed hospital. It is expected that there will be little impact of the construction-site population on the Mat-Su Borough's health facilities, with the exception of cases of major illness or accidents which cannot adequately be handled by the site hospital.

The population influx into the Mat-Su Borough communities associated with the project is expected to increase the number of hospital beds needed in 1990 by about one bed. This population influx may contribute to a slightly accelerated need for a new hospital, a development which was projected to be required around 1990 under baseline forecast conditions.

- Education

School-age children at the construction site will be educated at project facilities and hence will not have an effect on the Mat-Su Borough School District.

The impact of the Susitna project on enrollment in the Mat-Su Borough School District is shown in Table 6.2-11. There will be an increase of 159 primary school children and 133 secondary school children accompanying immigrants into communities in the Mat-Su Borough between 1983 and 1990, representing about three percent of the baseline forecast levels. These figures will decline to 127 and 106, respectively, during the Devil Canyon peak. There will be a need for about seven additional primary school classrooms and teachers and seven secondary school classrooms and teachers in 1990, in addition to the 216 primary school and 230 secondary school classrooms which will be needed to accommodate growth without the project.

- Public Recreation Facilities

Recreational facilities will be provided at the construction site for use by project employees and their families. Thus, residents of the work camp are not expected to have much of an impact on public recreational facilities, although some increase in visits to the national and state parks near Mt. McKinley, and to other parks can be expected. Residents can also be expected to engage in outdoor recreation activities in portions of the upper Susitna basin where no public facilities now exist.

TABLE 6.2-11

IMPACT OF THE PROJECT ON MATANUSKA-SUSITNA BOROUGH
SCHOOL DISTRICT ENROLLMENT, 1981-2005

	Primary School Enrollment			Secondary School Enrollment			Total Borough Enrollment		
	Baseline Forecast	Project Re- lated Influx	Forecast with Project	Baseline Forecast	Project Re- lated Influx	Forecast with Project	Baseline Forecast	Project-Re- lated Influx	Forecast with Project
1981	2,527	0	2,527	2,153	0	2,153	4,680	0	4,680
1982	2,953	0	2,953	2,515	0	2,515	5,468	0	5,468
1983	3,199	4	3,203	2,725	3	2,728	5,924	7	5,931
1984	3,457	4	3,461	2,945	3	2,949	6,401	8	6,409
1985	3,842	14	3,856	3,272	12	3,284	7,114	26	7,140
1986	4,180	17	4,198	3,561	14	3,576	7,741	32	7,772
1987	4,542	83	5,625	3,869	69	3,938	8,412	152	8,564
1988	4,884	113	4,997	4,160	94	4,254	9,044	207	9,251
1989	5,182	127	5,309	4,414	106	4,520	9,596	233	9,828
1990	5,406	159	5,565	4,605	133	4,738	10,011	292	10,304
1991	5,744	154	5,898	4,893	129	5,022	10,637	283	10,921
1992	6,029	143	6,172	5,136	119	5,256	11,166	262	11,429
1993	6,392	125	6,517	5,445	104	5,549	11,837	229	12,066
1994	6,738	117	6,855	5,739	97	5,836	12,477	215	12,692
1995	7,136	113	7,249	6,079	94	6,173	13,215	206	13,422
1996	7,505	116	7,621	6,393	96	6,489	13,897	212	14,109
1997	7,974	120	8,094	6,793	100	6,893	14,767	220	14,987
1998	8,403	125	8,529	7,158	104	7,263	15,561	230	15,791
1999	8,884	127	9,011	7,568	106	7,674	16,452	233	16,684
2000	9,360	124	9,484	7,973	103	8,076	17,334	227	17,561
2001	9,819	115	9,934	8,364	95	8,459	18,183	210	18,393
2002	10,030	103	10,133	8,774	86	8,860	19,074	189	19,263
2003	10,805	96	10,901	9,204	80	9,284	20,028	176	20,204
2004	11,334	96	11,430	9,655	80	9,735	20,989	176	21,165
2005	11,889	96	11,985	10,128	80	10,208	22,017	176	22,193

Source: Forecasts by Frank Orth & Associates, Inc.

(118)1.3477

The project-induced population influx into Borough communities will represent 2.6 percent of Borough population in 1990 and 1.3 percent in 1999. This additional population will have a slight impact on the requirements for public recreational facilities.

- Transportation

The Susitna hydroelectric project includes the construction of a road into an area that currently has no auto access. If policymakers decide to allow public access to this road, the result will be a major addition to the local transportation system. The ultimate status of the road is unsettled at this point, due to environmental concerns.

It is anticipated that the majority of project-related supplies and equipment will be transported by rail to Gold Creek, and then by truck to the work sites. The rail system is currently underutilized, and the increased revenues are expected to benefit the railroad.

An increase in vehicular traffic on the Parks Highway and nearby roads will result to the extent that private automobiles are allowed to use the access road to the sites. This increase in road traffic could include workers commuting to and from the site and traffic related to potential recreational activity in the impoundment areas.

(iv) Employment

There will be significant employment opportunities for current Mat-Su residents during 1985-1990 and intermittently beyond 1990. By 1990, about 3500 on-site construction (direct) jobs will be filled. It is difficult to predict what proportion of these jobs will be filled by current Mat-Su residents due to: (1) the potential for high immigration to Alaska, particularly if the economy is ailing in the Lower-48; and (2) competition for limited jobs among residents of the Railbelt. A conservative estimate for on-site construction jobs filled by current Mat-Su residents would be 200--it could be significantly more.

By 1990 there will be 2,865 support (indirect and induced) jobs generated by the project. Due to construction worker immigration into the Borough, there will be proportionately more indirect and induced jobs available in the Borough than on-site jobs. Accordingly, at least 300 indirect and induced jobs will probably be filled by Mat-Su residents. As above, it could be substantially more.

By 1990 it is estimated that there will be about 6900 jobs in the Borough (without the project). If 500 of the direct and induced jobs are filled by Mat-Su residents, this would represent a 7.2 percent increase in employment in the Borough.

By 1999, the peak workforce year for Devil Canyon, the number of on-site construction jobs will decline to about 1700 and the number of indirect and induced jobs will decline to about 1500. This will occur after a

relative lull in construction during the mid-1990s. Current Mat-Su residents should hold at least 90 of these direct and 160 of these indirect jobs. Persons who moved to the Borough during 1985-1995 should also fill a significant number of these jobs.

As the project enters the operation phase for both dams (2003), employment opportunities will diminish significantly. There will be 170 permanent positions at the Watana and Devil Canyon sites in 2003 and thereafter. Several of these positions could be filled by Mat-Su residents.

(v) Personal Income

Substantial personal income will be earned in the Mat-Su Borough during the construction and operation of the dams. Personal income will increase for construction and operations workers; for those persons who are employed by institutions that provide goods and services for construction and operations; and for those persons who are employed by service and related firms where construction workers spend their income. Quantitative estimates of project payroll, construction and operations workers' expenditures in the Borough, and increases in construction and operations workers personal income the Borough are discussed below. Personal income that will accrue to support (indirect and induced) sector workers is discussed briefly.

Tables 6.2-12 shows the amount of payroll that will be earned by construction and operations workers during 1983-2005. In 1990, when the Watana workforce peaks, payroll also peaks at \$98 million. There is another

peak in payroll in 1999, the Devil Canyon workforce peak, at \$53 million. Total payroll during 1983-2002 is \$888 million; all but \$54 million of this amount is construction payroll. During the operation phases for both dams, payroll is expected to be about \$6.5 million annually. Prior to 2002, when only the Watana facility is in operation, payroll is about \$5.6 million on average.

A significant number of workers will maintain their primary residences and spend much of their earnings outside of the Mat-Su Borough. To begin to estimate construction and operations workers' personal income that will accrue to the Borough, it is appropriate to look at the amount of payroll that will be spent in the Borough. In Table 6.2-13, it can be seen that \$8.0 million and \$4.1 million of construction payroll are estimated to be spent in the Borough in 1990 and 1999, respectively. During 1983-2002, about \$67 million of the construction payroll will be spent in the Borough. If the expenditures made in the Borough by the Watana operations work force are added to this amount, a total of \$72 million will be spent in the Borough during 1983-2002.

Some of the expenditures made by Watana operations personnel could accrue to Borough firms that provide goods and services to the village. These expenditures are shown in Table 6.2-14 in the "village" row. Thus, construction and operations payroll spent in the Borough will be greater than \$72 million during 1983-2002.

The above payroll expenditure estimates nearly reflect increases in construction and operations workers' personal income in the Borough. These estimates underesti-

TABLE 6.2-12

TABLE 5.16: TOTAL PAYROLL FOR ON-SITE CONSTRUCTION AND OPERATIONS MANPOWER, 1983-2005
(IN THOUSANDS OF DOLLARS)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CONSTRUCTION (a)																							
LABORERS	3895	1258	16847	25323	38319	50739	56863	70984	65985	51529	26806	16543	10186	16141	25433	32211	34255	29892	14950	3114			
SEMI-SKILLED/ SKILLED	2607	3468	3671	9162	9441	11750	13169	16440	15282	10643	5475	3389	2383	3871	5952	7725	8189	8182	6438	574			
ADMINISTRATIVE/ ENGINEER	940	2342	8159	3810	5555	7436	8334	10404	9671	7362	3842	2378	1465	2374	3655	4737	5038	3946	3289	492			
SUBTOTAL CONSTRUCTION	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	36123	22310	14034	22386	35040	44673	47482	42020	24677	4180			
OPERATIONS (b)																							
ALL LABOR CATEGORIES											2684	5559	5559	5559	5559	5559	5559	5559	5559	6517	6517	6517	6517
TOTAL PAYROLL (7)02	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	38807	27869	19593	27945	40599	50232	53041	47579	30236	10697	6517	6517	6517

(a) Based on 1,825 working hours in the year.

(b) Based on 2,496 working hours in the year.

TABLE 6.2-13

TABLE 5.17: TOTAL ON-SITE CONSTRUCTION WORK FORCE PAYROLL EXPENDITURE PATTERN^(a)
(IN THOUSANDS OF DOLLARS)

PLACE OF EXPENDITURE -----	YEARS																			
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL PAYROLL ^(b)	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	36123	22310	14034	22386	35040	44673	47482	42020	24677	4180
EXPENDABLE INCOME ^(c)	4149	3886	15760	21385	29757	39020	43729	54589	50746	38803	20157	12457	7838	12499	19553	25583	27789	26109	15517	2603
IMPACT AREA 3	3658	3282	13452	18946	26383	34588	38763	48390	44982	34417	17877	11046	6949	11079	17337	22750	24779	23495	13854	2339
ANCHORAGE REGION	2796	2509	10282	14480	20548	26947	30202	37709	35052	26815	13916	8588	5394	8613	13494	17715	19296	18293	10771	1795
ANCHORAGE	2045	1833	7525	10596	14104	18475	20698	25825	24010	18385	9576	5938	3756	5955	9289	12169	13250	12565	7429	1308
NAI-SUE REGION	433	399	1607	2228	4353	5728	6428	8042	7471	5696	2924	1778	1092	1784	2833	3741	4078	3856	2251	307
KENAI-COOK INLET	313	272	1130	1627	2051	2692	3017	3768	3502	2681	1389	856	536	856	1346	1770	1931	1836	1070	177
SEWARD	6	5	20	29	40	53	59	74	69	53	27	17	11	17	26	35	38	36	21	4
FAIRBANKS	796	716	2930	4119	5352	7008	7851	9794	9106	6971	3633	2255	1429	2262	3526	4618	5028	4769	2829	501
SE FAIRBANKS	5	4	18	25	36	47	52	65	61	46	24	15	9	15	23	31	33	32	19	3
VALDEZ-CHITINA-WHITTIER	62	54	223	321	447	587	657	821	763	584	303	187	118	188	294	386	421	401	235	40

(a) Table shows total expenditures by construction work force in Impact Area 3.

(b) Total construction payroll, all labor categories.

(c) Gross payroll minus 30 percent for taxes (federal, F.I.C.A., and unemployment/workman's compensation with self and one dependent) minus 10 percent for net income saved.

TABLE 6.2-14

TABLE 5.18: TOTAL OPERATIONS WORK FORCE PAYROLL EXPENDITURE PATTERN^(a)
In Thousands of Dollars

Place of Expenditure ^(b)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Payroll ^(c)	2,684	5,559	5,559	5,559	5,559	5,559	5,559	5,559	5,559	6,517	6,517	6,517	6,517
Expendable Income ^(d)	1,691	3,502	3,502	3,502	3,502	3,502	3,502	3,502	3,502	4,106	4,106	4,106	4,106
Village	1,015	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,464	2,464	2,464	2,464
Anchorage	338	700	700	700	700	700	700	700	700	821	821	821	821
Fairbanks	85	175	175	175	175	175	175	175	175	205	205	205	205
Mat-Su	253	526	526	526	526	526	526	526	526	616	616	616	616

(a) Table shows total expenditures by operations work force in selected areas.

(b) Assumed that 60 percent of payroll to be spent at Village; 15 percent in the Mat-Su Borough; 20 percent in Anchorage; and 5 percent in Fairbanks.

(c) Total Operations Payroll.

(d) Gross payroll minus 30 percent for taxes (federal, FICA, and unemployment/workman's compensation with self and one dependent) minus 10 percent for net income saved.

mate personal income impacts because (1) federal income taxes and savings are not included and (2) non-wage and non-salary income are excluded (this is relevant for workers that relocate to the Borough). With an adjustment for (1), personal income resulting from the project will be at least \$107 million during 1983-2002. There is no way to adjust for the effect of (2) above. The effects of (2) would be to increase personal income slightly.

Income will also accrue to support (indirect and induced) sector workers. The amount of income that will accrue to indirect workers will depend upon the extent to which goods and services needed for construction and operation are procured in the Borough. Induced income will be in the tens of millions for the Borough.

(vi) Business Activity

Most business activities in Impact Area 1 (proximity to dams, access roads and transmission lines) are dependent upon abundance and location of fish and game species. These activities include guiding, lodging, trapping, salmon fishing and other recreation. Short term displacement of such enterprises by construction activity may occur, but in the long run increased access to the area may increase business opportunities.

Guides are expected to have to adjust to changes in abundance and location of fish and game species, but may benefit from improved access to wilderness areas. Lodges catering to hunters and fishermen will be affected by the same factors, but may find new opportunities to offer access to sports such as cross country

skiing or to provide facilities for business conferences. Trappers will be affected by loss of habitat for furbearers. Salmon stocks will be affected by changes in species mix and numbers of fish, but long term impacts on Cook Inlet commercial fishermen, recreational fishermen and other user groups are expected to be minor. Impacts on other types of recreation will include the loss of sections of Susitna River to white-water kayaking, but general recreational use is expected to increase as a result of improved access.

One active mining site is expected to be totally displaced by the project and one inactive site partially displaced. However, the project may prove beneficial to other mining activities by improving access, hence allowing existing claims to be worked more profitably and facilitating discovery of new deposits.

Business activity will increase in the Borough during the mid to late 1980's as a result of road and dam construction at the Watana site. Businesses that supply construction materials such as sand, gravel, fuel, etc., will have increased sales as will firms that provide transportation services such as trucking, helicopter, and airplane support services. Further, it is estimated that by 1990 more than 400 support sector jobs will be created by the project. Existing support sector businesses such as restaurants, service stations, lodging establishments, retail food stores, etc., will expand and new businesses will be started. Most of this activity will be concentrated along the Parks Highway from Wasilla to Cantwell.

(vii) Fiscal Impacts on Local Government

The methodology used in the fiscal impact analysis is the per capita multiplier method, an average cost technique that assumes current per capita revenues and costs are a good approximation of future flows, other variables remaining constant. It is implicit, therefore, that any revenue or expenditure projections based on per capita amounts will vary in direct proportion to changes in population. The fiscal impact analysis is to be viewed as a set of trend indicators of future fiscal flows, and not as a predictor of actual receipts and costs to be incurred. The analysis is not comprehensive in that it focuses on major sources of revenue and major categories of service costs. Therefore, projections could be either higher or lower, varying primarily as a result of public policy decisions and budgetary allocations.

- Matanuska-Susitna Borough Budget

Impact forecasts for the major sources of revenue for selected funds in the Mat-Su Borough budget are provided in Tables 6.2-15 and 6.2-16. The impacts of the project are greater in 1990 during the peak construction year of the Watana dam than those to be experienced in 1999, the peak construction year of the Devil Canyon dam. Total revenues between 1990 and 1999 will increase approximately 45 percent with or without the project, over 1990 levels.

The Service Area Fund will be impacted most by the project, causing a 28 percent increase in revenues

TABLE 6.2-15

MAT-SU BOROUGH BUDGET: IMPACT FORECAST OF GENERAL FUND REVENUES.

YEAR	A TOTAL PROPERTY TAXES \$	B SCHOOL DBT SRV REIMBSMT \$	C STATE SHARED REVENUE \$	D MUNICIPAL ASSIST TAXES \$	E FEDERAL REVENUE SHARING (\$)	MISC REVENUE \$	TOTAL REVENUE (\$000)
1981	5808344	3485006	2384495	1900019	534840	1227192	15339896
1982	6040678	3624407	2566074	2044705	575568	1291429	16142861
1983	6289075	3773445	2783070	2217613	624240	1364125	17051569
1984	6540346	3924208	3007128	2396147	674496	1438463	17980788
1985	6816501	4089900	3349207	2668723	751224	1537005	19212560
1986	7092341	6260355	3645811	2905064	817752	1801854	22523178
1987	7464946	6589251	4009718	3195033	899376	1926811	24085135
1988	7796746	6882128	4291984	3419949	962688	2030739	25384234
1989	8118653	7166273	4539903	3617497	1018296	2127011	26587632
1990	8807249	7486162	4716132	3757920	1057824	2245677	28070964
1991	9140306	7769260	4958059	3950693	1112088	2341774	29272180
1992	9480321	8058273	5146700	4101006	1154400	2429626	30370325
1993	9822449	8349082	5412702	4312962	1214064	2531414	31642673
1994	10197069	8667509	5647888	4500364	1266816	2633013	32912658
1995	10590969	9002324	5924590	4720846	1328880	2745010	34312619
1996	11011739	9359978	6203325	4942949	1391400	2861686	35771077
1997	11450478	9732906	6536523	5208448	1466136	2990825	37385316
1998	11908874	10122543	6832592	5444363	1532544	3116601	38957516
1999	12378716	10521909	7190828	5729813	1612896	3255145	40689307
2000	12862664	10933265	7509046	5983376	1684272	3388924	42361547
2001	13357664	11345055	7865463	6267377	1764216	3518959	44130191
2002	13869969	11788708	8237823	6564082	1847736	3678005	45987302
2003	14415478	12253156	8635970	6881335	1937040	3836781	47959760
2004	14986233	12738298	9055517	7215639	2031144	4002333	50029163
2005	15579866	13242886	9495715	7566399	2129880	4175195	52189942

ASSUMPTIONS:

(A) AREAWIDE MILL LEVY 6.0 MILLS PER \$1000 ASSESSED VALUATION, 1981-2005.

NON-AREAWIDE LEVY 0.5 MILLS, 1981-1989; 0.75 MILLS, 1990-2005.

(B) 0.52 % TOTAL BONDED INDEBTEDNESS, 1981-1985.

0.0765% TOTAL BONDED INDEBTEDNESS, 1986-2005.

(C) \$107.00 PER CAPITA.

(D) \$85.26 PER CAPITA. 0.75 MILLS (1990-2005)

(E) \$24.00 PER CAPITA.

INCLUDES ONLY MAJOR SOURCES OF REVENUE FOR THE MAT-SU BOROUGH BUDGET.

TABLE 6.2-16

MAT-SU BOROUGH BUDGET: IMPACT FORECAST OF REVENUES FOR THE SERVICE AREA
FUND; LAND MANAGEMENT FUND; AND MAXIMUM TOTAL BONDED INDEBTEDNESS.

YEAR	SERV. AREA	A		B	C
	FUND	NON A-WIDE PROP TAX SHARE	STATE SHARED REVENUE	LAND MANAGEMENT FUND	TOTAL BONDED INDEBTEDNESS
	TOT. REV				
	\$	\$	\$	(\$)	(\$000)
1981	1489319	446796	1042523	944438	67019.36
1982	1548892	464668	1084224	1016357	69700.13
1983	1612583	483775	1128808	1102304	72566.25
1984	1677012	503104	1173908	1191048	75465.53
1985	1747821	524346	1223474	1326536	78651.93
1986	1818549	545565	1272984	1444014	81834.71
1987	1914089	574227	1339862	1588148	86134.00
1988	1999166	599750	1399416	1699947	89962.45
1989	2081706	624512	1457194	1798141	93676.77
1990	3261944	978583	2283361	1867941	97858.32
1991	3385298	1015590	2369709	1963762	101558.95
1992	3511230	1053369	2457861	2038478	105336.90
1993	3637944	1091383	2546561	2143835	109138.32
1994	3776692	1133008	2643685	2236986	113300.77
1995	3922581	1176774	2745807	2346581	117677.44
1996	4078422	1223527	2854895	2456981	122352.66
1997	4240918	1272275	2968642	2588952	127227.53
1998	4410694	1323208	3087486	2706217	132320.82
1999	4584710	1375413	3209297	2848106	137541.29
2000	4763950	1429185	3334765	2974144	142918.49
2001	4943379	1483014	3460366	3115311	148418.48
2002	5136692	1541008	3595684	3262794	154110.75
2003	5339066	1601720	3737346	3420490	160171.98
2004	5550457	1665137	3885320	3586662	166513.70
2005	5770321	1731096	4039225	3761013	173109.63

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED UPON THE FOLLOWING:

(A) MILL LEVY FOR SERVICE AREAS:

0.5 PER \$1000 ASSESSED VALUATION (1981-1989).

0.75 PER \$1000 ASSESSED VALUATION (1990-2005).

(B) \$42.38 PER CAPITA.

(C) RATIO OF TOTAL BONDED INDEBTEDNESS TO TOTAL ASSESSED VALUATION IS 0.075.

over baseline in 1990, while other funds will average a 2.6 percent change due to the project. However, even in the absence of the project, Service Area Fund revenues will rise 114 percent by 1990 over 1981 levels, increasing at a faster rate than the population increase of 93 percent. Service Area Fund revenues will rise 119 percent by 1990 over 1981 levels with the project. Changes in the 1999 impact forecast over baseline forecast will be 50 percent less than those in 1990, averaging 1.3 percent for all funds, excluding the Service Area Fund. However, Service Area Fund revenues in 1999 and 2005 will remain a constant 25 percent over those forecast without the project. This is consistent with the population settlement forecasts that the majority of the population influx will reside in the outlying areas of the Borough.

The Borough will have to increase substantially the delivery of services to service areas. These include basic services such as sanitary land fill, library, fire protection, ambulance, and road construction and repair.

The Borough administration will experience a short-term impact from the lag between receipt of revenues and outlays for service costs. There may be an initial net deficit due to the costs of delivering services to substantially larger client groups and receiving additional revenues, both local and state. Increases in local revenues will be generated in the form of property taxes and service user charges.

The increased population will indirectly expand the tax base through changes of land ownership, whereby more Borough lands will be in private ownership. (See section 6.2(c)(v) for example of impacts on a service area.)

Currently property taxes account for 30 percent of total Service Area Fund revenues; however, this may change depending upon the mill levy rate per \$1,000 assessed valuation, the ratio of assessed value to real market value, and the proportion of total Service Area Revenues attributed to property taxes. There is usually a lag between the time new property is placed on tax rolls and is assessed, and the receipt of tax revenues. However, over time, increases in the tax base are anticipated to offset the increases in service delivery cost. In addition, there is a lag in the receipt of State revenues; however, these will continue to increase as long as allocation formulae are based upon population.

Certain General Fund sources of revenues will be impacted more than others: property tax revenues with the project, provided in Table 6.2-17, will rise nearly 5 percent in 1990 and 3.6 percent in 1999 over the baseline forecast. Actual property tax revenues will double by 1999 for both forecasts. These are based on a 4 percent annual real rate of increase in property values and a mill levy of 6.75 mills per \$1000 assessed valuation. Per capita share of property taxes declines from \$256.64 in 1981 to \$195.40 in 1990, and \$179.23 in 1999 under the baseline forecast.

TABLE 6.2-17

PROPERTY TAX IMPACT FORECAST FOR MAT-SU BOROUGH.

YEAR	MAT-SU BOROUGH POP	PER CAPITA ASSESSED VALUATION \$	TOTAL ASSESSED VALUATION (\$000)	AREAWIDE PROPERTY TAX \$	NONAREAWIDE PROPERTY TAX \$	TOTAL PROPERTY TAXES \$	PER CAPITA PROPERTY TAX \$
1981	22285	40098	893591	5361548	446796	5808344	260.64
1982	23982	38751	929335	5576010	464668	6040678	251.88
1983	26010	37199	967550	5805300	483775	6289075	241.79
1984	28104	35803	1006207	6037243	503104	6540346	232.72
1985	31301	33503	1048692	6292154	524346	6816501	217.77
1986	34073	32023	1091129	6546777	545565	7092341	208.15
1987	37474	30647	1148453	6890720	574227	7464946	199.20
1988	40112	29904	1199499	7196996	599750	7796746	194.37
1989	42429	29438	1249024	7494142	624512	8118653	191.35
1990	44076	29603	1304778	7828666	978583	8807249	199.82
1991	46337	29223	1354119	8124716	1015590	9140306	197.26
1992	48100	29199	1404492	8426952	1053369	9480321	197.10
1993	50586	28766	1455178	8731066	1091383	9822449	194.17
1994	52784	28620	1510677	9064061	1133008	10197069	193.18
1995	55370	28337	1569033	9414195	1176774	10590969	191.28
1996	57975	28139	1631369	9788213	1223527	11011739	189.94
1997	61089	27769	1696367	10178202	1272275	11450478	187.44
1998	63856	27629	1764278	10585665	1323208	11908874	186.50
1999	67204	27288	1833884	11003303	1375413	12378716	184.20
2000	70178	27154	1905580	11433479	1429185	12862664	183.29
2001	73509	26921	1978913	11873479	1484185	13357664	181.71
2002	76989	26690	2054810	12328861	1541108	13869969	180.16
2003	80710	26460	2135626	12813758	1601720	14415478	178.61
2004	84631	26234	2220183	13321096	1665137	14986233	177.08
2005	88745	26009	2308128	13848770	1731096	15579866	175.56

ASSUMPTIONS:

AREAWIDE MILL LEVY = 6.0 MILLS PER \$1000 ASSESSED VALUATION.

NON-AREAWIDE MILL LEVY = 0.5 MILLS (1981-1989).

0.75 MILLS (1990-2005).

REAL VALUE OF REAL AND PERSONAL PROPERTY IS ASSUMED TO
INCREASE 4% PER YEAR.

Declines in per capita share of property taxes with the project are \$199.82 in 1990 and \$184.20 in 1999, over 1981 levels.

State funds for school debt service reimbursement increase from 22 percent of total revenues in 1981 to 26 percent in 1990, when 100 percent of local school capital project debt is anticipated to be reimbursed by the state. This relative proportion remains constant through 2005. This represents a 250 percent increase in 1990 over 1981 levels and a 40 percent increase in 1999 over 1990 levels with the project forecast. Municipal Assistance monies with the project are projected to be 2.6 percent above baseline forecast in 1990, decreasing to 1.2 percent in 2000 over baseline forecast. Federal Revenue Sharing funds will follow the same trend. These two sources of funding are based primarily upon population and therefore vary directly with population forecast changes.

Total bonded indebtedness for the Mat-Su Borough is not anticipated to exceed 7.5 percent of total assessed valuation. By 1990 total bonded indebtedness for the Mat-Su Borough could reach \$95.3 million (baseline forecast) or \$97.8 million with the project. By 1999 this could increase to approximately \$137 million, with the project, and to \$173 million by 2005.

Expenditure forecasts are provided in Table 6.2-18. These are based upon average per capita expenditures found in the FY81/82 budget. The cost of

TABLE 6.2-18

MAT-SU BOROUGH: IMPACT PROJECTIONS FOR GENERAL FUND; SERVICE AREA FUND; AND LAND MANAGEMENT FUND EXPENDITURE

YEAR	MAT-SU BOROUGH POP	AREAWIDE GEN.FUND ADMIN	AMBULANCE	SANITARY LANDFILL.	LIBRARY	FIRE SERVICE	PARKS LAND & RECR	MNMG PROGRAM ADMIN	ROAD MAINT & REPR	TOTAL EXPENDS
1981	22285	16713750	668550	356560	713120	779975	1114250	1114250	797500	22257955
1982	23982	17986500	719460	383712	767424	839370	1199100	1199100	877250	23971916
1983	26010	19507828	780313	416167	832334	910365	1300522	1300522	964975	26013027
1984	28104	21078247	843130	449669	899339	983652	1405216	1405216	1061473	28125941
1985	31301	23475627	939025	500813	1001627	1095529	1565042	1565042	1167620	31310325
1986	34073	25554728	1073299	572426	1090335	1252182	1703649	1703649	1284382	34234647
1987	37474	28105672	1180438	629567	1199175	1377178	1873711	1873711	1412820	37652273
1988	40112	30084019	1263529	673882	1283585	1474117	2005601	2005601	1554102	40344436
1989	42429	31821976	1336523	712812	1357738	1559277	2121465	2121465	1709512	42740768
1990	44076	33056769	1389384	740472	1410422	1619782	2203785	2203785	1880463	44503861
1991	46337	34752594	1474437	778458	1482777	1702877	2316840	2316840	2068510	46893332
1992	48100	36074787	1530533	808075	1539191	1767665	2404986	2404986	2275361	48805582
1993	50586	37939740	1609657	849850	1618762	1859047	2529316	2529316	2502897	51438585
1994	52784	39587912	1679583	886769	1689084	1939808	2639194	2639194	2753186	53814731
1995	55370	41527236	1761862	930210	1771829	2034835	2768482	2768482	3028505	56591442
1996	57975	43481538	1844777	973986	1855212	2152046	2898769	2898769	3331355	59436453
1997	61089	45816586	1943845	1026292	1954841	2267616	3054439	3054439	3664491	62782548
1998	63856	47891914	2031894	1072779	2043388	2370330	3192794	3192794	4030940	65826834
1999	67204	50403293	2138444	1129034	2150541	2494627	3360220	3360220	4434034	69470411
2000	70178	52633489	2233063	1178990	2245696	2605007	3508899	3508899	4877437	72791480
2001	73509	55131750	2339056	1234951	2352288	2728654	3675450	3675450	5365181	76502781
2002	76989	57741750	2449790	1293415	2463648	2857832	3849450	3849450	5901699	80407034
2003	80710	60532500	2568192	1355928	2582720	2995955	4035500	4035500	6491869	84598165
2004	84631	63473250	2692958	1421801	2708192	3141503	4231550	4231550	7141056	89041860
2005	88745	66558750	2823866	1490916	2839840	3294214	4437250	4437250	7855162	93737248

ASSUMPTIONS:

EXPENDITURE PROJECTIONS WERE BASED ON THE FOLLOWING:

- (A) \$30 1981-1985; +5% 1986-1990; +1% 1991-2005.
- (B) \$16 1981-1985; +5% 1986-2005.
- (C) \$32 1981-2005.
- (D) \$35 1981-1985; +5% 1986-1995; +1% 1996-2005.
- (E) \$50 1981-2005.
- (F) \$50 1981-2005.
- (G) \$2500 PER MILE; +10% PER YEAR

PROJECTIONS DO NOT INCLUDE ALL CATEGORIES OF EXPENDITURE.

delivering services almost doubles by 1990 and increases by only 55 percent in 1999 over 1990 levels with or without the project. The vast majority of impacts will be experienced in the increase in delivery of services to service areas with particular emphasis on communities experiencing a large population influx, such as Talkeetna and Trapper Creek. Total differences between baseline and impact forecasts in the costs of service average 2.6 percent in 1990, and only 1.3 percent in 1999. Costs for administration, fire service, and road maintenance and repair are likely to experience the largest increases. Service user changes are anticipated to rise proportionately to the increases in the costs of service delivery.

- Matanuska-Susitna Borough School District Budget

The school district budget for FY 81/82 is the single largest category of revenues and expenditures across all services provided within the Borough and within the incorporated communities. Table 6.2-19 provides impact forecasts of school district revenues to 2005, and Table 6.2-20 provides a comparison of baseline and impact forecasts of major revenues and expenditures for the school district budget. Total revenues more than double by 1990 and increase approximately 60 percent by 1999 over 1990 levels with or without the project. This is consistent with increases in the school age population. The impact of the project results in an overall 2.5 percent average increase in 1990 over the baseline forecast; 1.1 percent in 2000, and 0.7 percent in 2005.

TABLE 6.2-19

MAT-SU SCHOOL DISTRICT BUDGET: IMPACT REVENUE FORECASTS.

YEAR	SCH POP	ST FNDTN	ST TRANS	TOTAL LOC	FEDERAL	TOTAL
	MAT-SU	PROG REV	REVENUE	ST REV	TAXES REVENUES	REVENUES
BOROUGH	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)
1981	4680	15030	2106	17136	5362	23902
1982	5468	17561	2461	20021	5576	27238
1983	5931	19048	2669	21716	5799	29295
1984	6409	20583	2884	23467	6031	31420
1985	7140	22930	3213	26143	6272	34557
1986	7772	24960	3497	28457	6523	37312
1987	8564	27503	3854	31357	6784	40710
1988	9251	29710	4163	33873	7055	43703
1989	9828	31563	4423	35985	7337	46271
1990	10304	34746	4637	39383	7631	50105
1991	10921	36827	4914	41741	7936	52953
1992	11429	38540	5143	43683	8253	55364
1993	12066	40688	5430	46117	8584	58321
1994	12692	42799	5711	48510	8927	61245
1995	13422	45260	6040	51300	9284	64611
1996	14109	47577	6349	53926	9655	67814
1997	14987	50538	6744	57282	10042	71820
1998	15791	53249	7106	60355	10443	75535
1999	16684	56260	7508	63768	10861	79634
2000	17561	59217	7902	67120	11295	83683
2001	18393	62023	8277	70300	11748	87566
2002	19263	64957	8668	73625	12218	91622
2003	20184	68062	9083	77145	12706	95906
2004	21165	71370	9524	80895	13215	100459
2005	22193	74837	9987	84824	13743	105225

ASSUMPTIONS:

- (A) # OF INSTRUCTIONAL UNITS * 1.04 * \$38,600 (1981-1989) +5%
- (B) \$450 PER PUPIL
- (C) BASED ON 6.0 MILLS PER \$1000 ASSESSED VALUATION.
- (D) \$300 PER PUPIL

PROJECTIONS INCLUDE ONLY MAJOR SOURCES OF REVENUE FOR THE SCHO

TABLE 6.2-20

SUMMARIZED FISCAL IMPACTS OF THE PROJECT ON THE MAT-SU BOROUGH SCHOOL DISTRICT

<u>REVENUES (\$000)</u> ¹	<u>State Foundation Program Revenue</u>	<u>State Trans. Revenue</u>	<u>Total State Revenues</u>	<u>Local Property Taxes</u>	<u>Federal Revenues</u>	<u>Total Revenues</u>		
1981 Current	15,030	2,106	17,136	5,362	1,404	23,901		
1990 Baseline Forecast	33,758	4,505	38,263	7,631	3,003	48,897		
1990 Forecast W. Project	34,746	4,637	39,383	7,828	3,091	50,105		
Impact of Project	988	132	1,120	197	88	1,208		
% Change	2.93	2.93	2.93	2.58	2.93	2.47		
1999 Baseline Forecast	55,478	7,403	62,881	10,861	4,936	78,678		
1999 Forecast W. Project	56,260	7,508	63,768	11,003	5,005	79,634		
Impact of Project	782	105	887	142	69	956		
% Change	1.41	1.42	1.41	1.32	1.40	1.22		
<u>EXPENDITURES (\$000)</u>	<u>Regular Instruction</u>	<u>Vocational Instruction</u>	<u>Special Education</u>	<u>Support Services</u>	<u>Operations and Maintenance</u>	<u>Pupil Trans- portation</u>	<u>Other</u> ²	<u>Total Expend</u>
1981 Current	8,726	1,058	1,587	4,760	5,024	2,115	3,173	26,442
1990 Baseline Forecast	17,819	1,188	5,940	10,691	10,691	5,940	7,127	59,395
1990 Forecast W. Project	18,340	1,223	6,113	11,004	11,004	6,113	7,336	61,134
Impact of Project	521	35	173	313	313	173	209	1,739
% Change	2.92	2.95	2.91	2.93	2.93	2.91	2.93	2.93
1999 Baseline Forecast	29,283	1,952	9,761	17,570	17,570	9,761	11,713	97,610
1999 Forecast W. Project	29,696	1,980	9,899	17,818	17,818	9,899	11,878	98,986
Impact of Project	413	28	138	248	248	138	165	1,376
% Change	1.4	1.43	1.41	1.41	1.41	1.41	1.41	1.41

1. Revenues do not include State Reimbursement for School Debt Service Payments. See General Fund Table 5.28.

2. This category includes some capital improvements.

Forecasts in 1981 \$.

Selected years from forecasts prepared by Frank Orth & Associates, Inc.

Total State revenues comprise approximately 78 percent of total school revenues with State Foundation Program revenues accounting for 88 percent of total State funding. Local property taxes provide approximately 15 percent, with the remainder of revenues coming from Federal sources. Local property taxes for school revenues are based on a mill levy of 6 mills per \$1000 assessed valuation. School Debt Service Reimbursement monies from the State go to the General Fund to pay for major capital projects, and thereby make up the shortfall found between total expenditures and total revenues. The lag between reimbursement of funds and expenditures to be paid produces a short-term impact on fiscal cash flows. This condition would prevail even in the absence of the project.

Tables 6.2-21 and 6.2-22 provide the impact forecast for the Mat-Su Borough School District expenditures and Table 6.2-20 provides a summary comparison of baseline and impact forecasts. Total expenditures will follow a similar trend as revenues, increasing by 125 percent in 1990 over 1981 levels and by 62 percent over 1990 levels without the project. With the project, increases in expenditures between 1981 and 1990 will average 130 percent and 64 percent between 1990 and 1999. In either case, expenditures for education will be rising at a faster rate than the increase in revenues. Regular instruction comprises 30 percent of total expenditures, with special and vocational education accounting for 10 percent and 2 percent, respectively. Special education is anticipated to

TABLE 6.2-21

MAT-SU BOROUGH SCHOOL DISTRICT BUDGET: IMPACT EXPENDITURE FORECAST.

YEAR	A REGULAR INSTRN (\$000)	B VOCATNL EDUCTN (\$000)	C SPECIAL EDUCTN (\$000)	D SUPPORT SERVICES (\$000)	E OPERTNS MAINTN (\$000)	F PUPIL TRANSPN (\$000)	G OTHER (\$000)	H TOTAL EXPENDS (\$000)
1981	8726	1058	1587	4760	5024	2115	3173	26442
1982	10195	1236	1854	5561	5870	2472	3707	30894
1983	11058	1340	2011	6032	6367	2681	4021	33510
1984	11950	1448	2173	6518	6880	2897	4345	36211
1985	12102	807	4034	7261	7261	4034	4841	40341
1986	13174	878	4391	7904	7904	4391	5269	43912
1987	14516	968	4839	8710	8710	4839	5806	48387
1988	15680	1045	5227	9408	9408	5227	6272	52268
1989	16658	1111	5553	9995	9995	5553	6663	55528
1990	18340	1223	6113	11004	11004	6113	7336	61134
1991	19438	1296	6479	11663	11663	6479	7775	64794
1992	20342	1356	6781	12205	12205	6781	8137	67808
1993	21476	1432	7159	12886	12886	7159	8591	71588
1994	22590	1506	7530	13554	13554	7530	9036	75302
1995	23890	1593	7963	14334	14334	7963	9556	79633
1996	25113	1674	8371	15068	15068	8371	10045	83709
1997	26675	1778	8892	16005	16005	8892	10670	88918
1998	28106	1874	9369	16864	16864	9369	11243	93688
1999	29696	1980	9899	17818	17818	9899	11878	98986
2000	31257	2084	10419	18754	18754	10419	12503	104189
2001	32738	2183	10913	19643	19643	10913	13095	109126
2002	34286	2286	11429	20572	20572	11429	13714	114287
2003	35926	2395	11975	21555	21555	11975	14370	119752
2004	37672	2511	12557	22603	22603	12557	15069	125572
2005	39501	2633	13167	23701	23701	13167	15801	131671

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED UPON THE FOLLOWING:

- (A) 33% OF TOTAL EXPENDITURES, 1981-1984; 30% 1985-2005.
- (B) 4% 1981-1984; 2% 1985-2005.
- (C) 6% 1981-1984; 10% 1985-2005.
- (D) 18% 1981-2005.
- (E) 19% 1981-1984; 18% 1985-2005.
- (F) 8% 1981-1984; 10% 1985-2005.
- (G) 12% 1981-2005. THIS INCLUDES

SOME CAPITAL IMPROVEMENTS.

- (H) TOTAL EXPENDITURES PER PUPIL \$5650 1981-1989;
\$5933 1990-2005.

TABLE 6.2-22

MAT-SU BOROUGH SCHOOL DISTRICT BUDGET: IMPACT
EXPENDITURE FORECAST, OPERATIONS & MAINTENANCE.

YEAR	PRIMARY POPLTN	TOTAL EXPENDS PRIMARY (\$000)	SECDRY POPLTN	TOTAL EXPENDS SECDRY (\$000)	TOTAL SCHOOL EXPENDS (\$000)
1981	2527	7202	2153	7643	14845
1982	2953	8416	2515	8928	17344
1983	3203	9129	2728	9684	18813
1984	3401	9693	2949	10469	20162
1985	3856	10990	3284	11658	22648
1986	4198	11964	3576	12695	24659
1987	5625	16031	3938	13980	30011
1988	4997	14241	4254	15102	29343
1989	5309	15131	4520	16046	31177
1990	5565	16712	4738	17663	34375
1991	5898	17712	5022	18722	36434
1992	6172	18535	5256	19594	38129
1993	6517	19571	5549	20687	40257
1994	6855	20586	5836	21757	42342
1995	7249	21769	6173	23013	44782
1996	7621	22886	6489	24191	47077
1997	8094	24306	6893	25697	50003
1998	8529	25613	7263	27076	52689
1999	9011	27060	7674	28607	55669
2000	9484	28480	8076	30107	58588
2001	9934	29832	8459	31535	61367
2002	10403	31240	8860	33030	64270
2003	10901	32736	9284	34611	67346
2004	11430	34324	9735	36292	70616
2005	11985	35991	10208	38055	74046

ASSUMPTIONS:

PROJECTIONS WERE BASED UPON THE FOLLOWING:

AVERAGE PER PUPIL EXPENDITURE FOR O&M,
ELEMENTARY \$2850 1981-1989; \$3003 1990-2005

SECONDARY \$3550 1981-1989; \$3728 1990-2005

increase substantially from 6 percent in 1981 due to the passage of PL 94142. Current plans for capital projects for educational facilities take into account the possible increases in school-age population which will be associated with the project. It is anticipated that school facilities will have sufficient capacity to adequately handle the influx. Average costs of education excluding capital projects are assumed to increase by 5 percent in real dollars by 1990. Average per pupil expenditures excluding capital projects are assumed to be \$3,003 per elementary pupil and \$3,728 per secondary pupil.

- City of Palmer

The effects of the Susitna hydroelectric project on fiscal flows in the City budget will be negligible. Total increases in revenues will vary from one percent in 1990 and 0.56 percent in 1999 over the baseline forecast (See Tables 6.2-23 and 6.2-24, 6.2-25) In general, increases average 76 percent in 1990 over 1981 and 41 percent in 1999 over 1990 levels assuming normal growth. Between 1981 and 1990 revenues will increase 78 percent with the project; however, between 1990 and 1999 the impacts on fiscal flows will be virtually the same with or without the project, averaging approximately a 40 percent increase over 1990 levels.

Local sources of revenue provide 35 percent of total General Fund revenues: property taxes account for 52 percent of total local revenues and

TABLE 6.2-23: SUMMARIZED FISCAL IMPACTS OF THE PROJECT ON PALMER

	Property Taxes	State Sales Tax	Total Local Revenues	Intergovt. Revenue	Service Charges	Misc. Revenue	Total General Fund Revenue	Total Water Fund Revenue	Total Sewer Fund Revenue	Capital Project Fund Revenues		
REVENUES (\$000)												
1981 Current	256	240	497	355	336	231	1,420	249	108	2,258		
1990 Baseline Forecast	452	423	875	625	610	390	2,501	440	190	3,982		
1990 Forecast W. Project	457	427	884	631	617	399	2,525	443	192	4,018		
Impact of Project	5	4	9	6	7	9	24	3	2	30		
% Change	1.11	0.95	1.0	.9	1.15	2.31	0.96	0.68	1.04	0.75		
1999 Baseline Forecast	617	576	1,193	852	833	531	3,409	599	259	5,426		
1999 Forecast W. Project	620	580	1,200	857	837	539	3,428	602	261	5,456		
Impact of Project	3	4	7	5	4	8	19	3	2	30		
% Change	0.49	0.70	0.59	0.59	0.48	1.51	0.56	0.50	0.77	0.55		
										Total Bonded Indebted- ness		
EXPENDITURES (\$000)	Admin.	Police	Fire	Ambulance	Parks and Recreation	Health	Library	Public Works	Water Supply	Sewer	Total Expend.	
1981 Current	487	487	128	49	59	80	85	642	205	103	2,326	2,692
1990 Baseline Forecast	860	886	238	90	104	140	149	1,188	362	181	4,198	3,832
1990 Forecast W. Project	868	894	240	91	105	142	151	1,199	365	183	4,236	3,832
Impact of Project	8	8	2	1	1	2	2	11	3	2	38	0
% Change	0.93	0.90	0.84	1.11	0.96	1.43	1.34	0.93	0.83	1.1	0.91	0
1999 Baseline Forecast	1,171	1,207	327	124	142	191	204	1,619	493	247	5,725	5,453
1999 Forecast W. Project	1,178	1,213	329	125	143	192	205	1,628	496	248	5,756	5,453
Impact of Project	7	6	2	1	1	1	1	9	3	1	31	0
% Change	0.60	0.50	0.61	0.81	0.70	0.52	0.50	0.56	0.51	0.40	0.54	0

Forecasts in 1981 \$.

Selected years from forecasts prepared by Frank Orth & Associates, Inc.

(135)1.3520

TABLE 6.2-24

CITY OF PALMER BUDGET: GENERAL FUND REVENUE IMPACT FORECAST.

YEAR	PALMER POP	A PROPERTY TAX REVENUE	B SALES TAX REVENUE	TOTAL LOCAL TAX REV	C INTER GOVT REVENUE	D SERVICE CHARGES	MISCL REVENUE	TOTAL GENERAL REVENUE
1981	2567	256700	239963	496663	354759	336277	231338	1419038
1982	2734	273400	255574	528974	377839	358154	246388	1511355
1983	2913	291323	272328	563651	402608	381633	262709	1610431
1984	3102	310224	289998	600222	428730	406394	279746	1714920
1985	3306	330627	309070	639696	456926	433121	298550	1827704
1986	3522	352234	329268	681502	486787	475516	304082	1947150
1987	3768	376794	352227	729020	520729	508671	327526	2082916
1988	4019	401865	375664	777529	555378	542518	350184	2221511
1989	4281	428131	400216	828347	591676	577976	373309	2366706
1990	4567	456677	426901	883578	631127	616514	399062	2524509
1991	4723	472346	441549	913895	652782	637667	412375	2611128
1992	4885	488463	456615	945079	675056	659425	425865	2700225
1993	5050	505018	472091	977109	697935	681774	439507	2791739
1994	5224	522432	488370	1010802	722001	705284	454247	2888005
1995	5404	540423	505187	1045610	746864	729571	469590	2987458
1996	5593	559286	522821	1082107	772934	755037	485923	3091735
1997	5789	578881	541138	1120019	800013	781489	502928	3200054
1998	5992	599210	560141	1159351	828108	808933	520613	3312431
1999	6200	620045	579618	1199662	856902	837060	538604	3427606
2000	6416	641571	599740	1241311	886651	866120	557041	3546602
2001	6635	663500	620240	1283740	916957	895725	575414	3667828
2002	6866	686600	641834	1328434	948881	926910	595170	3795525
2003	7104	710400	664082	1374482	981773	959040	615528	3927091
2004	7352	735200	687265	1422465	1016046	992520	636886	4064186
2005	7608	760800	711196	1471996	1051426	1027080	658932	4205702

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING:

(A) MILL LEVY OF 4.0 MILLS PER \$1000 ASSESSED VALUATION; AVERAGE PER CAPITA ASSESSES VALUATION \$25000.00.

(B) SALES TAX=2% OF GROSS RETAIL SALES, PER CAPITA ESTIMATED RETAIL SALES \$4674.00.

(C) 25% OF TOTAL GENERAL REVENUE.

(D) \$131.00 1981-1985; \$135.00 1986-2005.

PROJECTIONS INCLUDE ONLY MAJOR SOURCES OF REVENUE.

TABLE 6.2-25

CITY OF PALMER BUDGET: SPECIAL FUNDS-REVENUE IMPACT FORECAST.

WATER FUND REVENUES

SEWER FUND REVENUES

YEAR	A CHARGES FOR SERVICE	RENTS	B TRANSFERS FROM FUNDS	TOTAL WATER FUND REVENUE	C CHARGES FOR SERVICE	INTEREST & MISC	TOTAL SEWER FUND REVENUE	D CAPITAL PROJECT FUND REVENUE
1981	87278	22443	139645	249366	82144	25940	108084	2258960
1982	92956	23903	148730	265589	87488	27628	115116	2405920
1983	99050	25470	158479	282999	93223	29439	122662	2563638
1984	105476	27122	168762	301361	99272	31349	130621	2729974
1985	112413	28906	179861	321180	105801	33411	139211	2909514
1986	119760	30795	191615	342170	112715	35594	148309	3099659
1987	128110	32943	204976	366028	120574	38076	158650	3315784
1988	136634	35135	218615	390383	128597	40610	169206	3536414
1989	145564	37431	232903	415898	137002	43264	180266	3767549
1990	155270	39927	248432	443629	146137	46148	192285	4018756
1991	160598	41297	256956	458850	151151	47732	198882	4156643
1992	166077	42706	265724	474507	156308	49360	205669	4298476
1993	171706	44153	274730	490589	161606	51033	212639	4444158
1994	177627	45676	284203	507506	167178	52793	219971	4597404
1995	183744	47248	293990	524982	172935	54611	227546	4755721
1996	190157	48898	304252	543307	178972	56517	235489	4921720
1997	196820	50611	314911	562341	185242	58497	243739	5094152
1998	203731	52388	325970	582089	191747	60552	252299	5273045
1999	210815	54210	337304	602329	198414	62657	261071	5456392
2000	218134	56092	349014	623240	205303	64832	270135	5645821
2001	225590	58009	360944	644543	212320	67048	279368	5838800
2002	233444	60028	373510	666983	219712	69383	289095	6042080
2003	241536	62109	386458	690103	227328	71788	299116	6251520
2004	249968	64277	399949	714194	235264	74294	309558	6469760
2005	258672	66516	413875	739063	243456	76881	320337	6695040

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING:

- (A) AVERAGE PER CAPITA CHARGE \$34.00.
- (B) 76% OF TOTAL WATER FUND REVENUE.
- (C) AVERAGE PER CAPITA CHARGE \$32.00.
- (D) AVERAGE PER CAPITA REVENUE = \$880.00.

are based on a mill levy of 4 mills per \$1000 assessed valuation; sales tax revenues represent the balance of local revenues, based upon a 2 percent gross retail sales tax assuming average per capita expenditures of \$4,674 per year for retail consumption. In addition, Palmer provides services based upon user-fees to help cover the cost of service delivery. These user fees are assumed to increase 3 percent in real dollars by 1990 and represent 30 percent of total General Fund revenues. Charges for service account for 35 percent of total Water Fund revenues; while service charges provide 76 percent of Sewer Fund revenues (See Table 6.2-25).

The ratio of total bonded indebtedness to assessed valuation is currently 4 percent and is not anticipated to exceed this ratio. Total possible bonded indebtedness under these assumptions would be \$4.0 million in 1990, \$5.4 million in 1999 and \$6.7 million in 2005, with little variation between the baseline and impact forecasts.

Impact forecasts for expenditures are provided in Table 6.2-26 and 6.2-23. Expenditures, like revenues, are not noticeably impacted by the changes in population influx due to the project. Expenditures for social services and facilities rise approximately 0.9 percent over the baseline forecast in 1990 at a slightly slower rate than increases in total revenues. Total expenditures increase from \$2.3 million in 1981 to \$4.2 million in 1990 and reach \$5.7 million in 1999 without the project. Expenditures with the project in 1999

TABLE 6.2-26

CITY OF PALMER BUDGET : IMPACT EXPENDITURE FORECAST.

YEAR	PALMER POP	A ADMIN	B POLICE	C FIRE	D AMBULANCE	E PARA S & RECR TN	F HEALTH	G LIBRARY	H PUBLIC WORKS	I WATER SUPPLY	J SEWER	TOTAL EXPENDS	K TOTAL ASSESSED VALUATION (\$000)	L TOTAL BONDED INDEBT DNS (\$000)
1981	2567	487730	487730	128350	48773	59041	79577	84711	641750	205360	102680	2325702	67299	2692
1982	2734	519460	519460	136700	51946	62882	84754	90222	683500	218720	109360	2477004	69991	2800
1983	2913	553513	553513	145661	55351	67004	90310	96136	728306	233058	116529	2639382	72791	2912
1984	3102	589426	589426	155112	58943	71352	96170	102374	775561	248179	124090	2810633	75702	3028
1985	3306	628190	628190	165313	62819	76044	102494	109107	826566	264501	132251	2995477	78730	3149
1986	3522	669245	669322	184923	70271	81014	109193	116237	924614	281787	140894	3267499	81880	3275
1987	3768	715908	737385	197817	75170	86663	116806	124342	989083	301435	150717	3495327	85155	3406
1988	4019	763544	786450	210979	80172	92429	124578	132616	1054896	321492	160746	3727903	88561	3542
1989	4281	813448	837852	224769	85412	98470	132720	141283	1123843	342504	171252	3971553	92103	3684
1990	4567	867686	893716	239755	91107	105036	141570	150703	1198777	365341	182671	4236362	95788	3832
1991	4723	897457	924381	247982	95178	108640	146427	155874	1239908	377877	188938	4382660	99619	3985
1992	4885	928080	955922	256443	98425	112347	151424	161193	1282216	390771	195385	4532206	103604	4144
1993	5050	959534	988320	265134	101761	116154	156556	166656	1325672	404014	202007	4685809	107748	4310
1994	5224	992621	1022400	274277	105270	120159	161954	172403	1371385	417946	208973	4847388	112058	4482
1995	5404	1026803	1057608	283722	108895	124297	167531	178340	1418610	432338	216169	5014314	116540	4662
1996	5593	1062644	1094523	296590	112696	128636	173379	184564	1468127	447429	223715	5192303	121202	4848
1997	5789	1099874	1132870	306981	116645	133143	179453	191031	1519562	463105	231552	5374215	126050	5042
1998	5992	1138498	1172653	317761	120741	137818	185755	197739	1572925	479368	239684	5562943	131092	5244
1999	6200	1178085	1213427	328810	124939	142610	192214	204615	1627617	496036	248018	5756369	136336	5453
2000	6416	1218984	1255554	340225	129276	147561	198887	211718	1684123	513256	256628	5956213	141789	5672
2001	6635	1260650	1298470	351854	133695	152605	205685	218955	1741688	530800	265400	6159801	147461	5898
2002	6866	1304540	1343676	364104	138350	157918	212846	226578	1802325	549280	274640	6374257	153359	6134
2003	7104	1349760	1390253	376725	143146	163392	220224	234432	1864800	568320	284160	6595212	159493	6380
2004	7352	1396880	1438786	389877	148143	169096	227912	242616	1929900	588160	294080	6825450	165873	6635
2005	7608	1445520	1488886	403452	153301	174984	235848	251064	1997100	608640	304320	7063115	172508	6900

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING:

- (A) \$190.00 (1981-2005)
- (B) \$190.00 (1981-1985) +3% 1986-2005.
- (C) \$ 50.00 (1981-1985) +5% 1986-1995; +1% 1996-2005.
- (D) \$ 19.00 (1981-1985) +5% 1986-1990; +1% 1991-2005.
- (E) \$ 23.00 (1981-2005)
- (F) \$ 31.00 (1981-2005)
- (G) \$ 33.00 (1981-2005)
- (H) \$250.00 (1981-1985) +5% 1986-2005.
- (I) \$ 80.00 (1981-2005)
- (J) \$ 40.00 (1981-2005)
- (K) INCREASES AT 4% PER YEAR IN 1981 DOLLARS.
- (L) ASSUMED NOT TO EXCEED 4% OF TOTAL ASSESSED VALUATION.

will increase approximately half of one percent over the baseline forecast. Between 1990 and 1999 expenditures will average a 41 percent increase among all services with or without the project. Expenditures thus rise faster than population increases with or without the project between 1990 and 1999. No sudden large capital improvements are anticipated for the City of Palmer with or without the project. Expansion or additions to existing facilities and services appear to be well integrated into the current planning process.

- City of Wasilla

Fiscal impacts on the City of Wasilla will vary due to normal growth, and growth attributed to the population influx associated with the project will be negligible. Actual increases in revenues will average about 95 percent with or without the project, for each decade: 92 percent by 1990, 104 percent by 2000 for baseline; 94 percent by 1990, 102 percent by 2000 for impact forecast (see Tables 6.2-27 and 6.2-28). The higher rates of increase in the 1990's with or without the project indicate rapid growth at an increasing rate between 1981 and 2005 for the City of Wasilla.

Actual impacts associated with the project will be very small, with increases in revenues and expenditures averaging about 1.2 percent over the baseline forecast in 1990 and about 0.5 percent over the baseline forecast in 1999. The majority of revenues comprise State shared taxes and State revenue sharing. Locally derived revenues from

TABLE 6.2-27

CITY OF WASILLA BUDGET: IMPACT REVENUE FORECAST.

							E	
			B	C	D		CAPITAL	F
A			STATE	FEDERAL	LISC	TOTAL	PROJECT	LIBRARY
WASILLA			SHARED	& STATE	FINES	GENERAL	FUND	FUND
YEAR	POP	TRANSFR	TAXES	REVENUE	MISC	FUND	STATE	FUND
1981	2168	26016	314360	195120	21680	557176	3533840	101896
1982	2331	27972	337995	209790	23310	599067	3799530	109557
1983	2506	30076	363424	225573	25064	644137	4085382	117799
1984	2694	32333	390688	242496	26944	692461	4391876	126637
1985	2900	34797	420466	260979	28998	745240	4726617	136289
1986	3118	37415	452102	280615	31179	801312	5082254	146544
1987	3372	40469	488998	303516	33724	866706	5497007	158503
1988	3633	43591	526721	326930	36326	933567	5921067	170730
1989	3907	46883	566507	351625	39069	1004086	6368325	183627
1990	4207	50485	610032	378640	42071	1081228	6857596	197734
1991	4517	54200	654911	406497	45166	1160774	7362109	212282
1992	4849	58183	703040	436370	48486	1246078	7903139	227882
1993	5205	62456	754682	468423	52047	1337609	8483667	244621
1994	5590	67076	810504	503071	55897	1436548	9111179	262715
1995	6004	72054	870651	540404	60045	1543154	9787320	282211
1996	6453	77437	935701	580780	64531	1658449	10518568	303296
1997	6935	83220	1005579	624153	69350	1782303	11304101	325946
1998	7453	89441	1080749	670810	74534	1915534	12149107	350312
1999	8010	96118	1161424	720884	80098	2058524	13056008	376462
2000	8514	102168	1234532	766261	85140	2188102	13877844	400159
2001	9129	109548	1323705	821610	91290	2346153	14880270	429063
2002	9790	117480	1419550	881100	97900	2516030	15957700	460130
2003	10503	126036	1522935	945270	105030	2699271	17119890	493641
2004	11267	135204	1633715	1014030	112670	2895619	18365210	529549
2005	12087	145044	1752615	1087830	120870	3106359	19701810	568089

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED UPON THE FOLLOWING AVERAGE PER CAPITA REVENUES
FOR F/Y 1981-1982.

(A) \$12 (E) \$10
(B) \$145 (F) \$1,630
(C) \$90 (G) \$47
(D) \$10

PROJECTIONS INCLUDE ONLY MAJOR SOURCES OF REVENUE .

TABLE 6.2-28 SUMMARIZED FISCAL IMPACTS OF THE PROJECT ON WASILLA

REVENUES (\$000)	Intergovt. Transfer	State Shared Taxes	Federal & State Revenue Sharing	Licenses Fines & Mics.	Total General Fund Revenues	Capital Project Fund Revenues	Library Fund Revenues
1981 Current	26	314	195	22	557	3,533	102
1990 Baseline Forecast	49	603	374	41	1,067	6,776	195
1990 Forecast W. Project	50	610	379	42	1,081	6,858	198
Impact of Project	1	7	5	1	14	82	3
% Change	2.04	1.16	1.34	2.44	1.22	1.21	1.54
1999 Baseline Forecast	95	1,156	717	79	2,047	12,989	374
1999 Forecast W. Project	96	1,161	721	80	2,058	13,056	376
Impact of Project	1	5	4	1	11	67	2
% Change	1.05	0.43	0.56	1.27	0.54	0.52	0.53
EXPENDITURES (\$000)	Parks & Recreation	Library	Fire Service	Local Government Administration	Road Maint. & Repair	Total O + M	Capital Project Expend.
1981 Current	47	102	74	264	191	679	3,794
1990 Baseline Forecast	91	195	148	507	366	1,308	7,275
1990 Forecast W. Project	93	198	150	513	370	1,324	7,362
Impact of Project	2	3	2	6	4	16	87
% Change	2.20	1.54	1.35	1.18	1.09	1.22	1.20
1999 Baseline Forecast	175	375	287	972	701	2,511	13,946
1999 Forecast W. Project	176	376	289	977	705	2,523	14,017
Impact of Project	1	1	2	5	4	12	71
% Change	0.57	0.27	0.70	0.51	0.57	0.48	0.51

Forecasts in 1981 \$.

Selected years from forecasts prepared by Frank Orth & Associates, Inc.

licenses and fines account for only four percent of total revenues, though additional revenues are to be generated from an assessment on lots directly benefitting from a new centralized water supply system. The City of Wasilla does not levy property taxes, and it does not utilize service user fees to cover costs of service delivery. In addition, capital projects are funded primarily through State and local grants.

Expenditure forecasts with the project are provided in Tables 6.2-29 and 6.2-28. Expenditure forecasts are derived from actual average per capita costs of service, with each service accounting for the following share of total expenditures, excluding capital project costs: parks and recreation seven percent, library 15 percent, fire service 11 percent, local government administration 39 percent, and road maintenance and repair 28 percent. These proportions are assumed to remain fairly constant over the period of the forecasts, with possible increases in administration and road repairs due to the increased population influx. The trends for expenditures are the same as those described above for revenues, with rates of growth in the 1990's exceeding those of the 1980's with or without the Susitna project.

- City of Houston

Impact forecasts of revenues and expenditures are provided in Table 6.2-30, 6.2-31 and 6.2-32. The trends of revenues and expenditures are very similar with increases of approximately 150 percent

TABLE 6.2-29

CITY OF WASILLA BUDGET: IMPACT EXPENDITURE FORECAST.

YEAR	WASILLA POP	A PARKS & RECR	B LIBRARY	C FIRE SERVICE	D LOCAL GOVT ADMIN	E ROAD MAINT & REPAIR	F TOTAL OPERS & MAINT	G CAPITAL PROJECTS EXPENDS
1981	2168	47696	101896	73712	264496	190784	678584	3794000
1982	2331	51282	109557	79254	284382	205128	729603	4079250
1983	2506	55140	117799	85217	305777	220561	784494	4386147
1984	2694	59277	126637	91610	328717	237107	843348	4715204
1985	2900	63795	136289	98592	353771	255179	907627	5074589
1986	3118	68595	146544	111311	380390	274379	981218	5456408
1987	3372	74193	158503	120395	411432	296771	1061293	5901695
1988	3633	79916	170730	129682	443172	319665	1143166	6356974
1989	3907	85953	183627	139478	476648	343811	1229517	6837159
1990	4207	92557	197734	150194	513268	370226	1323979	7362450
1991	4517	99366	212282	161244	551029	397464	1421384	7904104
1992	4849	106668	227882	173093	591523	426673	1525839	8484965
1993	5205	114503	244621	185808	634974	458014	1637920	9108231
1994	5590	122973	262715	199552	681941	491892	1759072	9781941
1995	6004	132099	282211	214360	732548	528395	1889613	10507859
1996	6453	141968	303296	232635	787279	567874	2033052	11292942
1997	6935	152571	325946	250008	846074	610283	2184882	12136304
1998	7453	163976	350312	268697	909320	655903	2348206	13043520
1999	8010	176216	376462	288754	977198	704864	2523494	14017186
2000	8514	187308	400159	306930	1038710	749233	2682340	14899526
2001	9129	200838	429063	329100	1113738	803352	2876091	15975750
2002	9790	215380	460130	352930	1194380	861520	3084340	17132500
2003	10503	231066	493641	378633	1281366	924264	3308970	18380250
2004	11267	247874	529549	406175	1374574	991496	3549668	19717250
2005	12087	265914	568089	435736	1474614	1063656	3808009	21152250

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING AVERAGE PER CAPITA COSTS :

(A)\$22

(B)\$47

(C)\$34; +5% 1986-1995; +1% 1996-2005.

(D)\$122

(E)\$88

(F)\$1,750

TABLE 6.2-3G

CITY OF HOUSTON BUDGET: ESTIMATES OF FUTURE GRANT FUNDING-IMPACT FORECAST

YEAR	HOUSTON POP	A ROAD MAINT & REPAIR	B JOBS PROG PARKS & RECR	C STATE LEGISL	D STATE REVENUE SHARING	E STATE SUPPLMT REVEUE	F MUNICPL ASSIST REVENUE	G FEDERAL REVENUE SHARING	H SP168 PER CAPITA GRANT	TOTAL ESTIMTD GRANT FUNDING
1981	600	109200	96600	11400	79800	12000	44400	2400	81000	436800
1982	660	120120	106260	12540	87780	13200	48840	2640	89100	480480
1983	727	132308	117042	13812	96687	14539	53796	2908	98141	529234
1984	800	145601	128801	15200	106400	16000	59200	3200	108000	582402
1985	881	160409	141901	16746	117222	17627	65221	3525	118985	641637
1986	970	176575	156201	18434	129035	19404	71794	3881	130976	706299
1987	1083	197164	174414	20583	144081	21666	80166	4333	146248	788656
1988	1196	217721	192599	22729	159104	23925	88524	4785	161496	870884
1989	1317	239629	211980	25016	175114	26333	97432	5267	177747	958518
1990	1453	264529	234007	27616	193310	29069	107556	5814	196217	1058117
1991	1593	289997	256536	30274	211921	31868	117911	6374	215108	1159989
1992	1747	318005	281312	33198	232388	34946	129299	6989	235883	1272020
1993	1915	348523	308309	36384	254690	38299	141707	7660	258520	1394092
1994	2102	382487	338354	39930	279510	42032	155517	8406	283713	1529947
1995	2308	420013	371550	43847	306932	46155	170774	9231	311548	1680051
1996	2536	461574	408315	48186	337304	50722	187673	10144	342376	1846296
1997	2788	507353	448812	52965	370758	55753	206286	11151	376333	2029413
1998	3064	557580	493244	58209	407462	61273	226708	12255	413589	2230320
1999	3367	612774	542069	63971	447796	67338	249150	13468	454530	2451094
2000	3700	673461	595754	70306	492145	74007	273825	14801	499545	2693844
2001	4065	739830	654465	77235	540645	81300	300810	16260	548775	2959320
2002	4467	812994	719187	84873	594111	89340	330558	17868	603045	3251976
2003	4910	893620	790510	93290	653030	98200	363340	19640	662850	3574480
2004	5399	982618	869239	102581	718067	107980	399526	21596	728865	3930472
2005	5936	1080352	955696	112784	789488	118720	439264	23744	801360	4321408

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING
AVERAGE PER CAPITA REVENUES FOR DIFFERENT
GRANT PROGRAMS.

(A) \$182	(E) \$20
(B) \$161	(F) \$74
(C) \$19	(G) \$4
(D) \$133	(H) \$135

GRANTS WERE COMBINED INTO CATEGORIES WHERE APPLICABLE.

TABLE 6.2-31

CITY OF HOUSTON BUDGET: IMPACT EXPENDITURE FORECAST.

YEAR	HOUSTON POP	A LOCAL GOVT ADMIN	B FIRE SERVICE	C PARKS & RECR	D ROAD MAINT	E SOLID WASTE	TOTAL EXPENDS
1981	600	32400	10200	5400	19800	900	68700
1982	660	35640	11220	5940	21780	990	75570
1983	727	39256	12358	6543	23990	1090	83238
1984	800	43200	13600	7200	26400	1200	91600
1985	881	47594	14983	7932	29085	1322	100917
1986	970	52390	17318	8732	33617	1455	113512
1987	1083	58499	19337	9750	37537	1625	126748
1988	1196	64599	21353	10766	41451	1794	139963
1989	1317	71099	23502	11850	45622	1975	154047
1990	1453	78487	25944	13081	50362	2180	170054
1991	1593	86043	28442	14341	56852	2390	188068
1992	1747	94353	31189	15726	62343	2621	206232
1993	1915	103408	34182	17235	68326	2872	226023
1994	2102	113485	37513	18914	74984	3152	248049
1995	2308	124619	41194	20770	82341	3462	272385
1996	2536	136951	45726	22825	90489	3804	299795
1997	2788	150533	50261	25889	99464	4181	329529
1998	3064	165436	55237	27573	109310	4595	362151
1999	3367	181812	60705	30302	120131	5050	398000
2000	3700	199818	66717	33303	132028	5551	437417
2001	4065	219510	73292	36585	145039	6098	480524
2002	4467	241218	80540	40203	159383	6701	528044
2003	4910	265140	88527	44190	175189	7365	580411
2004	5399	291546	97344	48591	192636	8099	638216
2005	5936	320544	107026	53424	211796	8904	701695

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING PER CAPITA COSTS:

(A) \$54

(B) \$17 1981-1985; +5% 1986-1995; +1% 1996-2005

(C) \$9

(D) \$33 1981-1985; +5% 1986-1990; +3% 1991-2005.

(E) \$1.50

TABLE 6.2 32 SUMMARIZED FISCAL IMPACTS OF THE PROJECT ON HOUSTON AND TALKEETNA

<u>Houston</u>	<u>Total Estimated Grant Funding</u>	<u>Total Expenditures</u>	<u>Local Govt. Admin.</u>	<u>Fire Service</u>	<u>Parks & Recreation</u>	<u>Road Maintenance</u>	<u>Solid Waste</u>
1981 Current	436,800	68,700	32,400	10,200	5,400	19,800	900
1990 Baseline Forecast	1,030,120	165,556	76,410	25,258	12,735	49,030	2,123
1990 Forecast w/Project	1,058,117	170,054	78,487	25,944	13,081	50,362	2,180
Impact of Project	27,997	4,499	2,077	686	346	1,332	57
% Change	2.72	2.72	2.72	2.72	2.72	2.72	2.68
1999 Baseline Forecast	2,427,880	394,230	180,090	60,130	30,015	118,993	5,003
1999 Forecast w/Project	2,451,094	398,000	181,812	60,705	30,302	120,131	5,050
Impact of Project	23,214	3,770	1,722	575	287	1,138	47
% Change	0.96	0.96	0.96	0.96	0.96	0.96	0.94
<u>Talkeetna</u>	<u>Property Taxes Paid to Mat-Su Borough</u>	<u>State General Revenues for Fire Service</u>	<u>State Shared Revenues for Road Repairs</u>	<u>Total Revenues to Borough from Talkeetna Service Areas</u>			
1981 Current	20,742	4,800	45,820	71,362			
1990 Baseline Forecast	48,615	7,500	108,041	164,156			
1990 Forecast w/Project	61,401	9,473	108,041	178,914			
Impact of Project	12,786	1,973	0	14,758			
% Change	26.30	26.31	0	9.00			
1999 Baseline Forecast	88,649	11,722	254,755	355,127			
1999 Forecast w/Project	100,560	13,298	254,755	368,613			
Impact of Project	11,911	1,576	0	13,486			
% Change	13.44	13.44	0	3.8			

Forecasts in 1981 \$.

Selected years from forecasts prepared by Frank Orth & Associates, Inc.

(132)1.3139

with or without the project for both decades until 2000. The overall impact of the project in 1990 will raise revenues and expenditures approximately 2.7 percent over the baseline forecast and will increase fiscal flows slightly less than one percentage point in 1999 over the baseline forecast. Total revenues and expenditures will rise at the same rate as population increases, doubling approximately every eight years. The rate of growth during the 1990's is anticipated to exceed that of the 1980's for the City of Houston with or without the project, thereby causing expenditures and revenues also to increase dramatically with or without the project. Houston does not raise any funds locally, either through property assessments or service user fees. Current revenues are derived from State and local grants; this pattern is expected to continue. However, many local revenue generating alternatives are available to the residents within Houston City limits.

As the community grows, it is likely to provide additional services for which it may choose to levy taxes, set user charges or other forms of recipient fees. As petroleum revenues decline in the 1990's and State funding cuts back, local communities and cities will have to find increasingly creative methods of raising funds to cover the costs of service delivery. Local taxes and user fees are the predominant methods used by local fiscal officials.

Expenditures for local government administration represent 47 percent of total expenditures, and

road maintenance 29 percent, with fire service comprising 15 percent. This distribution of expenditures is similar to that of the cities of Wasilla and Palmer reflecting similar local priorities. Other major services are provided by the Mat-Su Borough.

(b) Trapper Creek

Table 6.2-33 displays summarized information on expected impacts of the project on Trapper Creek.

(i) Population

- Construction Phase

Trapper Creek will probably experience the largest relative population influx and related population impacts of all the communities in Impact Area 2.

Between 1983 and 1990, there is a baseline forecast of an increase in population of about 75 people, bringing the 1990 population level to 320 (growth of about 30 percent). With construction of the project, Trapper Creek's population is expected to reach 660 by 1990, more than doubling the community's projected population in that year (see Table 6.2-34).

Trapper Creek will experience a lull period between 1991 and 1995, during which time some project-related families are expected to leave. Growth expected under baseline forecast conditions will only partially compensate for this decline. Between 1991 and 1995, a net outmigration of about 75 people (11

TABLE 6.2-33: SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON TRAPPER CREEK

Socioeconomic Variable	Present Conditions		Watana Construction Peak				Devil Canyon Peak			
	1981 Capacity	1981 Amount/ Usage	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	N.A.	225	320	661	341	106.6	456	701	245	49.8
Employment (a)	N.A.	(b)	(b)	(b)	66	(b)	(b)	(b)	31	(b)
Housing Demand (no. of units)	69	68	107	221	114	106.5	169	261	92	54.4
Water (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sewage Treatment (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Police	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Education (primary students)	30 ^(c)	40 ^(d)	78	128-148	50-70	64.1	116	151-171	35-55	30.1
(secondary students)	0 ^(d)	0 ^(d)	34	74	40	117.6	52	82	30	57.7
Hospital Beds	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. - Not Applicable

(a) By place of employment

(b) Data not available

(c) Planned capacity of 150

(d) School service areas do not correspond exactly to community delineations. The Trapper Creek elementary school serves a wide area outside of the community. Secondary school-age children from Trapper Creek attend Susitna Valley High School.

Source: Forecasts by Frank Orth & Associates, Inc.

(135)1.3160

TABLE 6.2-34
IMPACT OF THE SUSITNA PROJECT ON POPULATION
IN TRAPPER CREEK, 1981-2005

<u>Year</u>	<u>Baseline Forecast</u>	<u>Cumulative Project-Related Population Influx</u>	<u>Total Population With Project</u>
1981	225	0	225
1982	234	0	234
1983	243	8	251
1984	253	8	261
1985	263	27	291
1986	274	34	308
1987	285	175	460
1988	296	242	538
1989	308	272	580
1990	320	341	661
1991	333	327	660
1992	346	291	637
1993	360	235	595
1994	375	212	586
1995	390	198	588
1996	406	209	615
1997	422	225	647
1998	439	241	680
1999	456	245	701
2000	474	236	710
2001	493	209	702
2002	513	175	688
2003	533	169	702
2004	555	169	724
2005	577	169	746

Source: Forecasts by Frank Orth & Associates, Inc.

(122)1.3515

percent) is likely. If new sources of employment do not develop, this exodus could be somewhat larger.

By 1999, the peak year of construction on the Devil Canyon site, the project-related population will account for approximately 40 percent of total community population.

- Operation Phase

By the end of construction of the project in 2003, approximately 170 of the original 340 project-related immigrants are expected to remain. No further immigration is expected.

(ii) Housing

The expected impact of the project on housing demand in Trapper Creek is shown in Table 6.2-35.

- Construction Phase

The population influx into Trapper Creek between 1983 and 1990 will result in an increased demand for approximately 114 housing units over the baseline forecast level of 107. This is likely to cause a substantial short-term housing shortage. To the extent that this doubling in housing needs cannot be met, it is expected that immigrants will seek housing in nearby areas of the Borough.

Traditionally, the availability of vacant housing in Trapper Creek has been extremely limited. Under baseline forecast conditions, this trend is expected

TABLE 6.2-35
IMPACT OF THE SUSITNA PROJECT ON HOUSING DEMAND
IN TRAPPER CREEK, 1981-2005

	<u>Projected Housing Stock</u>	<u>Baseline Forecast of Households</u>	<u>Project-Induced Influx of Households</u>	<u>Total Housing Demand</u>
1981	69	68	0	68
1982	72	72	0	72
1983	76	75	3	78
1984	80	79	3	82
1985	84	83	9	92
1986	88	87	11	98
1987	93	92	56	148
1988	98	97	79	176
1989	103	102	89	191
1990	108	107	114	221
1991	114	112	111	223
1992	119	118	100	218
1993	126	124	82	205
1994	132	131	74	206
1995	139	138	70	208
1996	147	145	75	220
1997	155	153	82	235
1998	163	161	89	250
1999	171	169	92	261
2000	180	178	89	267
2001	187	186	78	264
2002	195	193	66	259
2003	203	201	63	264
2004	211	209	63	272
2005	219	217	63	280

Source: Forecasts by Frank Orth & Associates, Inc.

(122)1.3517

to continue, as additional housing is built only to satisfy definite needs. Thus, only one or two vacant housing units are expected to be available in 1990--far short of the 114 needed.

It is possible that speculative activity prior to the construction peak period will result in additional housing units being available to meet part of the increase in demand. Some families may reside temporarily in cottages or rooms owned by lodges in the area, and part of the housing needs may be met quickly by purchase of mobile homes and trailers to be used on individual lots or in trailer parks. While there is not a great deal of private land in the Trapper Creek area, there is a sufficient amount to support the expected population influx. It is probable that this large increase in demand for housing will have a significant upward impact on land and housing prices.

By 1999, the peak year of construction on the Devil Canyon site, the project-related population will account for approximately 40 percent of total community population.

- Operation Phase

By the end of construction of the project in 2003, approximately 170 of the original 340 project-related immigrants are expected to remain. No further immigration is expected.

(ii) Housing

The expected impact of the project on housing demand in Trapper Creek is shown in Table 6.2-35.

- Construction Phase

The population influx into Trapper Creek between 1983 and 1990 will result in an increased demand for approximately 114 housing units over the baseline forecast level of 107. This is likely to cause a substantial short-term housing shortage. To the extent that this doubling in housing needs cannot be met, it is expected that immigrants will seek housing in nearby areas of the Borough.

Traditionally, the availability of vacant housing in Trapper Creek has been extremely limited. Under baseline forecast conditions, this trend is expected to continue, as additional housing is built only to satisfy definite needs. Thus, only one or two vacant housing units are expected to be available in 1990--far short of the 114 needed.

It is possible that speculative activity prior to the construction peak period will result in additional housing units being available to meet part of the increase in demand. Some families may reside temporarily in cottages or rooms owned by lodges in the area, and part of the housing needs may be met quickly by purchase of mobile homes and trailers to be used on individual lots or in trailer parks. While there is not a great deal of private land in the Trapper Creek area, there is a sufficient amount to support the expected population influx. It is probable that this large increase in demand for housing will have a significant upward impact on land and housing prices.

The lull period during the early 1990s is expected to result in a net outmigration of eight percent (about

20 families). As Table 6.2-35 shows, the cumulative number of immigrant households will fall to 205 in 1994. This decline will have short-term implications for the Trapper Creek housing market. However, by 1996 continued population influx (mostly related to baseline forecast growth) will bring the number of households near to the 1991 level. Thus, any over-capacity that may develop during the lull will not last past the medium-term.

At the second project construction peak, the 92 project-related households will account for approximately 35 percent of the housing demand in the community.

- Operations Phase

Once construction of the project is completed in 2002, approximately 63 of the immigrant households are expected to stay in Trapper Creek. No further impacts on housing are expected.

(iii) Public Facilities and Services

The small, remote, and unincorporated nature of the community contributes to a low current level of available public services and facilities. A major impact of the increase in population in Trapper Creek may be an increased need for services that are currently not available, such as fire protection and closer proximity to medical care.

- Water, Sewage, and Solid Waste

Water and sewage needs are currently met by individual wells and septic tanks; solid waste is disposed of by the public at a nearby landfill run by the Borough. To the extent that new housing is built on plots with suitable soil, few impacts from the increased population are expected. It is possible that the added population will exacerbate present problems of insufficient groundwater during dry spells.

Rapid growth can have the potential for hastily built housing development that does not meet health standards for wells, septic tanks, and/or solid waste disposal. It is anticipated that Borough and State oversight can prevent such problems from occurring.

- Transportation

Residents of Trapper Creek can expect to see a substantial increase in traffic on the Parks Highway as a result of construction of the Susitna project. This traffic will include trucks carrying supplies and equipment and possibly workers commuting to the work sites from Anchorage and the southern part of the Borough. Maintenance of the Parks Highway is provided by the State.

In addition, the expected rapid increase in population in the community will result in a corresponding need for increased maintenance of local roads and some requirements for new roads. To the extent that the population influx stimulates subdivision acti-

vity, the responsibility for construction of new roads to access these areas will rest with the developers. Maintenance of new local roads would be coordinated through the Trapper Creek Road Service Area.

- Police Protection

It is expected that as a result of the project and the increased population in the area, the force at the State Trooper substation in Trapper Creek will increase by between two and four troopers. This station serves the whole northern part of the Borough. For Trapper Creek, this will mean an increased police presence in the community.

- Fire Protection

Trapper Creek currently has no active fire protection facilities. The present small size of the community has limited its ability to support a fire service area. There is an existing building that could be used if a new service area were developed.

The population influx into Trapper Creek will exacerbate the need for active fire facilities in the community. It is possible that the influx of project-related households added to the baseline forecast growth during the period between 1983 and 1990 could result in a population level that could support fire protection facilities. Personnel in this case would need to be volunteers (as is true throughout the Borough).

- Health Care

With the exception of an ambulance, no formal health care facilities are currently available in Trapper Creek. Residents of the area with medical training help out on an informal basis (without pay) when needed, and health care facilities in Wasilla and Palmer are utilized.

Growth of the community, due to both baseline forecast growth and to project-related immigration, is expected to put a strain on this informal system of medical care. The community may want to request the establishment of a Public Health Service office in the future.

- Education

A new elementary school is currently being planned for Trapper Creek. It will have an initial capacity of 100 students, and could be expanded to accommodate up to 200 students.

The population increase related to the Susitna project will include an increase in student enrollment at the elementary school of approximately 60 students between 1983 and 1990, over the baseline forecast level of about 80 in 1990. The result will be a need for expansion of the school in the late 1980's and addition of two or three teachers. This expansion is expected to be sufficient to provide for the estimated 1999 enrollment of 160.

The population influx related to the project is also expected to result in an increase by 1990 of about 35

junior and senior high school students from Trapper Creek attending Susitna Valley High School.

(iv) Economic Activity

Business activity will change little in Trapper Creek during the 1980s if the dams are not built. By 1990, with dam construction, project-induced demand for services will equal or exceed that associated with the forecast baseline population. With dam construction it is very likely that Trapper Creek will have service types and levels similar to those of Talkeetna today. Because Trapper Creek is on the Parks Highway, it could even have more service businesses than present-day Talkeetna by 1990.

The Susitna project will present vastly increased employment opportunities for residents of Trapper Creek, both in terms of on-site construction, and in terms of jobs in the support sector.

Income spent in Trapper Creek is anticipated to increase sharply during the construction phase of the project, as a result of the increased employment of local residents and the immigrant population, and as a result of expenditures made by work camp residents on items such as food, beverages, gasoline and recreation.

(v) Fiscal Impacts on Trapper Creek and Other Small Communities

The potential for the Susitna Hydroelectric project to substantially impact the smaller communities within the

Mat-Su Borough is not anticipated. Population influx will occur; however, fiscal impacts will be experienced by the Borough administration. Initially, the costs of service delivery will be accelerated and these will not be matched by an immediate parallel increase in revenues. It is anticipated there will be a two-year lag between the receipt of revenues and the outlay for additional service costs. This lag is a function of the time it takes to input new property owners on the tax rolls and for the property assessments to be made, and taxes collected.

The Borough is assumed to levy an areawide property tax of 6.0 mills per \$1,000 assessed valuation for areawide services. The non-areawide mill levy is assumed to increase to cover the rising costs of fire and road service to a steadily increasing population. The mill levy for non-areawide services is expected to increase as follows: 1.00 - 1981-1985; 1.25 -1986-1989; 1.50 - 1990-1995; and 1.75 - 1996-2005. The ambulance service is assumed to continue operating on a user fee basis. Projections of estimated local taxes to cover the costs of capital projects can not be made as this will depend upon the size of the project, the availability of State and Federal grant monies, local preferences, and the Mat-Su Borough's bonding capabilities. (For further detail concerning the Mat-Su Borough's fiscal impacts, see Section 4.1 (c) (iv).)

(c) Talkeetna

The expected impacts of the project on Talkeetna are summarized in Table 6.2-36.

TABLE 6.2-36: SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON TALKEETNA

Socioeconomic Variable	Present Conditions		Watana Construction Peak				Devil Canyon Peak			
	1981 Capacity	1981 Amount/Usage	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	N.A.	640	1,000	1,263	263	26.3	1,563	1,773	210	13.4
Employment (a)	N.A.	-(b)	-(b)	-(b)	71	-(b)	-(b)	-(b)	34	-(b)
Housing Demand (no. of units)	196	194	334	421	87	26.0	581	658	77	13.3
Water (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sewage Treatment (gallons per day)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Police	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Education (primary students)	120 ^(d)	73 ^(d)	126	164	38	30.2	209	240	31	14.8
(secondary students)	0 ^(d)	0 ^(d)	107	138	31	29.0	178	204	26	14.6
Hospital Beds	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. - Not Applicable

(a) By place of employment

(b) Data not available

(c) School service areas do not correspond exactly to community delineations. Secondary school-age children attend Susitna Valley High School.

Source: Forecasts by Frank Orth & Associates, Inc.

(135)1.3161

(i) Population

- Construction Phase

Between 1983 and 1990, an estimated population influx of 263 is expected as a result of the project (as shown in Table 6.2-37). This will represent a 26 percent increase over the baseline forecast of 1,000. By 1999, 210, or 80 percent, of the earlier population influx will remain. A further moderate decline in population of 37 is expected between 1999 and 2002.

- Operation Phase

By 2003, about 170 project-related individuals will remain in Talkeetna, representing eight percent of total community population in that year. No further population influx is expected.

(ii) Housing

Table 6.2-38 compares projections of housing demand in Talkeetna with and without the project.

- Construction Phase

The population influx related to the Watana construction phase will result in an addition of 87 households between 1983 and 1990 to the Talkeetna area. As in Trapper Creek, a shortage of available housing is probable. Under baseline forecast conditions, only six vacant housing units will be available in that year. This estimate is based on the community's historically low vacancy rate.

TABLE 6.2-37
IMPACT OF THE SUSITNA PROJECT ON POPULATION
IN TALKEETNA, 1981-2005

<u>Year</u>	<u>Baseline Forecast</u>	<u>Cumulative Project-Related Population Influx</u>	<u>Total Population With Project</u>
1981	640	0	640
1982	672	0	672
1983	707	6	713
1984	743	7	750
1985	780	22	802
1986	820	27	847
1987	862	138	1,000
1988	906	186	1,092
1989	952	209	1,161
1990	1,000	263	1,263
1991	1,051	254	1,305
1992	1,104	236	1,340
1993	1,160	208	1,368
1994	1,219	196	1,415
1995	1,281	189	1,470
1996	1,347	193	1,540
1997	1,415	199	1,614
1998	1,487	207	1,694
1999	1,563	210	1,773
2000	1,642	205	1,847
2001	1,726	191	1,917
2002	1,814	173	1,987
2003	1,906	169	2,075
2004	2,003	169	2,172
2005	2,106	169	2,275

Source: Forecasts by Frank Orth & Associates, Inc.

(122)1.3516

TABLE 6.2-38
IMPACT OF THE SUSITNA PROJECT ON HOUSING DEMAND
IN TALKEETNA, 1981-2005

	<u>Projected Housing Stock</u>	<u>Baseline Forecast of Households</u>	<u>Project-Induced Influx of Households</u>	<u>Total Housing Demand</u>
1981	196	194	0	194
1982	210	206	0	206
1983	223	219	2	221
1984	237	232	2	234
1985	251	246	7	253
1986	267	262	9	271
1987	284	278	45	323
1988	302	296	61	357
1989	320	314	69	383
1990	340	334	87	421
1991	362	355	86	441
1992	385	377	81	458
1993	409	401	72	473
1994	435	426	68	494
1995	462	453	67	520
1996	492	482	69	551
1997	523	513	72	585
1998	557	546	76	622
1999	592	581	77	658
2000	630	618	77	695
2001	662	650	71	721
2002	696	683	65	748
2003	732	717	64	781
2004	769	754	64	818
2005	808	792	64	856

Source: Forecasts by Frank Orth & Associates, Inc.

(122)1.3518

The expected short-term shortfall in housing supply may be made up by speculative advance construction, temporary residence in local lodges/hotels, the use of mobile homes and trailers, and rapid construction. To the extent that the housing supply cannot meet demand, it is likely that some immigrant families will find housing elsewhere in the northern part of the Borough. It is possible that a significant amount of inflation in housing prices will occur.

The number of households in Talkeetna is expected to continue to increase in the 1990's as a result of baseline forecast growth. Thus, as Table 6.2-38 displays, the lull in project construction between 1991 and 1995 is not expected to affect the housing market in Talkeetna.

- Operations Phase

At the end of construction of the project, about 64 project-related households are expected to remain in Talkeetna. No further impacts on housing are expected.

(iii) Public Facilities and Services

- Water and Sewage

Talkeetna is served by independent wells and septic tanks; there is a potential for problems in the "downtown" area due to the small size of the lots on which houses are built and the proximity of wells to septic tanks.

It is not possible to predict with certainty where new residents in Talkeetna will settle. To the extent that project-related immigrant population settles in the town itself, they will contribute to the need for central water and sewage systems.

As in Trapper Creek, it is possible that quickly constructed housing will need to be closely supervised to ensure compliance with health standards regarding wells and septic tanks.

- Solid Waste

The peak population influx into Talkeetna associated with the project will occur just around the time that the Borough's landfill near Talkeetna is expected to be closed (1987-89), according to the Borough's solid waste disposal plan. A new landfill or a transfer station will be needed at that time. The additional population is not expected to have significant impact on the need for a new landfill.

- Transportation

A large amount of the supplies and equipment for construction of the dams will be transported by railroad. This is not expected to have any adverse effects on rail service for Talkeetna residents.

As the population increases and new housing is constructed, there will be increased need for construction and maintenance of roads in Talkeetna and the surrounding area. However, baseline forecast growth is expected to cause a large part of this increased

need. Construction of new roads to service subdivisions will be the responsibility of individual developers, and maintenance of local roads will be administered by the Borough through the Talkeetna Road Service Area.

- Police Protection

As Talkeetna grows, there may be a community desire for a police presence closer than the Trapper Creek substation. The population influx associated with the project between 1983 and 1990, and the proximity of the work camp to the community may further reinforce this tendency. Incorporation would be a prerequisite to the establishment of a local police force.

- Fire Protection

Increased population is not expected to affect fire-fighting facilities in the area; these are planned on the basis of distance between the station and population centers, and on the availability of pumped water. The planned addition of equipment to the Talkeetna fire station should be sufficient to serve the community until such time as a community water system is put into place.

- Health Care

Residents of Talkeetna currently use the health care facilities in the southern part of the Borough and in Anchorage. The population influx related to the project, along with baseline forecast growth, may result

in sufficient demand to warrant some provision of medical care in the community by a private doctor or a Public Health nurse.

- Education

The population influx associated with the project will include approximately 38 primary school-age children by 1990, just as the enrollment in the elementary school in Talkeetna is projected to exceed its capacity of 120. Additional classroom space and teachers will be needed.

Between 1990 and 1999, facilities for an additional 75 elementary school children will have to be built, as a result of baseline forecast growth. The Susitna project is expected to have limited impacts during this period.

Population influx into Talkeetna is also likely to include approximately 30 junior and senior high school pupils at the peak of construction of the project. Together with the additional enrollment from Trapper Creek families, this increase in students at Susitna Valley High School may exceed its present capacity of 180 by 1988 or 1989.

(iv) Economic Activity

By 1990, without the project, the demand for services will almost double. It is expected that existing businesses will operate at fuller capacity and some will expand their services. A few new businesses will emerge to meet the increased demands. Some of these might offer services not currently available in Talkeetna.

The project is expected to have a significant impact on Talkeetna's business activity as new residents and workers from the project spend their income in Talkeetna. The new residents will have spending patterns similar to those residents now living in Talkeetna, and the workers who come to Talkeetna for short visits will be expected to concentrate their expenditures on food, beverages, lodging, and related items. If workers make visits to Talkeetna frequently (this would be probable if workers are allowed to fly to and from the construction site), the demand for services could be double that implied by the 1990 baseline forecast of population.

Income spent in Talkeetna is anticipated to increase somewhat during the construction phase of the project, but at a more moderate level of increase than that anticipated for Trapper Creek. The increase in income and expenditures will be primarily in the form of local residents obtaining employment on the project and due to the immigrant workers and families. In that Talkeetna is situated off the Parks highway and that the proposed access route does not go through Talkeetna, there will be fewer purchases of supplies and other goods and services made by work camp residents in Talkeetna. However, if workers are able to fly into Talkeetna from the work camp, then considerably more income could be spent in Talkeetna, particularly for food, beverages and lodging.

(v) Fiscal Impacts: Talkeetna Service Areas

Impact forecasts for revenues generated by or on behalf of the Talkeetna Service Areas for the Mat-Su Borough

Administration are shown in Table 6-2-39 and Table 6.2-32. Due to substantial population changes caused by the project, there will be a 26 percent increase in revenues from property taxes in 1990 over the baseline forecast for 1990. The change due to normal growth would increase revenues by 134 percent without the project and 196 percent with the project, over 1981 levels. Increases over baseline forecasts of 13 percent between 1990 and 1999 with the project are consistent with other trends where the changes due to the project are twice as large in 1990 as they are in 1999. Property tax revenues are based upon a non-areawide mill levy of 1.5 mills in 1990 and 1.75 mills in 1999 per \$1000 assessed valuation.

State General Revenues for fire service areas are based upon population and therefore will follow the same trend as property tax revenues, increasing 26 percent by 1990 and increasing 13 percent by 1999 over the baseline forecast. Revenues for road maintenance and repair are assumed to increase 10 percent per year in 1981 dollars, consistent with assumptions regarding all revenues for maintenance of roads within the Borough that will experience significant increased use.

Total revenues to the Borough will increase 130 percent from 1981 to 1990, and 135 percent from 1990 to 1999, without the project. Total revenues to the Borough with the project will increase 9 percent by 1990 and 3.4 percent by 1999 over baseline forecast.

Constant rapid growth for the community of Talkeetna can be anticipated with or without the project. The exact impact of the project will therefore be relatively small

TABLE 6.2-39

TALKEETNA: IMPACT REVENUE FORECAST†.

YEAR	TALKEETNA POP	A TOTAL ASSESSED VALTN (\$000)	B FIRE SERVICE AREA		C ROAD SERV AREA		D TOTAL REVENUES MS BOR \$
			PROPTY TAXES \$	ST GEN REVENUES \$	ST SHARE REVENUES \$	REVENUES \$	
1981	640	20742	20742	4800	45820	71362	
1982	672	21780	21780	5040	50402	77222	
1983	713	23108	23108	5348	55442	83898	
1984	750	24308	24308	5625	60986	90919	
1985	802	25993	25993	6015	67085	99093	
1986	847	27451	34314	6353	73794	114460	
1987	1000	32410	40513	7500	81173	129185	
1988	1092	35392	44240	8190	89290	141720	
1989	1161	37628	47035	8708	98219	153962	
1990	1263	40934	61401	9473	108041	178914	
1991	1305	42295	63443	9768	118845	192075	
1992	1340	43429	65144	10050	130730	205924	
1993	1368	44337	66505	10260	143803	220568	
1994	1415	45860	68790	10613	158183	237586	
1995	1470	47643	71464	11025	174001	256490	
1996	1540	49911	87345	11550	191402	290296	
1997	1614	52310	91542	12105	210542	314189	
1998	1694	54903	96079	12705	231596	340380	
1999	1773	57463	100560	13298	254755	368613	
2000	1847	59861	104757	13853	280231	398841	
2001	1917	62130	108727	14378	308254	431359	
2002	1986	64366	112641	14895	339079	466615	
2003	2075	67251	117689	15563	372987	506239	
2004	2172	70395	123190	16290	410286	549767	
2005	2275	73733	129032	17063	414389	560484	

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE
FOLLOWING:

(A) PER CAPITA ASSESSED VALUATION
\$32410.00

(B) MILL LEVY PER \$1000 ASSESSED
VALUATION: 1.00 1981-1985
1.25 1986-1989
1.50 1990-1995
1.75 1996-2005

(C) \$7.50 PER CAPITA FY81/82.

(D) \$2000.00 PER MILE, +10% PER YEAR
22.91 MILES.

† REVENUES GO TO MAT-SU BOR BUDGET;
EXCLUDES TALKEETNA FLOOD CONTROL.

when compared to changes due to normal growth. However, relative to project-induced changes in other communities, the impact of the project on Talkeetna is substantial.

The community of Talkeetna is assumed not to incorporate before 2000 if the Susitna project is not built. Under these conditions the Matanuska-Susitna Borough will continue to provide services, including ambulance, fire protection, solid waste disposal, and road maintenance and repair. Police protection will continue under State Troopers. Services will be administered by Borough officials and paid for by the Borough government out of funds derived both locally and from the State. Property located within the service boundary will continue to be liable for taxes levied to cover the costs of service delivery. The mill levy for education is assumed to remain constant at 6.0 mills per \$1,000 assessed valuation. The non-areawide tax mill levy is assumed to increase, thereby generating additional revenues over and above those that result from real increases in the value of property over time.

In addition to stimulating revenues and raising expenditures for service delivery, the impact of the Susitna hydroelectric project is likely to accelerate the timetable in which the Talkeetna community will decide to incorporate. The increased population influx will act as an impetus for the community to organize itself such that it can control the delivery of necessary services. The City of Talkeetna would be able to levy taxes to cover the costs of government administration and service operations, functioning either as a second class city or a Home Rule city. The city is likely to elect to pro-

vide its own fire and ambulance services and as a second class city, would continue police protection under State Troopers. The Mat-Su Borough would continue to provide services to the road service area which would exclude the city limits of Talkeetna. Local government would then be responsible for providing road maintenance and repair within the City limits. The Borough would continue to levy non-areawide taxes for services delivered under non-areawide powers. The areawide tax would also be levied to cover the costs of education provided by the Mat-Su Borough School District.

Any additional fiscal expenditures are not anticipated. It is assumed that individual septic tanks will continue to be the mode of sewage disposal. Water supply systems are anticipated to remain as wells on individual lots. However, should city lot sizes prove to be inadequate for individual wells, the residents may elect to build a community well. The costs of this would most likely be borne by those residents who directly benefit from the improvements. Solid waste will likely continue to be disposed of at the Borough land fill sites. The majority of funding for capital projects is assumed to be grant monies derived from either Borough or State funds. Local shares will likely be paid for by monies derived from taxes levied on residents who benefit directly or by issuing municipal bonds.

(d) Railroad Communities

The purpose of this section is to identify what types of changes are likely to occur in the "railroad communities" north of Talkeetna: Gold Creek, Hurricane, Chase, Sherman and Curry. As discussed in Stephen R. Braund & Associates' "Sociocultural

Studies" (1982), these communities are actually clusters of people having diverse backgrounds, values, goals and sources of income. These people live along the Alaska railroad corridor and use the railroad as a means to get to Talkeetna and other communities for necessities.

Impacts on Chase, Sherman and Curry are likely to be minor. The road could disturb local fish and game species causing them to change their movements. This could impact those in the area that depend on fish and/or game for food and for income.

Impacts on Gold Creek and Hurricane are likely to be relatively greater. Gold Creek is proposed to be a railhead. This will require over 50 acres of land and certain facilities. This would certainly change the character of Gold Creek. Additionally, old patented homesteads in the Gold Creek area could provide a private land base that could accommodate commercial, residential or other development. These landowners could experience windfall financial gains at the expense of losing a rather remote environment.

The situation is similar at Hurricane. Currently, few people live here, but the Indian River Subdivision was created recently. This subdivision has a capacity for about 140 housing units. There might be more parcels of land available here in the near future. Clearly, Hurricane has the potential to be a good-sized community in several years. It is likely that workers would desire to live here. If this were the case, service businesses such as a general store, a bar, a gas station, etc. would be established.

One other area near the "railroad communities" deserves consideration. This is the Indian River Remote Parcel area. As proposed, the access road and transmission line will be near

these parcels. The impacts on parcel landowners would be similar to those discussed above for Chase, Sherman and Curry.

For further information regarding these communities and potential impacts on these communities, see Stephen R. Braund & Associates (1982).

(e) Cantwell

Cantwell, an unorganized community with very limited employment opportunities and land for development, will be affected only slightly by the hydroelectric project. Due to the lack of private land, it is unlikely that many construction workers will settle in Cantwell. Service businesses such as service stations, restaurants, bars, and motels (lodges) will experience increased revenues, particularly during the construction period. Also, the hydroelectric project will provide employment opportunities for Cantwell residents.

For further information regarding Cantwell and impacts on Cantwell, see Stephen R. Braund & Associates (1982).

6.3 - Impact Area 3

Table 6.3-1 contains a summary of the projected impacts of the project on the Railbelt.

TABLE 6.3-1 SUMMARIZED IMPACT OF THE SUSITNA HYDROELECTRIC PROJECT ON IMPACT AREA 3^(a)

Socioeconomic Variable	Watana Construction Peak					Devil Canyon Peak			
	1980 Amount	1990 Baseline Forecast	1990 Forecast with Project	Impact of Project	Percent Increase Over Baseline Forecast	1999 Baseline Forecast	1999 Forecast With Project	Impact of Project	Percent Increase Over Baseline Forecast
Population	284,166	397,999	400,323	2,324	0.6	473,191	474,419	1,228	0.3
Employment	114,112 ^(b)	200,112	206,477	6,365	3.2	232,311	235,668	3,357	1.4
Households	96,899	138,938	139,794	856	0.6	171,895	172,384	489	0.3

(a) Includes the following census divisions: Anchorage, Kenai Peninsula, Mat-Su Borough, Fairbanks-North Star Borough, S.E. Fairbanks and Valdez-Chitina-Whittier.

(b) Average employment during the first nine months of 1980.

Source: Forecasts by Frank Orth & Associates, Inc.

(136)1.3162

(a) Population

(i) Construction Phase

Overall, the population impact of the Susitna project on the Railbelt will be very slight. Between 1983 and 1990, the population of the region will increase by 86,100 to approximately 400,320, an increase of 22 percent. Of this amount, only 2,325 people (three percent) will be related to the project. The vast majority will be related to natural growth and other major projects, as discussed in Section 4.2.

There will be a significant decline in the population related to the project in the early 1990's as construction on the Watana site winds down, reaching a low of about 600 in 1995. Project-related immigration to the region in the late 1990's will bring the number to approximately 1,230 by 1999, the peak of construction at the Devil Canyon site, and then decline sharply to approximately 300 by 2003.

These sharp changes in the Railbelt are not expected to have any significant impact on the Railbelt as a whole, due to the relatively small size of the project-induced population as compared to the total.

In addition to net immigration into Impact Area 3, the project will also result in some shifting of population within the region. A substantial percentage of immigrants to the Matanuska-Susitna Borough are expected to move from the Anchorage, Kenai-Cook Inlet and Fairbanks-North Star Borough census divisions.

Over 95 percent of the net immigration into Impact Area 3 will occur in Anchorage and the Mat-Su Borough. Anchorage will experience a project-related increase of about 1,140 by 1990. In Fairbanks, net immigration between 1983 and 1990 will be less than 90 people. For both cities, this represents only a small portion of the baseline forecast population.

(ii) Operations Phase

As the project enters the operations phase in 2003, about 300 of the original immigrants are assumed to remain in the Railbelt. No further immigration or outmigration is expected after 2003. Due to the partial redistribution of population to the Mat-Su Borough, the Anchorage, Fairbanks and Kenai-Cook Inlet census divisions will experience a net outmigration of population by 2003.

(b) Housing

No significant impacts of the project are expected on housing conditions in the Railbelt, outside of the Matanuska-Susitna Borough. At the peak of construction of the project (1990), the cumulative number of immigrant households into the region is expected to total approximately 855. This represents only 0.6 percent of baseline forecast for that year. Based upon the assumptions that (1) the housing stock keeps pace with baseline forecast housing demand and (2) vacancy rates average around 5 percent, the estimated number of vacant housing units in the Railbelt in 1990 of 8,600 will be far more than sufficient to accomodate the immigrants. In 1999, the number of new project-related households will decline to 489, or 0.3 percent of the total number of households in the Railbelt.

Similarly, the impacts on the major cities in the region, Anchorage and Fairbanks, will be negligible. By 1990, project-induced immigrant households will represent only 0.5 and 0.1 percent, respectively, of total housing demand in these cities. By 1999, new project-induced households will represent only 0.2 percent of the total in Anchorage; Fairbanks will experience a net decline in housing demand by project-related households of five.

No further impacts on housing in the Railbelt will occur during the operations phase of the project.

(c) Public Facilities and Services

Impacts of the project on public facilities and services in the Railbelt (outside of the Matanuska-Susitna Borough) have not been quantitatively addressed. The population influx represents such a small percent of current and baseline forecast population levels that impacts on facilities and services are expected to be negligible.

(d) Employment

(i) Construction

There will be considerable employment opportunities for residents of Impact Area 3 during the mid to late 1980's. By 1990, when the work force peaks at the Watana site, a total of 6,365 direct (on-site construction), indirect and induced jobs will be generated by the project. It is estimated that 79 percent of these jobs (5,049) will be filled by residents of Impact Area 3. The remainder will be filled by other Alaska residents and out-of-state residents.

As shown in Table 6.3-2, these new jobs for Impact Area 3 residents will represent a 2.5 percent increase over estimated employment in Impact Area 3 without the project. Employment opportunities will gradually diminish during the early to mid 1990's as construction at the Watana site ends and construction at the Devil Canyon site starts. By 1999, when the work force at Devil Canyon peaks, there will be a total of 3,212 direct, indirect and induced jobs. Of these, it is estimated that 2,548 will be filled by Impact Area 3 residents. As Table 6.3-2 shows, this represents a 1.1 percent increase over estimated employment without the project.

During 1985-2002, about 70 percent of the jobs will be filled by residents of the Anchorage Region. About 13 percent of the jobs will be filled by residents of the Fairbanks Region, and the remainder, 3 percent, will be filled by residents of the Valdez-Cordova Region.

It must be borne in mind that the Impact Area 3 and Regional shares of employment are best estimates. The actual number of jobs filled by various residents will depend upon several factors, including: (1) employment opportunities and unemployment conditions in Impact Area 3, other areas of the State and out-of-state; relative wages among Alaska industries and between Alaska's construction industry and out-of-state construction industries, and hiring practices.

In the peak work force year for Watana, 1990, there will be 3,498 on-site workers. Of these 2,369 (68 percent) will be laborers; 627 (18 percent) will be semi-skilled/skilled; and 502 (14 percent) will be administrative/engineering. The major trades for the

TABLE 6.3-2
 BASELINE EMPLOYMENT AND IMPACT
 FORECASTS FOR IMPACT AREA 3
 SELECTED YEARS

	<u>Baseline Forecast</u>	<u>Impact Forecast</u>	<u>Difference</u>	<u>% Difference</u>
1981	142,162	--	--	--
1990	200,111	205,859	5,049	2.5%
1999	232,311	234,859	2,548	1.1%
2003	254,808	254,928	120 ^(a)	--

(a) Assumes that about 70 percent of operation jobs (120 of 170 jobs) are filled by Impact Area 3 residents).

laborers category are: laborers (61 percent); excavators (9 percent); drillers (5 percent); and others (25 percent). The major trades for the semi-skilled/skilled category are: heavy truck drivers (15 percent); carpenters (13 percent); electrical transmission technicians (11 percent); kitchen workers (8 percent); light truck drivers (6 percent), and others (37 percent). The major professions for the administrative/engineering category are: civil engineers (19 percent); surveyors (14 percent) and all others (67 percent). The above trades and professions dominate in most years of construction at both the Devil Canyon and Watana construction sites.

(ii) Operation

The Watana facility will begin operating in 1993 and the Devil Canyon facility will begin operating in 2002. It is estimated that about 70 permanent jobs will be available at the Watana facility beginning in 1993 and that another 75 permanent jobs will be available during 1994-2001, for a total of 145 permanent jobs. Beginning in 2002, an additional 35 permanent jobs will be available. Thus, a total of 170 permanent jobs will be generated by the projects by 2002.

It is estimated that about 70 percent of the operations jobs will be filled by residents of Impact Area 3. This means that 120 of the 170 total permanent jobs will be filled by Impact Area 3 residents.

(e) Personal Income

Substantial personal income will be earned in Impact Area 3 during the construction and operation of the dams. Personal

income will increase for construction and operations workers; for those persons who are employed by institutions that provide goods and services for construction and operations; and for those persons who are employed by service and related firms where construction workers spend their incomes. Quantitative estimates of project payroll, construction and operations workers expenditures in the Borough, and increases in construction and operations workers personal income in the Borough are discussed below. Personal income that will accrue to support (indirect and induced) sector workers is discussed briefly.

Table 6.3-3 shows the amount of payroll that will be earned by construction and operations workers during 1983-2005. In 1990, payroll peaks at \$98 million. There is another peak in payroll in 1999 at \$53 million. Total payroll during 1983-2002 is \$888 million; all but \$54 million of this amount is construction payroll.

During the operations phases for both dams, payroll is expected to be about \$6.5 million annually. Prior to 2002, when only the Watana facility is in operation, payroll is about \$5.6 million in most years.

Some of the construction workers will maintain their primary residences and spend much of their earnings outside of Impact Area 3. To begin to estimate construction and operations workers personal income that will accrue to Impact Area 3, it is appropriate to look at the amount of payroll that will be spent in the Area. In Table 6.3-4, it can be seen that \$48.4 million and \$24.8 million of construction payroll are estimates to be spent in the Area in 1990 and 1999, respectively. During 1983-2002, about \$422 million of the construction payroll will be spent in the Area. If the expenditures made in the Area by the Watana operations work force are added to this amount, a

TABLE 6.3-3

TOTAL PAYROLL FOR ON-SITE CONSTRUCTION AND OPERATIONS MANPOWER, 1983-2005
(IN THOUSANDS OF DOLLARS)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
CONSTRUCTION (a)																							
LABORERS	3895	1258	16847	25323	38319	50739	56863	70984	65985	51529	26806	16543	10186	16141	25433	32211	34255	29872	14950	3114			
SEMI-SKILLED/ SKILLED	2607	3468	3671	9162	9441	11750	13169	16440	15282	10643	5475	3389	2383	3871	5952	7725	8189	8182	6438	574			
ADMINISTRATIVE/ ENGINEER	940	2342	8159	3810	5555	7436	8334	10404	9671	7362	3842	2378	1465	2374	3655	4737	5038	3946	3289	492			
SUBTOTAL CONSTRUCTION	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	36123	22310	14034	22386	35040	44673	47482	42020	24677	4180			
OPERATIONS (b)																							
ALL LABOR CATEGORIES											2684	5559	5559	5559	5559	5559	5559	5559	5559	6517	6517	6517	6517
TOTAL PAYROLL (7)02	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	38807	27869	19593	27945	40599	50232	53041	47579	30236	10697	6517	6517	6517

(a) Based on 1,825 working hours in the year.

(b) Based on 2,496 working hours in the year.

TABLE 6.3-4

TOTAL ON-SITE CONSTRUCTION WORK FORCE PAYROLL EXPENDITURE PATTERN^(a)
(IN THOUSANDS OF DOLLARS)

PLACE OF EXPENDITURE	YEARS																			
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
TOTAL PAYROLL ^(b)	7442	7068	28677	38295	53315	69925	78366	97828	90938	69534	36123	22310	14034	22386	35040	44673	47482	42020	24677	4180
EXPENDABLE INCOME ^(c)	4149	3886	15760	21385	29757	39020	43729	54589	50746	38803	20157	12457	7838	12499	19553	25583	27789	26109	15517	2603
IMPACT AREA 3	3658	3282	13452	18946	26383	34588	38763	48390	44982	34417	17877	11046	6949	11079	17337	22750	24779	23495	13854	2339
ANCHORAGE REGION	2796	2509	10782	14480	20548	26947	30202	37709	35052	26815	13916	8588	5394	8613	13494	17715	19296	18293	10771	1795
ANCHORAGE	2045	1833	7525	10596	14104	18475	20698	25825	24010	18185	9576	5938	3756	5955	9289	12169	13250	12565	7429	1308
MAT-SUE REGION	433	399	1607	2228	4351	5728	6428	8042	7471	5696	2924	1778	1092	1784	2833	3741	4078	3856	2251	307
KENAI-COOK INLET	313	272	1130	1627	2051	2692	3017	3768	3502	2681	1389	856	536	858	1346	1770	1931	1836	1070	177
SEWARD	6	5	20	29	40	53	59	74	69	53	27	17	11	17	26	35	38	36	21	4
FAIRBANKS	796	716	2930	4119	5352	7008	7851	9794	9106	6971	3633	2255	1429	2262	3526	4618	5028	4769	2829	501
SE FAIRBANKS	5	4	18	25	36	47	52	65	61	46	24	15	9	15	23	31	33	32	19	3
VALDEZ-CHITINA-WHITTIER	62	54	223	321	447	587	657	821	763	584	303	187	118	188	294	386	421	401	235	40

(a) Table shows total expenditures by construction work force in Impact Area 3.

(b) Total construction payroll, all labor categories.

(c) Gross payroll minus 30 percent for taxes (federal, F.I.C.A., and unemployment/workman's compensation with self and one dependent) minus 10 percent for net income saved.

total of \$436 million will be spent in the Area during 1983-2002.

Some of the expenditures made by Watana operations personnel could accrue to firms in the Area that provide goods and services to the village. These expenditures are shown in Table 6.3-5 in the "Village" row. Thus, construction and operations payroll spent in the Area will be greater than \$436 million during 1983-2002.

The above payroll expenditure estimates nearly reflect increases in construction and operations workers' personal income in the Area. These estimates underestimate personal income impacts because (1) federal income taxes and savings are not included and (2) non-wage and non-salary income are excluded (this is relevant for workers that relocate to the Area. With an adjustment for (1), personal income resulting from the project will be at least \$651 million during 1983-2002. There is no way to adjust for the effect of (2) above. The effects of (2) would be to increase personal income slightly.

Income will also accrue to support (indirect and induced) sector workers. The amount of income that will accrue to indirect workers will depend upon the extent to which goods and services needed for construction and operation are procured in the Borough. Induced income will be in the hundreds of millions for the Area.

(f) Business Activity

Many of Alaska's industry sectors will experience more growth as a result of the hydroelectric project. Hard minerals mining, for example, will grow as sand and gravel are mined as near as possible to the dam construction sites. Additionally, it would

TABLE 6.3-5

TABLE 6.2-43 TOTAL OPERATIONS WORK FORCE PAYROLL EXPENDITURE PATTERN^(a)
In Thousands of Dollars

Place of Expenditure ^(b)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Payroll ^(c)	2,684	5,559	5,559	5,559	5,559	5,559	5,559	5,559	5,559	6,517	6,517	6,517	6,517
Expendable Income ^(d)	1,691	3,502	3,502	3,502	3,502	3,502	3,502	3,502	3,502	4,106	4,106	4,106	4,106
Village	1,015	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,101	2,464	2,464	2,464	2,464
Anchorage	338	700	700	700	700	700	700	700	700	821	821	821	821
Fairbanks	85	175	175	175	175	175	175	175	175	205	205	205	205
Mat-Su	253	526	526	526	526	526	526	526	526	616	616	616	616

(a) Table shows total expenditures by operations work force in selected areas.

(b) Assumed that 60 percent of payroll to be spent at Village; 15 percent in the Mat-Su Borough; 20 percent in Anchorage; and 5 percent in Fairbanks.

(c) Total Operations Payroll.

(d) Gross payroll minus 30 percent for taxes (federal, FICA, and unemployment/workman's compensation with self and one dependent) minus 10 percent for net income saved.

be more feasible to mine other hard minerals of the upper Susitna basin if surface transportation (the access road) into the basin is developed.

The construction industry, of course, will also benefit. Besides the dam, work camp, and village construction there will also be significant housing, public facilities, and private building construction in the Mat-Su Borough.

Secondary manufacturing could grow in the Anchorage area as structures are manufactured for use at the construction site. Other manufacturing is not anticipated to be affected significantly by the project.

The transportation sector, notably the Alaskan Railroad and trucking companies, will experience significant demand for their services. Nearly all construction materials and equipment will be transshipped to the sites via rail, truck transport, or a combination of both (see Section 2.5).

Additional impacts on air transportation services can be expected. Railway impact will be to Anchorage based private air charter business as they are used to transport personnel, specialized and expedited equipment, and as couriers.

Service businesses, especially motels, hotels, restaurants, and bars in Anchorage and Fairbanks will experience increased demand during the late 1980s and early 1990s. Much of this increase in business will result from workers who are waiting to get hired on the project and those who spend time temporarily in Anchorage and Fairbanks waiting to return to their primary residences or while on leave from their jobs.

The project could have a negative impact on the fishing industry in the Cook Inlet area if salmon availability declines. Future

availability of salmon will have to be estimated before this analysis can be done.

(g) Fiscal Impacts

(i) Anchorage

Impact forecasts to 2005 for expenditures in Anchorage are provided in Table 6.3-6 and a comparison of baseline and impact forecasts is provided in Table 6.3-7. The project has little impact: total expenditures in Anchorage are projected to increase one-half of one percent in 1990 due to the project and remain almost the same as baseline forecasts for 1999. Normal growth as measured by the baseline forecast will result in a 32 percent increase in expenditures by 1990 over 1981 levels and a 12 percent increase between 1990 and 1999. Increases are evenly distributed among all categories of service.

(ii) Fairbanks

Impact forecasts to 2005 for expenditures are provided in Table 6.3-8, and a comparison of baseline and impact forecasts is provided in Table 6.2-45. The project will have virtually no impact on fiscal conditions in Fairbanks. Total expenditures in Fairbanks are projected to increase eighth-tenths of one percent over the baseline forecast for both 1990 and 1999. This constant rate of change is reflected by the fact that with or without the project the population in Fairbanks will increase approximately 31 percent between 1981-1990; and 18 percent between 1990-1999. Growth in Fairbanks, with the project, is

TABLE 6.3-6

MUNICIPALITY OF ANCHORAGE BUDGET: IMPACT EXPENDITURE FORECASTS.

		A	B	C	D	E	F	G	H	I	J	
	ANCHORAGE	POLICE	FIRE	AMBLNC	PARKS	LIBRARY	HEALTH	TRANS	SEWAGE	SOLID	WATER	TOTAL
YEAR	POP	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	CARE (\$000)	(\$000)	SERVICE (\$000)	WASTE (\$000)	SUPPLY (\$000)	EXPENDS (\$000)
1981	174717	26732	17472	3320	9784	3669	4368	14676	15899	3669	21665	121254
1982	179410	27450	17941	3409	10047	3768	4485	15070	16326	3768	22247	124511
1983	184144	28174	18414	3499	10312	3867	4604	15468	16757	3867	22834	127796
1984	190430	29136	19043	3618	10664	3999	4761	15996	17329	3999	23613	132158
1985	201425	30818	20143	3827	11280	4230	5036	16920	18330	4230	24977	139789
1986	210410	32193	22093	4198	11783	4419	5418	17674	19147	4419	26091	147434
1987	217876	33335	22877	4347	12201	4575	5610	18302	19827	4575	27017	152666
1988	223557	34204	23473	4460	12519	4695	5757	18779	20344	4695	27721	156646
1989	225741	34538	23703	4504	12641	4741	5813	18962	20542	4741	27992	158177
1990	225164	35484	23642	4492	12609	4728	5798	18914	21105	4870	28758	160400
1991	227035	35778	23839	4575	12714	4768	5889	19071	21280	4911	28997	161821
1992	227749	35891	23914	4589	12754	4783	5908	19131	21347	4926	29088	162330
1993	230182	36274	24169	4638	12890	4834	5971	19335	21575	4979	29399	164065
1994	232341	36615	24396	4682	13011	4879	6027	19517	21777	5026	29675	165603
1995	234430	36944	24615	4724	13128	4923	6081	19692	21973	5071	29941	167092
1996	237703	37460	25208	4790	13311	4992	6166	19967	22280	5142	30359	169675
1997	241326	38031	25593	4863	13514	5068	6260	20271	22619	5220	30822	172261
1998	244510	38532	25930	4927	13693	5135	6343	20539	22918	5289	31229	174534
1999	248184	39111	26320	5001	13898	5212	6438	20847	23262	5368	31698	177156
2000	251441	39625	26665	5067	14081	5280	6522	21121	23568	5439	32114	179481
2001	254340	40081	26973	5125	14243	5341	6598	21365	23839	5501	32484	181550
2002	257892	40641	27349	5197	14442	5416	6690	21663	24172	5578	32938	184086
2003	261505	41211	27733	5269	14644	5492	6783	21966	24511	5656	33399	186665
2004	265170	41788	28121	5343	14850	5569	6879	22274	24854	5736	33868	189281
2005	268886	42374	28515	5418	15058	5647	6975	22586	25203	5816	34342	191934

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING AVERAGE PER CAPITA COSTS:

- (A) \$153 1981-1989; +3% 1990-2005.
- (B) \$100 1981-1985; +5% 1986-1995; +1% 1996-2005
- (C) \$19 1981-1985; +5% 1986-1990; +1% 1991-2005.
- (D) \$56
- (E) \$21
- (F) \$25 1981-1985; +3% 1986-1990; +3% 1991-2005..
- (G) \$84
- (H) \$91 1981-1989; +3% 1990-2005.
- (I) \$21 1981-1989; +3% 1990-2005.
- (J) \$124 1981-1989; +3% 1990-2005.

EXPENDITURE PROJECTIONS ARE NOT ALL INCLUSIVE.

TABLE 6.3-7

SUMMARIZED FISCAL IMPACTS OF THE PROJECT ON ANCHORAGE AND FAIRBANKS

Anchorage											
	Police	Fire	Ambulance	Parks and Recreation	Library	Health Care	Transportation	Sewage Service	Solid Waste Disposal	Water Supply	Total Expenditures
1981 Current	26,732	17,472	3,320	9,784	3,669	4,368	14,676	15,899	3,669	21,665	121,254
1990 Baseline Forecast	35,304	23,523	4,469	12,546	4,705	5,769	18,818	20,998	4,846	28,613	159,590
1990 Forecast W. Project	35,484	23,642	4,492	12,609	4,728	5,798	18,914	21,105	4,870	28,758	160,400
Impact of Project	180	119	23	63	23	29	96	107	24	145	810
% Change	0.51	0.51	0.51	0.50	0.49	0.50	0.51	0.51	0.50	0.51	0.51
1999 Baseline Forecast	39,044	26,275	4,992	13,875	5,203	6,427	20,812	23,222	5,359	31,644	176,853
1999 Forecast W. Project	39,111	26,320	5,001	13,898	5,212	6,438	20,847	23,262	5,368	31,698	177,156
Impact of Project	67	45	9	23	9	11	35	40	9	54	303
% Change	0.17	0.17	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Fairbanks											
	Parks and Recreation	Police	Fire Service	Health Care	Public Works	Sewer Service	Electric Utilities	Water Supply	Total Expenditures		
1981 Current	796	3,069	3,228	727	2,319	2,501	2,154	1,887	16,681		
1990 Baseline Forecast	1,037	4,120	4,418	977	3,173	3,357	2,891	2,533	22,505		
1990 Forecast W. Project	1,046	4,156	4,456	985	3,201	3,386	2,916	2,555	22,702		
Impact of Project	9	36	38	8	28	29	25	22	198		
% Change	0.88	0.87	0.86	0.82	0.88	0.86	0.86	0.87	0.88		
1999 Baseline Forecast	1,209	4,805	5,204	1,173	3,701	3,915	3,372	2,954	26,333		
1999 Forecast W. Project	1,220	4,847	5,249	1,183	3,733	3,949	3,401	2,980	26,564		
Impact of Project	11	42	45	10	32	34	29	26	231		
% Change	0.91	0.87	0.86	0.85	0.86	0.87	0.86	0.88	0.88		

Forecasts in 1981 \$.

Selected years from forecasts prepared by Frank Orth & Associates, Inc.

TABLE 6.3-8

CITY OF FAIRBANKS BUDGET:EXPENDITURE IMPACT FORECAST.

YEAR	FAIRBANKS PDP	PARKS & RECR (\$000)	POLICE (\$000)	FIRE SERVICE (\$000)	HEALTH CARE (\$000)	PUBLIC WORKS (\$000)	SEWER SERVICE (\$000)	ELECTRIC UTILS (\$000)	WATER SUPPLY (\$000)	TOTAL EXPENDS (\$000)
1981	22734	796	3069	3228	727	2319	2501	2154	1887	16681
1982	23510	823	3174	3338	752	2398	2586	2227	1951	17250
1983	24442	855	3300	3471	782	2493	2689	2316	2029	17934
1984	26028	911	3514	3696	833	2655	2863	2466	2160	19098
1985	29050	1017	3922	4125	930	2963	3196	2752	2411	21315
1986	32085	1123	4331	4784	1058	3436	3529	3040	2663	23964
1987	31667	1108	4275	4722	1044	3392	3483	3000	2628	23652
1988	29743	1041	4015	4435	980	3185	3272	2818	2469	22215
1989	29827	1044	4027	4447	983	3194	3281	2826	2476	22278
1990	29888	1046	4156	4456	985	3201	3386	2916	2555	22702
1991	30153	1055	4193	4496	1023	3229	3416	2942	2578	22933
1992	30578	1070	4252	4559	1038	3275	3464	2984	2614	23256
1993	31158	1091	4333	4646	1058	3337	3530	3040	2664	23698
1994	31637	1107	4399	4717	1074	3388	3584	3087	2705	24062
1995	32165	1126	4473	4796	1092	3445	3644	3139	2750	24463
1996	32781	1147	4558	4936	1113	3511	3714	3199	2802	24981
1997	33435	1170	4649	5035	1135	3581	3788	3263	2858	25479
1998	34140	1195	4747	5141	1159	3656	3868	3331	2919	26016
1999	34858	1220	4847	5249	1183	3733	3949	3401	2980	26564
2000	35574	1245	4947	5357	1207	3810	4031	3471	3041	27109
2001	36257	1269	5042	5460	1231	3883	4108	3538	3100	27630
2002	36992	1295	5144	5571	1256	3962	4191	3610	3162	28190
2003	37747	1321	5249	5684	1281	4043	4277	3683	3227	28765
2004	38519	1348	5356	5801	1307	4125	4364	3759	3293	29353
2005	39305	1376	5465	5919	1334	4210	4453	3835	3360	29952

ASSUMPTIONS:

PROJECTIONS WERE MADE BASED ON THE FOLLOWING PER CAPITA COSTS:

(A)\$35.00 CONSTANT

(B)\$135.00 1981-1989; +3% 1990-2005.

(C)\$142.00 1981-1985; +5% 1986-1995;+1% 1996-2005.

(D)\$32.00 1981-1985; +3% 1986-1990;+3% 1991-2005.

(E)\$102.00 1981-1985; +5% 1986-2005.

(F)\$110.00 1981-1989; +3% 1990-2005.

(G)\$94.74 1981-1989; +3% 1990-2005.

(H)\$83.00 1981-1989; +3% 1990-2005.

projected to increase total expenditures by 36 percent in 1990 over 1981 levels, and by 18 percent in 1999 over 1990 levels. Once again, increases are evenly distributed among all categories of service.

6.4 - Impact Area 4

(a) Population

The population impact of the project will be very slight in terms of the total State population. As shown in Table 6.4-1, Alaska population is forecast to increase from approximately 428,200 in 1982 to 564,720 in 1990, with construction of the project. Out of the projected increase of 136,500 people, only about 2325 are project-related. By 1990, project-related population will represent only a 0.4 percent increase over the baseline forecast level.

During the 1990s, project-induced new population will decline (reaching a low of 535 in 1995) and then reach a second peak in 1999 of 1,228. Overall, State population will continue to increase moderately throughout the period.

(b) Employment

The employment impacts of the project are shown in Table 6.4-2 for selected years. Years before construction begins, in 1981, statewide employment is 214,200. When the workforce peaks at Watana, state-wide employment is estimated to be 309,365--6365 more than the forecast of employment without the project. This represents a 2.1 percent increase over the baseline forecast. A little more than half of these new jobs will be on-site construction jobs. The remainder will be support (service and related) jobs.

TABLE 6.4-1

IMPACT OF THE SUSITNA PROJECT
ON ALASKA POPULATION, 1981-2005

<u>Year</u>	<u>Baseline Forecast of Alaska Population</u>	<u>Project Related Population Influx</u>	<u>Total Forecast of Alaska Population</u>
1981	412,400	0	412,400
1982	428,200	0	428,200
1983	444,500	182	444,682
1984	463,900	178	464,078
1985	498,100	672	498,772
1986	531,900	852	532,752
1987	545,300	1,203	546,503
1988	547,700	1,671	549,371
1989	558,200	1,867	560,067
1990	562,400	2,324	564,724
1991	572,700	2,191	574,891
1992	579,300	1,735	581,035
1993	588,000	1,014	589,014
1994	598,500	714	599,214
1995	608,900	535	609,435
1996	621,100	690	621,790
1997	634,500	957	635,457
1998	646,900	1,170	648,070
1999	660,900	1,228	662,128
2000	675,000	1,122	676,122
2001	689,000	743	689,743
2002	703,000	278	703,278
2003	718,000	179	718,179
2004	732,900	179	732,900
2005	748,200	179	748,200

Source: Forecasts by Frank Orth & Associates, Inc.

TABLE 6.4-2

BASELINE AND IMPACT FORECASTS OF EMPLOYMENT
FOR THE STATE OF ALASKA, 1981-2005, SELECTED YEARS

<u>Year</u>	<u>Phase</u>	<u>Baseline Forecast</u>	<u>Impact Forecast</u>	<u>Difference</u>	<u>% Difference</u>
1981	Pre-Construction	214,200	N.A.	N.A.	N.A.
1990	Construction-Watana	303,000	309,365	7,365	2.1%
1999	Operation-Watana Construction-Devil Canyon	343,900	347,112	3,212	1.0%
2003	Operation-Watana Operation-Devil Canyon	374,900	375,070	170	--

In 1999, when the Watana facility is in operation and the Devil Canyon workforce peaks, state-wide employment will be about 347,100--3212 more than the employment forecast without the project. This would be approximately a one percent increase over the baseline forecast. As above, slightly more than half of these jobs will be on-site construction.

In 2003 when both dams are operating, 170 persons will be needed at the facilities. This is an insignificant increase over the 2003 baseline employment forecast of 374,900.

It is expected that more than three quarters of the project generated jobs will be filled by Alaskans. This will help lower the unemployment rate, provided that immigration like that during the trans-Alaska pipeline is not repeated here.

(c) Personal Income

Substantial personal income will be earned in the State during the construction and operations of the dams. This has been discussed previously in Section 6.3(e).

In 1990 when the work force peaks at Watana, \$48.4 - 54.6 million of the construction payroll will be spent in the State. In 1999, when the workforce peaks at Devil Canyon, \$28.3 million - 31.3 million of the construction and operations payroll will be spent in the State. From 2003 onward, when both dams are in operation, about 4.1 million will be spent in the State annually.

During construction of Watana and Devil Canyon, and the early years of operation of Watana (1983-2002), \$452 - 506 million will be spent in the State. Most of this money will be spent in Anchorage, Fairbanks, and the Mat-Su Borough.

The above payroll expenditure estimates nearly reflect increases in personal income in the State resulting from the project. These estimates understate personal income impacts because (1) federal income taxes and savings are not included and (2) non-wage and non-salary income are excluded (this is relevant for workers that relocate to Impact Area 3). Adjusting for the effects of (1), personal income resulting from the project will range from \$674 - \$755 million during 1983-2002. The effects of (2) will be to increase slightly these personal income estimates.

7 - LIST OF LITERATURE

7.1 - Introduction

The following is a list of sources examined and utilized in the development of the Susitna hydroelectric project socioeconomic profile and impact analysis. They are arranged into three sections: 7.2 - Energy Development Impact Studies; 7.3 - Data; and 7.4 - Methodologies.

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8 - AUTHORITIES CONTACTED

8.1 - Introduction

Contained in this section is a comprehensive list of government agencies organizations, institutions, and individuals contacted to assist in the development of this socioeconomic profile and impact analysis. The section is divided into four distinct categories: Federal Institutions; State Institutions; Local Institutions; and Other Institutions, Organizations, and Individuals.

8.2 - Federal Institutions

GOVERNMENT OF CANADA, DEPARTMENT OF FISHERIES AND OCEANS
Victoria, B.C.

Bill Massey, Chief of Recreational and Habitat Economics Department
- Phone conversation with Ron Reisner; January 13, 1982; discussed Canadian Government studies of commercial fish values.

GOVERNMENT OF CANADA, BRITISH COLUMBIA MINISTRY OF ENVIRONMENT
Victoria, B.C.

Jon O'Riordan, Ph.D.
- Phone conversation with Ron Reisner; January 13, 1982; discussed his work in establishing recreational values for fresh water fish and some game species in British Columbia.

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Anchorage, AK

E.R. Robinson, Director
- Phone discussion with Andy Woolford; February 12, 1981; information on housing data for Copper River Region.

U.S. DEPARTMENT OF AGRICULTURE

Delon Brown, Chief Researcher
- Meeting with Irene Gendron; June 5, 1980; identified forecasting models and socioeconomic data and information.

Soil Conservation Service
Anchorage, AK

Sterling E. Powell, P.E., River Basin Planning Staff
- Meeting with Peter Rogers; January 29, 1981; discussed goals, objectives and status of river basin planning project.

John O'Neil, Coordinator
- Telephone discussion with David Davies; July 14, 1981; Discussed resource valuation studies done for the Susitna River Basin Cooperative Study

- Phone conversation with Ron Reisner; January 12, 1982; discussed his work in establishing fish and game values for Alaska.

John O'Neil, Coordinator

- Telephone discussion with Peter Rogers; January 13, 1982; discussed economic valuation of big game.

- Meeting with Peter Rogers; January 15, 1982; discussed economic valuations of recreational activities in the Susitna Basin and extensions of the travel cost methodology.

Economics, Statistics and Cooperative Service
Natural Resource Economics Division
Anchorage, AK

Paul Fuglestad, Agricultural Economist

- Meeting with Peter Rogers; January 29, 1981; discussed methods and results of agriculture and timber potential studies for the Willow subbasin; discussed plan of study for other subbasins; discussed population projects for the river basin.

U.S. DEPARTMENT OF ARMY

Corp. of Engineers
Seattle, WA

Art Harnisch, Chief of Economic and Social Evaluation Section

- Phone discussion with Andy Woolford; December 11, 1981; discussed work force characteristics in rural areas.

U.S. DEPARTMENT OF COMMERCE

National Marine Fisheries Service
Seattle, WA

Jack Richards, Regional Economist

- Phone conversation with Ron Reisner; January 12, 1982; discussed NMFS studies to determine commercial and recreational values of salmon.

Bureau of Economic Analysis
Washington, DC

Al Silverman, Regional Economist

- Telephone conversation with Robin Hill; December 22, 1981; requested data on Alaska wage and salary income.

U.S. DEPARTMENT OF FISH AND WILDLIFE SERVICE

Michael Hay, Economist

- Phone conversation with Ron Reisner; January 12, 1982; discussed game value data in the National Survey of Fishing and Hunting.

U.S DEPARTMENT OF INTERIOR

Bureau of Land Management
Anchorage, AK

Michael Brown

- Phone discussion with Peter Rogers; January 30, 1981; discussed type, quality, and quantity of data available regarding the historic use of Alaska's inland waters for travel, trade or commerce.

Bureau of Land Management, Outer Continental Shelf (SESP)
Anchorage, AK

Gary Hennigh; Charlie Smythe, Socioeconomic Specialists
- Meeting with Andy Woolford; January 9, 1981; discussed OCS, SESP Studies and Enclave Development Study (Louis Berger & Associates).

Charlie Smythe, Socioeconomic Specialist

- Meeting with David Davies; September 24, 1980; identified sources of socioeconomic data and information.

Bureau of Mines
Anchorage, AK

- Meeting with Andy Woolford; January 8, 1981; obtained information and map on mining claim locations in Upper Susitna River Basin.

Joanne Gidlund, Public Affairs Office

- Phone discussion with David Davies; February 10, 1981; regarding information on D-2 legislation.

Quality of the Environment Division, Resources For the Future

Elizabeth Willman, Fellow

- Phone conversation with Ron Reisner; January 7, 1982; obtained referral names for Game Valuation in the U.S. Department of Fish and Wildlife Service.

U.S. DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration
Alaska Railroad
Anchorage, AK

Fred Hoeffler, Traffic Officer

- Meeting with Andy Woolford; January 9, 1981; discussed freight schedules, capacity, upgrading, employment, and payroll.

8.3 - State Institutions

ALASKA DEPARTMENT OF EDUCATION Juneau, AK

Lee Hays

- Phone discussion with Andy Woolford; February 3, 1981; regarding information on school districts in the Mat-Su Borough and Valdez-Chitina-Whittier Census Division.

Dave Scott, Deputy Director of Management and Finance

- Telephone discussion with Madelaine Laurello; December 15, 1981; requested information on State Debt Service Reimbursement Program.

ALASKA DEPARTMENT OF TRANSPORTATION Valdez, AK

Rick Quiroz, Planner

- Phone discussion with Andy Woolford; January 27, 1981; regarding Environmental Assessments for portions of Richardson Highway.

ALASKA DEPARTMENT OF TRANSPORTATION Anchorage, AK

Reed Gibby, Transportation Planner

- Phone discussion with Andy Woolford; November 5, 1980; regarding Mat-Su Borough Transportation Study.

- Meeting with Andy Woolford; January 7, 1981; discussed and obtained data on highway and bridge conditions, road capacities and plans for upgrading for Parks, Glenn, Denali, and Richardson Highways.

Bill Humphrey, Transportation Planner I

- Phone discussion with Andy Woolford; November 5, 1980; regarding Mat-Su Borough Transportation Study.

Eugene Weiler, Traffic Data Supervisor

- Telephone discussion with Andy Woolford; May 12, 1981; requested traffic counts on Denali Highway.

ALASKA DEPARTMENT OF COMMUNITY AND REGIONAL AFFAIRS (CRA) Anchorage, AK

Richard Spitler, Planner

- Meeting with Peter Rogers; November 21, 1980; discussed CRA's activities in the Valdez-Chitina-Whittier census division and obtained studies on communities in this division.

Mark Stephens, Planner VI

- Meeting with Andy Woolford; January 6, 1981; discussed activities in Valdez-Chitina-Whittier Census Division (Richardson Highway corridor) and existing community profiles.

- Phone discussion with David Davies; September 25, 1980; identified sources of socioeconomic data and information.

Ed Busch

- Telephone discussion with Robin Hill; September 24, 1981; discussed the availability of statewide public service standards and demographic forecasts for the Mat-Su Borough.

ALASKA DEPARTMENT OF FISH AND GAME
Anchorage, AK

Sterling Eide, Regional Supervisor for Game Division

- Meeting with David Davies; September 23, 1980; established communication and obtained data.
- Meeting with Peter Rogers; August 19, 1980; established communication and obtained data on harvest.

Sterling Miller, Game Biologist III

- Meeting with David Davies; September 23, 1980; established communication and obtained data.

Larry Heckart, Fisheries Biologist IV

- Meeting with David Davies; September 23, 1980; established communication and obtained data.

Michael Mills, Fishery Biometrician III

- Meeting with David Davies; September 23, 1980; established communication and obtained data.
- Meeting with Peter Rogers; June 5 and 6, 1981; obtained and discussed ADF&G's work plans and FO&A, Inc.'s proposed increment (Work Packages 5-9).
- Meeting with Peter Rogers; October 14, 1980; requested answers to questions of ADF&G's Final Preliminary Plan of Study; determined status of ADF&G's Susitna effort; determined and established optimal communications channels and methods of coordination with ADF&G; obtained socioeconomic data and information on recreational fisheries for Areas 2 and 5 from ADF&G; established timetables for data and information outputs and sharing with ADF&G.
- Telephone discussion with David Davies; July 13, 1981; set up meeting for July 15, 1981.
- Meeting with David Davies, July 15, 1981; Discussed and obtained most recent ADF&G POS, resource valuation studies and methods, and 1980 sport fish harvest data (Annual Report)

Christopher Estes, Fisheries Biologist III

- Meeting with David Davies; September 23, 1980; established communication.

ALASKA DEPARTMENT OF REVENUE
Juneau, AK

Linda Lockridge, Records and Licensing Supervisor, Fish & Game
Licensing Division
- Meeting with Peter Rogers; August 20, 1980; obtained information on
game harvest

Bill Yankee, Economist II
- Meeting with Peter Rogers; November 21, 1980; discussed structure on
non-petro revenue model and revenues from hydro projects.
- Phone discussion with David Davies; February 6, 1981; regarding
data on gross sales by census division.

Hazel Nowlin, Administrative Assistant I
- Phone discussion with David Davies; February 20, 1981; regarding
Gross Business Receipts by Borough - North Star, Mat-Su, Anchorage,
1970 - 1977.

ALASKA DEPARTMENT OF ENERGY
Anchorage, AK

Heinz Noonon, Energy Economist
- Meeting with Irene Gendron; June 3, 1980; identified sources of
socioeconomic data and information.

ALASKA DEPARTMENT OF LABOR

Division of Research and Analysis
Anchorage, AK

Neil Fried, Labor Economist
- Meeting with Peter Rogers; January 30, 1981; discussed employment
data, multipliers, labor supply data, location quotients and the
availability of commuting and labor migration studies.

- Phone discussion with Peter Rogers; June 5, 1981; discussed results
of Municipality of Anchorage's multiplier study.

Cal Dauel, Administrative Officer
- Meeting with Andy Woolford; January 8, 1981; discussed income and
employment multipliers; industry linkages; and consumer price index
for Matanuska-Susitna Borough.

Greg Huff, Labor Economist
- Meeting with Andy Woolford; December 15, 1981; discussed fore-
casted Alaska construction labor force supply and demand.

- Phone discussion with Andy Woolford; January 11, 1982; discussed
wage rates for selected occupations.

- Phone conversation with Robin Hill; December 28, 1981 requested
information on wage and salary income.

- Phone conversation with Ron Reisner; January 12, 1982; discussed paper entitled "A Discussion of the Methods for Evaluating The Economic Values of Fish and Wildlife".

Ron Stanek, Resource Specialist II

- Meeting with David Davies; September 23, 1980; established communication.

Steve Burgess, State Wide Coordinator for Habitat

- Phone conversation with Ron Reisner; January 12, 1982; discussed status of ADF&G study to determine fish and game values for Alaska.

- Telephone discussion with Peter Rogers; January 12, 1982; discussed ADF&G's plans to conduct fish and game valuation studies.

Dennis Haanpaa, Fisheries Biologist IV, Commercial Fisheries

- Meeting with David Davies; September 23, 1980; established communication.

Jerry Sexton, Game Biologist II

- Meeting with Peter Rogers; August 19, 1980; established communication and obtained gain harvest data.

Lee Miller, Fish and Game Technician V

- Meeting with Peter Rogers; August 19, 1980; established communication and obtained game harvest data.

Greg Bos, Game Biologist IV

- Phone discussion with David Davies; February 10, 1981; regarding obtaining a copy of the Alaska Wildlife Management Plans.

ALASKA DEPARTMENT OF FISH AND GAME
Anchorage, AK

Jeff Hartman, Regional Bioengineering Coordinator

- Telephone discussion with Peter Rogers; October 27, 1981; discussed salmon valuation techniques.

ALASKA DEPARTMENT OF PUBLIC SAFETY

Division of Fire Prevention, Southcentral District
Anchorage, AK

Dave Taylor, Fire Protection Engineer

- Telephone discussion with Robin Hill; September 28, 1981; discussed fire prevention facilities in the Mat-Su Borough.

Division of Fish and Wildlife Protection
Anchorage, AK

Rodney Mills, Detachment Commander

- Meeting with David Davies; September 23, 1980; establish communication.

Ms. Lobb, Clerk

- Telephone discussion with Peter Rogers; January 15, 1982; discussed financial survey of guides who operate in Game Management Unit 13.

Division of Public Safety
Palmer, AK

Michael Dekreon, Trooper

- Interview with Robin Hill; October 12, 1981; discussed the police facilities and services available in the Mat-Su Borough.

Lt. Rhodes

- Interview with Robin Hill; October 13, 1981; discussed standards used to determine a need for additional police protection.

ALASKA DEPARTMENT OF NATURAL RESOURCES

Division of Research and Development, Land and Resources Planning
Anchorage, AK

Carol Larsen, Public Information Officer

- Meeting with David Davies; September 25, 1980; identified sources of socioeconomic data and information.

Bob Loeffler, Associate Planner

- Meeting with David Davies; September 25, 1980; identified sources of socioeconomic data and information.

- Meeting with Peter Rogers; November 19, 1980; discussed land use planning methods, status of Willow subbasin area land use planning, and socioeconomic implications of land use zoning.

Steve Reeves, Chief, Land Resource Planner; Randy Cowart, Planner

- Meeting with Andy Woolford; January 9, 1981; discussed time schedules and collaboration regarding Regional Plan for the Upper Susitna.

Division of Pipeline Surveillance
Fairbanks, AK

Elstun Lausen, Socioeconomic Officer

- Phone discussion with Andy Woolford; January 7, 1981; regarding community profiles and studies of Southeast Fairbanks and Valdez-Chitina-Whittier census divisions.

ALASKA DEPARTMENT OF REVENUE
Juneau, AK

Linda Lockridge, Records and Licensing Supervisor, Fish & Game
Licensing Division

- Meeting with Peter Rogers; August 20, 1980; obtained information on game harvest

Bill Yankee, Economist II

- Meeting with Peter Rogers; November 21, 1980; discussed structure on non-petro revenue model and revenues from hydro projects.

- Phone discussion with David Davies; February 6, 1981; regarding data on gross sales by census division.

Hazel Nowlin, Administrative Assistant I

- Phone discussion with David Davies; February 20, 1981; regarding Gross Business Receipts by Borough - North Star, Mat-Su, Anchorage, 1970 - 1977.

ALASKA DEPARTMENT OF ENERGY
Anchorage, AK

Heinz Noonon, Energy Economist

- Meeting with Irene Gendron; June 3, 1980; identified sources of socioeconomic data and information.

ALASKA DEPARTMENT OF LABOR

Division of Research and Analysis
Anchorage, AK

Neil Fried, Labor Economist

- Meeting with Peter Rogers; January 30, 1981; discussed employment data, multipliers, labor supply data, location quotients and the availability of commuting and labor migration studies.

- Phone discussion with Peter Rogers; June 5, 1981; discussed results of Municipality of Anchorage's multiplier study.

Cal Dael, Administrative Officer

- Meeting with Andy Woolford; January 8, 1981; discussed income and employment multipliers; industry linkages; and consumer price index for Matanuska-Susitna Borough.

Greg Huff, Labor Economist

- Meeting with Andy Woolford; December 15, 1981; discussed forecasted Alaska construction labor force supply and demand.

- Phone discussion with Andy Woolford; January 11, 1982; discussed wage rates for selected occupations.

- Phone conversation with Robin Hill; December 28, 1981; requested information on wage and salary income.

- Phone discussion with Andy Woolford; January 12, 1982; requested information on 1981 CPI for Anchorage SMSA.

Division of Research and Analysis
Juneau, AK

Steve Harrison, Labor Economist

- Meeting with Peter Rogers; November 20, 1980; discussed population data and LABMOD (short-run labor projections model).

Chuck Caldwell, Chief of Research and Analysis

- Meeting with Peter Rogers; November 20, 1980; discussed levels of disaggregation of employment data and employment estimates.

Chris Miller, Labor Economist

- Meeting with Peter Rogers; November 20, 1980; discussed structure of LABMOD and income and employment multipliers.

Rod Brown, Supervisor of Research

- Meeting with Peter Rogers; November 20, 1980; discussed income and employment multipliers and economic base analysis.

Sally Saddler, Labor Economist

- Phone discussion with David Davies; February 23 and 25; requested labor data information.

Dave Swanson, Demographer

- Phone discussion Meeting with Andy Woolford; August 18, 1981; obtained information on demographic estimates and projections.

James Wilson, Economist

- Phone discussion with Andy Woolford; November 19, 1981; information on local and regional labor supply.

ALASKA DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT

Division of Energy and Power Development
Anchorage, AK

Secretary

- Phone discussion with David Davies; September 25, 1980; identified sources of socioeconomic data and information.

David Reaume, Economist

- Meeting with Irene Gendron; June 6, 1980; identified forecasting models.

- Phone discussion with Peter Rogers; January 30, 1981; discussed availability of State's Long-Term Energy Plan.

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Anchorage, AK

Jim Allen, Anchorage/West District Supervisor

- Phone conversation with Robin Hill; September 28, 1981; discussed water and and sewage standards.

UNIVERSITY OF ALASKA

Institute of Social and Economic Research
Anchorage, AK

Lee Huskey, Economist

- Meeting with Andy Woolford; January 6, 1981; discussed employment and population multipliers and Valdez-Chitina-Whittier community studies.

Scott Goldsmith, Assistant Professor of Economics

- Meeting with Irene Gendron; June 4, 1980; identified forecasting models.

- Meeting with Peter Rogers; July 8, 1980; determined relevance of ISER demographic and economic models for Work Package 4.

- Phone discussion with Peter Rogers; August 13, 1981; discussed availability of ISER's MAP outputs.

- Phone discussion with Peter Rogers; July 13, 1981 discussed form and content of ISER's planned MAP outputs.

- Phone discussion with Peter Rogers; September 21, 1981; discussed availability of ISER's MAP outputs.

- Phone discussion with Peter Rogers; November 24, 1981; discussed ISER's statewide and regional employment, population and household projections.

ARCTIC ENVIRONMENTAL INFORMATION AND DATA CENTER (AEIDC)
Anchorage, AK

Barbara Sokolov, Director, Information Services

- Meeting with Andy Woolford; January 6, 1981; apprised of AEIDC data cataloging and retrieval, especially as it pertains to Richardson Highway corridor.

HOUSE POWER ALTERNATIVES STUDY COMMITTEE
Juneau, AK

Hugh Malone

- Meeting with Irene Gendron; June 6, 1980; established communication channels.

ALASKA STATE TROOPERS
Glennallen Trooper Post
Glennallen, AK

Bob Cockrell, State Trooper

- Phone discussion with Andy Woolford; February 4, 1981; regarding trooper facilities and personnel in the Valdez-Chitina-Whittier census divisions.

Palmer Trooper Post
Palmer, AK

Lt. Rhodes

- Phone discussion with Andy Woolford; December 11, 1981; discussed existing and future State Trooper needs in Alaska.

ALASKA STATE HOUSING AUTHORITY
Anchorage, AK

Bill Foster, Housing Director

- Meeting with Andy Woolford; January 9, 1981; discussed housing studies/surveys in Matanuska and Valdez-Chitina-Whittier census divisions.

8.4 - Local Institutions

CITY OF FAIRBANKS
Fairbanks, AK

Greg Mumm, Finance Director

- Correspondence from Madelaine Laurello; December 11, 1981; requested data on per capita costs of delivery of services by the City of Fairbanks.
- Telephone from Madelaine Laurello; November 30, 1981; requested copies of annual budget FY 1981/82; information on utilities in Fairbanks.

Fred Brantingham, Utility Director

- Telephone from Madelaine Laurello; November 30, 1981; requested copies of utility budget FY 1981/82.

CITY OF HOUSTON
Houston, AK

Elsie O'Brien, City Clerk

- Meeting with Robin Hill; October 13, 1981; discussed housing and land, fire protection, recreational and solid waste disposal facilities available in the City.

Elsie O'Bryan, City Clerk

- Meeting with Madelaine Laurello; December 21, 1981; reviewed annual budget for FY 1981/82; discussed sources of revenue; per capita expenditures and reviewed population projections.

- Correspondence from Madelaine Laurello; December 11, 1981; requested data on average per capita costs of delivery of services by the City of Houston.

CITY OF PALMER

Palmer, AK

Dave Soulak, City Manager

- Meeting with Robin Hill; October 15, 1981; discussed water, sewage, police, fire, recreation and housing available in the City.

- Telephone discussion with Robin Hill; October 20, 1981; requested further information on water and sewage facilities in Palmer.

- Meeting with Madelaine Laurello; December 22, 1981; reviewed annual budget for FY 1982; discussed sources of revenue; per capita expenditures for services, and reviewed population projections.

Marsha Craig, City Clerk

- Correspondence from Madelaine Laurello; December 11, 1981; requested data on average per capita costs of delivery of services provided by the City of Palmer.

Dan Contini, Fire Chief

- Correspondence from Madelaine Laurello; December 11, 1981; requested information regarding costs of delivery for service to the City of Palmer.

- Phone discussion with Robin Hill; December 17, 1981; regarding the impacts that population growth will have on police and fire protection in Palmer.

- Phone discussion with Andy Woolford; February 4, 1981; regarding data on EMT (ambulance) and fire facilities in the Borough.

- Telephone conversation with Robin Hill; October 20, 1981; regarding fire protection facilities in the Borough.

CITY OF WASILLA

Wasilla, AK

Earling Nelson, City Clerk

- Meeting with Robin Hill; October 14, 1981; Discussed water, fire and education facilities and services in the City, and the expected pattern of future growth.

- Telephone discussion with Robin Hill; October 20, 1981; requested further information on water facilities.

- Phone discussion with Andy Woolford; December 11, 1981; discussed existing public services in Wasilla, thresholds, and future needs.

- Meeting with Madelaine Laurello; December 23, 1981; reviewed annual budget for FY 1981/1982. Discussed sources of revenue; per capita expenditures for services, and new water supply system.

- Correspondence from Madelaine Laurello; December 11, 1981; requested data on average per capita costs of delivery of services by the City of Wasilla.

Jake Wright, Fire Chief

- Correspondence from Madelaine Laurello; December 11, 1981; requested information regarding costs of delivering fire service to the Wasilla Fire Service Area.

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT
Fairbanks, Ak

Mr. Easton, Business Manager

- Telephone from Madelaine Laurello; November 30, 1981; requested copies of school budget FY 1981/82.

MUNICIPALITY OF ANCHORAGE
Anchorage, AK

Mike Meehan, Director of Planning

- Meeting with Irene Gendron; June 4, 1980; established contact and identified sources of socioeconomic data and information.

Shawn Hemme, Assistant Planner

- Meeting with Irene Gendron; June 4, 1980; established contact and identified sources of socioeconomic data and information.

Barbara Withers, Regional Economist

- Meeting with David Davies; September 23, 1980; discussion of socioeconomic information and studies.

Chuck Becker, Economic Development Director

- Meeting with David Davies; September 23, 1980; discussion of socioeconomic information and studies.

Bruce Silva, Demographer

- Phone discussion with Peter Rogers; June 5, 1981; discussed results of Municipality's multiplier study.

- Meeting with Robin Hill; October 15, 1981; discussed housing and demographic trends, vacancy rates, size of households, and survey methodologies.

Gene Dusek, Budget Officer

- Correspondence from Madelaine Laurello; November 23, 1981; requested copy of annual city budget for FY 1981/82; tax information concerning bonded indebtedness; total assessed valuation.

- Correspondence from Madelaine Laurello; December 11, 1981; requested data on average per capita costs of delivery of services by the City of Anchorage.

ANCHORAGE SCHOOL DISTRICT
Anchorage, AK

Mel Greaves, Director of Budget Department

- Telephone from Madelaine Laurello; November 30, 1981; requested copy of annual school district budget for FY 1981/82.

FAIRBANKS NORTH STAR BOROUGH
Community Research Center
Fairbanks, AK

Karen Fox, Research Analyst

- Meeting with Irene Gendron; June 2, 1980; identified sources of socioeconomic data and information.

Cathy Nichols, Research Aide

- Phone discussion with Andy Woolford; December 8, 1981; information on current housing stock and vacancy rates - City of Fairbanks.

PLANNING DEPARTMENT
Fairbanks, AK

John Kent

- Phone discussion with Andy Woolford; December 9, 1981; information on current and historical housing stock and vacancy rates - Fairbanks North Star Borough.

MATANUSKA-SUSITNA BOROUGH OFFICE
Palmer, AK

Rick Feller, Planner

-Telephone discussion with Andy Woolford; April 11, 1981; obtained definition of different classifications of sewage systems.

Rodney Schulling, Planner

- Phone discussion with Andy Woolford; February 6, 1981; regarding Borough areawide and non-areawide services, with particular attention to Talkeetna and vicinity.

- Meeting with Robin Hill; October 12, and 14; obtained copies of planning documents for solid waste, health care and fire protection, and a copy of the facilities inventory prepared for the Dow-Shell Group. Discussed housing conditions in the Borough and public service planning standards.

- Meeting with Madelaine Laurello; December 22, 1981; reviewed preliminary population projections developed by FO&A, Inc.

Walt Chapel, Controller

- Telephone from Madelaine Laurello; December 3, 1981; requested information regarding tax collections; G.O. bond issues.

- Correspondence to Madelaine Laurello; December 4, 1981; provided population data; total assessed valuation data by category of property.

Alan Tesche, In-house Attorney

- Meeting with David Davies; September 26, 1980; general discussion of Borough.

Lee Wyatt, Planning Director

- Meeting with David Davies; September 26, 1980; discussed Borough development objectives.

Claud Oxford, Engineer

- Meeting with Robin Hill; October 14, 1981; discussed sanitary landfill capacity.

Vern Roberts, Finance Director

- Telephone conversation with Robin Hill; November 19, 1981; establish contact.

- Meeting with Madelaine Laurello; December 21, 1981; discussed annual budget of the Mat-Su Borough for FY 1981/82; discussed major sources of revenue; categories of expenditures, and bonded indebtedness.

- Correspondence from Madelaine Laurello; December 11, 1981; requested average per capita costs of various services provided by the Mat-Su Borough.

- Telephone from Madelaine Laurello; December 15, 1981; information regarding general obligation bonds for capital improvements in the Mat-Su Borough.

Pat Stevenson, Senior Accountant

- Meeting with Madelaine Laurello; December 21, 1981; discussed annual budget of the Mat-Su Borough for FY 1981/82.

Steve Van Sant, Director of Land Management

- Meeting with Madelaine Laurello; December 22, 1981; obtained information on total assessed valuation for 1970 to 1981 in the Mat-Su Borough; discussed acreage belonging to Native Lands; State Lands, Federal Lands and Borough Lands.

Bob Vroman, Service Area Coordinator

- Phone conversation with Robin Hill; discussed the implications of population growth on transportation infrastructure.

MATANUSKA-SUSITNA SCHOOL DISTRICT
Palmer, AK

Monty Hotchkiss, Business Manager

- Phone discussion with Andy Woolford; February 13, 1981; discussed capacities and plans for expansion of public school facilities in the Mat-Su Borough.

- Meeting with Madelaine Laurello; December 22, 1981; discussed annual budget for FY 1981/82; focussed on revenue sources; expenditures; enrollment projections.

- Correspondence to Madelaine Laurello; December 23, 1981; enclosed 6 year 1980 Capital Improvement Plan and anticipated sources of funding.

- Telephone conversation with Madelaine Laurello; November 23, 1981; requested copy of annual school budgets for FY 1980/81, FY 1981/82.

Marie Keen, Accountant

- Telephone conversation with Madelaine Laurello; December 16, 1981; requested clarification of computations to determine state revenues.

- Telephone conversation with Madelaine Laurello; December 15, 1981; requested information regarding G.O. Bonds for school construction projects.

Kenneth Kramer, Superintendent

Bruce DeMond, Assistant Superintendent

- Meeting with Robin Hill; October 14, 1981; discussed present capacity and utilization of schools, and planned expansion. Exchanged some background information on the Susitna project.

- Letter from Robin Hill; November 3, 1981; requested additional information on school facilities.

VALDEZ POLICE DEPARTMENT
Valdez, AK

Police Officer

- Phone discussion with Andy Woolford; February 5, 1981; regarding community and judicial facilities in the Valdez-Chitina-Whittier census divisions.

MAGISTRATE
Glennallen, AK

Sheldon Spector, Magistrate

- Phone discussion with Andy Woolford; February 5, 1981; regarding community and judicial facilities in the Valdez-Chitina-Whittier census divisions.

COPPER RIVER SCHOOL DISTRICT
Glennallen, AK

Dr. Krinke, Superintendent

- Phone discussion with Andy Woolford; February 5, 1981; regarding school facilities and enrollment for the Copper River region.

TRAPPER CREEK COMMUNITY COUNCIL
Trapper Creek, AK

David Porter, Nancy Robinson and Gail Saxowsky, Council Members

- Meeting with Peter Rogers, Steve Braund and Charlotte (APA); October 21, 1981; discussed local business, plans for new school facility, access plans, Subtask 7.05 study, and how Trapper Creek might be impacted by the dam(s) and access plans.

- Phone conversation with Robin Hill; December 3, 1981; discussed population growth and economic activity in Trapper Creek.

8.5 - Other Institutions, Organizations, and Individuals

AHTNA, INC.
Copper Center, Ak

Lee Adler, Director

- Phone discussion with Andy Woolford; February 5, 1981; regarding community facilities/infrastructure for the Ahtna region.
- Phone discussion with David Davies; February 20, 1981; to determine status of Ahtna, Inc. lands in Susitna area.

ALASKA BUSINESS DEVELOPMENT CORORATION
Anchorage, AK

Gary Selk, Partner

- Interview with Ron Reisner; January 18, 1982; obtained listing of contractors likely to engage in access road system, airport and dam construction.

ALASKA HOSPITAL
Anchorage, AK

Director of Medical Records

- Phone discussion with Andy Woolford; February 4, 1981; regarding data on facilities and capacity.

Tom Kent, Statistical Analyst of Medical Records

- Phone conversation with Robin Hill; requested statistics on number of patient days by Mat-Su Borough residents.

ALASKA MINERS' ASSOCIATION
Anchorage, AK

- Meeting with Andy Woolford; January 7, 1981; discussed location and number of mining claims in the Upper Susitna Basin; discussed implications of access routes to mining activity.

ASSOCIATED GENERAL CONTRACTORS ALASKA CHAPTER Anchorage, AK

Barbara Horn, Assistant Director

- Interview with Ron Reisner; January 18, 1982; obtained listing of contractors likely to engage in access road system, airport and dam construction.

ATCO
Anchorage, AK

Mr. Osborn, Industrial Marketing Representative

- Interview with Ron Reisner; January 19, 1982; discussed what materials equipment and labor would be available for the camp in state.

BATTELLE, PACIFIC NORTHWEST LABORATORIES
Richland, WA

Ward Swift and Michael Scott

- Meeting with Peter Rogers and others; July 29, 1981: (1) identified whether Battelle is providing the "without Susitna forecast" desired by the APA; and (2) determined when Battelle expects to receive new outputs from ISER.

Jeff King, Senior Research Engineer

- Meeting with Peter Rogers; July 29, 1981; discussed Battelle's scope and methods for assessing socioeconomic impacts associated with Susitna and other potential energy developments.

Mike Scott, Senior Research Economist

- Phone discussion with Peter Rogers; May 28, 1981; discussed Battelle's workplan for Alternatives Study and data and information sharing.

- Phone discussion with Peter Rogers; December 23, 1981; discussed ISER's statewide and regional employment, population and housing projections.

- Phone discussion with Peter Rogers; October 16, 1981; discussed Battelle's plans for using ISER's MAP output.

BEN MARSH AND ASSOCIATES
Anchorage, AK

Nancy Cole, Assistant Property Manager

- Meeting with Robin Hill; October 15, 1981; discussed housing market conditions in Anchorage.

BRADFORD H. TUCK, PH.D
Anchorage, AK

Brad Tuck, Economic Consultant

- Meeting with Peter Rogers; October 22, 1981; discussed baseline forecast methods.

CCC ARCHITECTS AND PLANNERS
Anchorage, AK

Richard Moorehouse and Gordon Harrison, Sub-contractors

- Phone conversation with Andy Woolford; November 24, 1981; discussed methodology for deriving work force characteristic assumptions used in Dow-Shell Group Petrochemical feasibility study.

CHEVRON OIL CO.
Anchorage, AK

Jim Howard, Sales - Phone conversation with Ron Reisner; January 21, 1982; discussed labor share component of fuel prices.

CONSTRUCTION AND RIGGING
Anchorage, AK

Paul Reynolds, President

- Phone conversation with Ron Reisner; January 19, 1982; discussed what materials, equipment and labor are available in Alaska for access road system and airport.

COOK INLET REGION, INC.
Anchorage, AK

Marge Sagerser, Land Manager

- Meeting with Irene Gendron; June 3, 1980; established communications channels and identified sources of socioeconomic data and information.

CIRI representatives

- Meeting with Peter Rogers and other team members and the APA; October 20, 1981; discussed alternative access plans, potential.

COPPER RIVER HOUSING AUTHORITY
Copper Center, AK

Thea Smelcher, Housing Director

- Phone discussion with Andy Woolford; February 11, 1981; housing information in Copper River Region.

COPPER RIVER NATIVE ASSOCIATION
Copper Center, AK

Secretary

- Phone discussion with Andy Woolford; February 4, 1981; regarding community facilities in the Ahtna region.

Ms. Billy Peters, Health Director

- Phone discussion with Andy Woolford; February 20, 1981; information on health services in Copper River Region.

COPPER VALLEY ELECTRIC ASSOCIATION
Valdez, AK

Dan Tegglar

- Phone discussion with Andy Woolford; February 2, 1981; regarding Copper Valley Electric Association rates, capacities, power requirements.

COPPER VALLEY VIEWS
Kenny Lake, AK

Reporter

- Phone discussion with Andy Woolford; February 2, 1981; regarding circulation and information on other media in the immediate vicinity.

DARBYSHIRE AND ASSOCIATES
Anchorage, AK

Mr. Ralph Darbyshire

- Phone discussion with Andy Woolford; January 7, 1981; regarding socioeconomic profiles.

DOYON CORPORATION
Fairbanks, AK

Doug Williams, Land Planner

- Meeting with Irene Gendron; June 3, 1980; established communication channel and identified sources of socioeconomic data and information.

DOW CHEMICAL U.S.A.
Midland, Michigan

Mr. Hugh Starks, Property Manager for Michigan Division
- Phone conversation with Andy Woolford; November 24, 1981; discussed construction work force characteristics assumptions made in Dow-Shell Group Petrochemical feasibility study.

FAIRBANKS CHAMBER OF COMMERCE
Fairbanks, AK

Bob Dempsey, Business Analyst
- Meeting with Irene Gendron; June 2, 1980; identified sources of socioeconomic data and information.

FAIRBANKS TOWN AND VILLAGE ASSOCIATION FOR DEVELOPMENT, INC.
Fairbanks, AK

Art Patterson, Representative
- Phone discussion with Andy Woolford; January 9, 1981; discussed community profiles and other studies they have prepared for Interior District.

FLORIDA STATE UNIVERSITY
Tallahassee, FL

Phil Sorensen, Ph.D, Professor
- Phone conversation with Ron Reisner; January 12, 1982; discussed his work in establishing methodology to determine values for fish and game species.

FRANK MOOLIN & ASSOCIATES, INC.
Anchorage, AK

Mike Finnegan, Project Control Manager
- Phone discussion with Andy Woolford; November 19, 1981; information on local labor supply and workforce characteristics.

Mike Jens, Project Manager
- Meeting with Andy Woolford; December 15, 1981; discussed Susitna labor force requirements and availability of local labor.

GUIDE LICENSE REVIEW BOARD
Anchorage, AK

- Phone discussion with David Davies; September 25, 1980; information on guide services in Susitna River Basin area.

HIGH LAKE LODGE
Mat-Su Borough, AK

John Wilson, Resident Manager
- Meeting with Peter Rogers; July 7, 1980; obtained socioeconomic data from along the Upper Susitna River.

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS UNION LOCAL 1547
Anchorage, AK

John Fenwick, Dispatcher

- Phone discussion with Andy Woolford; January 18, 1982; discussed relocation patterns of construction workforce.

IRONWORKERS LOCAL 751
Anchorage, AK

Jim Rushing, Dispatcher

- Phone discussion with Andy Woolford; January 18, 1982; discussed relocation patterns of construction workforce.

INSURANCE SERVICE ORGANIZATION
San Francisco, CA

Gary Morse, Customer Service Representative

- Telephone conversation with Robin Hill; September 29, 1981; discussed the fire suppression rating schedule.

LABORERS AND HOD CARRIERS LOCAL NO. 341
Anchorage, AK

Ray Lee, Financial Secretary

- Phone discussion with Andy Woolford, January 18, 1982; discussed relocation patterns of construction workforce.

LABORERS STREET PAVERS AND TUNNEL WORKERS LOCAL 440
Seattle, WA

Mike Dillon, Dispatcher

- Phone conversation with Andy Woolford; January 12, 1982; information on classifications of construction workers, i.e., laborers vs. semi-skilled/skilled.

M. B. CONTRACTING
Anchorage, AK

- Phone conversation with Ron Reisner; January 19, 1982; discussed what materials, equipment and labor are available in Alaska for access road system and airport.

MICHIGAN STATE UNIVERSITY
East Lansing, Michigan

Dan Tachelm, Ph.D., Assistant Professor

- Phone conversation with Ron Reisner; January 8, 1982; discussed his work in determining recreational values for sport fish.

MORRISON-KNUDSEN COMPANY, INC.
Anchorage, AK

W. J. Renauld, Area Manager-Alaska

- Meeting with Andy Woolford; December 16, 1981; discussed Susitna labor force requirements and availability of local labor.

MATANUSKA ELECTRIC ASSOCIATION, INC.
Palmer, AK

Ken Ritchey, Engineering Services

- Phone discussion with Andy Woolford; November 5, 1980; requesting Power Requirements study.

- Phone discussion with Andy Woolford; February 19, 1981; information on average electricity consumption from 1975 - 1980.

Bud Goodyear, Public Information Officer

- Meeting with David Davies; September 26, 1980; obtained information on electrical supply and demand and future projections.

- Meeting with Irene Gendron; June 6, 1980; obtained information regarding power requirements study.

MATANUSKA TELEPHONE ASSOCIATION
Palmer, AK

Don Taylor, Traffic Equipment Engineer

- Phone discussion with Andy Woolford; February 10, 1981; information on telephone service in Mat-Su Borough.

Graham Rolstad, Chief Engineer

- Meeting with David Davies; September 26, 1980; obtained information on telephone service and projections.

N.W. ALASKAN PIPELINE COMPANY
Fairbanks, AK

Sue Fisson, Socioeconomic Coordinator

- Phone discussion with David Davies; January 8, 1981; discussed gas pipeline corridor community profiles; obtained copies.

- Meeting with Frank Orth; June 16, 1980; determined Northwest Alaskan Pipeline Company's recent and current activities in socioeconomics.

- Telephone discussion with Andy Woolford; November 20, 1981; information on construction workforce characteristics and monitoring of Alaska pipeline construction.

- Phone discussion with Andy Woolford; December 14, 1981; discussed projected manpower requirements for gas pipeline by craft and mix of in-state vs. out-of-state workers.

Virginia Manna, Socioeconomic Research

- Meeting with Irene Gendron; June 3, 1980; identified sources of socioeconomic data and information.

OREGON STATE UNIVERSITY
Corvallis, OR

Bill Brown, Ph.D., Professor

- Phone conversation with Ron Reisner; January 12, 1982; discussion about his work in determining sport values for salmon and steelhead.

OVERALL ECONOMIC DEVELOPMENT PROGRAM, INC.
Wasilla, AK

Don Lyon, Director

- Meeting with Irene Gendron; June 5, 1980; identified sources of socioeconomic data and information.

- Meeting with David Davies; September 26, 1980; discussed socioeconomic data and information and obtained recent study.

- Meeting with Peter Rogers; November 19, 1980; discussed results of Economic Program for the Matanuska-Susitna Borough.

- Telephone discussion with Robin Hill; November 9, 1981; discussed housing conditions and population estimates for the Mat-Su Borough.

Russell Cotten, Project Development Coordinator

- Meeting with Robin Hill; October 14, 1981; discussed future growth in the Borough and its possible effects on housing and public services.

PALMER VALLEY HOSPITAL
Palmer, AK

Ann Demmings, Director of Medical Records

- Phone discussion with Andy Woolford; February 4, 1981; regarding data on facilities and capacity.

- Phone discussion with Robin Hill; December 10, 1981; regarding average daily census statistics.

Valerie Blakeman, Administrative Secretary

- Meeting with Robin Hill; October 14, 1981; discussed the plans for hospital expansion and renovation.

Rae-Ann Hickling, Consultant

- Phone discussion with Robin Hill; October 14, 1981; discussed the plans for hospital expansion, the planning standards used and the possible increase in number of doctors serving the Borough.

PLASTERERS AND CEMENT MASONS LOCAL 867
Anchorage, AK

Alan Pilto, Dispatcher

- Phone discussion with Andy Woolford; January 18, 1982; discussed relocation patterns of construction workforce.

PLUMBERS AND STEAMFITTERS LOCAL 367
Anchorage, AK

Don Wagner, Dispatcher

- Phone discussion with Andy Woolford; January 18, 1982; discussed relocation patterns of construction workforce.

PROVIDENCE HOSPITAL
Anchorage, AK

Lisa Ebmeyer, Assistant Planner

- Phone discussion with Robin Hill; December 10, 1981; requested statistics on the number of patient days of Mat-Su Borough residents.

QUEBEC HYDRO CENTER
Quebec, Ontario

Pierre Savignac, Conseiller

- Phone discussion with Andy Woolford; November 20, 1981; information on hydroelectric construction workforce characteristics.

ROGERS AND BABLER
Anchorage, AK

Harold Kerslake, Managing Partner

- Interview with Ron Reisner; January 20, 1982; discussed what materials, equipment and labor are available in Alaska for access road system and airport.

REED HANSEN
Kitsap, WA

Reed Hansen, Economic Consultant

- Telephone discussion with Peter Rogers; December 23, 1982; discussed method to estimate induced employment.
- Meeting with Peter Rogers; December 28, 1982; discussed adjustments to induced employment estimation methodology.

UCHITAL COMPANY
Anchorage, AK

Ann Massey, Office Manager

- Phone Conversation with Ron Reisner; January 20, 1982; discussed what materials, equipment and labor are available in Alaska for access road system and airport.

UNIVERSITY OF ALBERTA
Edmonton, Alberta

Bill Phillips, Ph.D., Professor

- Phone conversation with Ron Reisner; January 7, 1981; discussed his work in determining recreational value of moose.

UNIVERSITY OF BRITISH COLUMBIA
Vancouver, B.C.

Tony Dorcey, Ph.D., Professor

- Phone conversation with Ron Reisner; January 12, 1982; discussed his work determining salmon values in a timber industry study.

Gordon Munro, Ph.D., Professor

- Phone conversation with Ron Reisner; January 12, 1982; discussed known studies in fish and game valuation.

UNIVERSITY OF CALIFORNIA AT SANTA CRUZ
Santa Cruz, CA

Susan Holt, Ph.D., Assistant Professor

- Phone conversation with Ron Reisner; January 13, 1982; discussed her work in determining recreational values for ocean species.

UNIVERSITY OF ILLINOIS
Champagne/Urbana, IL

Kerry Livengood, Associate Professor

- Phone conversation with Ron Reisner; January 7, 1982; discussed his study to determine recreational value of deer in Texas.

UNIVERSITY OF KENTUCKY
Lexington, KY

Alan Randall, Ph.D., Agricultural Economist

- Phone conversation with Ron Reisner; January 6, 1982; discussed his studies in developing game values.

UNIVERSITY OF MARYLAND
College Park, Maryland

Kenneth McConnell, Ph.D., Associate Professor

- Phone conversation with Ron Reisner; January 8, 1982; discussed a reference list which he has compiled dealing with work done to determine economic values of fish and game species.

UNIVERSITY OF WISCONSIN
Madison, Wisconsin

Richard Bishop, Ph.D., Associate Professor

- Phone conversation with Ron Reisner; January 6, 1982; discussed his work in developing recreational values for game.

VALDEZ COMMUNITY HOSPITAL
Valdez, AK

Director of Statistical Records

- Phone discussion with Andy Woolford; February 4, 1981; regarding data on facilities and capacity.

VALDEZ VANGUARD
Valdez, AK

Reporter

- Phone discussion with Andy Woolford; February 2, 1981; regarding circulation, service area, and existence of other publications in the area.

9 - COPIES OF LETTERS RECEIVED

Section 9 contains copies of letters received from individuals in the course of researching the contents of this report. Given that the majority of research was conducted by personal and telephone interviews, and review of other materials, there are few letters.

RECEIVED JAN 21 1982



Battelle

Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington U.S.A. 99352
Telephone (509)
Telex 15-2874

January 18, 1982

Mr. Peter Rogers
Frank Orth and Associates
225 108th N.E.
Bellevue, WA 98004

Dear Peter:

Enclosed are the basic employment, total employment, and population estimates for the low, middle, and high cases with Susitna.

Yours truly,

Michael J. Scott
Senior Research Economist

MJS:cw

Enclosure

cc: J.J. Jacobsen

UNIVERSITY OF MARYLAND

COLLEGE OF AGRICULTURE

COLLEGE PARK 20742

RECEIVED JAN 15 1981

DEPARTMENT OF AGRICULTURAL
AND RESOURCE ECONOMICS

January 11, 1982

Mr. Ron Reisner
Frank Orth Associates
225 108th Avenue N.E.
Suite 311
Bellevue, Washington 98004

Dear Mr. Reisner:

Enclosed are title pages from several significant sources of benefit estimate of wildlife recreation. If you investigate these references, you will find other sources. This should give you a start in this area.

Sincerely,

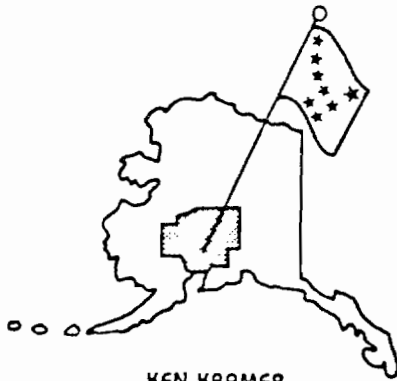


K.E. McConnell
Associate Professor

KEM:vmk

Enclosures

RECEIVED DEC 28 1981



KEN KRAMER
SUPERINTENDENT OF SCHOOLS

MATANUSKA-SUSITNA BOROUGH SCHOOL DISTRICT

BOX 98 • PALMER, ALASKA 99645 • PHONE 745-4822

December 23, 1981

Ms. Madeline Laurello
Associate Economist
c/o Frank Orth and Associates
225 108th Avenue N.E.
Suite 311
Bellevue, Washington 98004

Dear Ms. Laurello,

Please find attached the October, 1980 Six Year Capital Construction Plan. Also attached are those projects submitted to the Borough this fall, ranked in priority, for consideration as legislative requests.

I hope this is the information you needed. If not, please let me know.

Sincerely yours,

F. L. Hotchkiss
F. L. Hotchkiss
Business Manager

FLH:lc

Attachments

RECEIVED DEC 21 1981

Municipality
of
Anchorage



FOUCH 6-650
ANCHORAGE, ALASKA 99501
(907) 254-4111

GEORGE M. SULLIVAN
MAYOR

DEPARTMENT OF MANAGEMENT BUDGET

December 15, 1981

Madeliane Laurello
Frank Orth & Associates, Inc.
225-108th Avenue N.E., Suite 311
Bellevue, WA 98004

Dear Ms. Laurello:

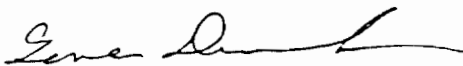
Per our recent telephone conversation and your letter of November 27, 1981, I have enclosed a copy of the Municipality of Anchorage's 1982 Preliminary Operating Budget. Unfortunately we do not have sufficient copies of our 1981 Approved Budget for me to send you a copy. However, the 1982 budget document contains comparative data for 1981, and in many cases also for 1980.

Taxes levied by the Municipality of Anchorage in 1981 are as follows:

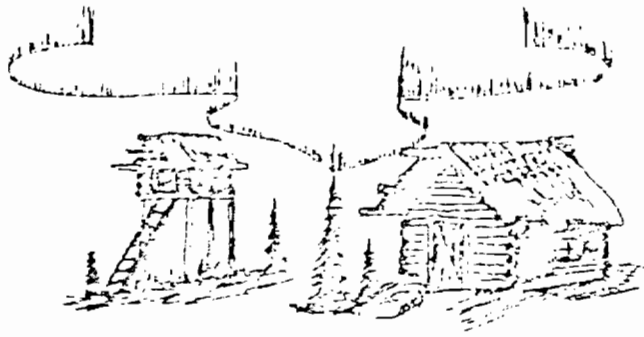
Property Tax	\$30,129,040*
Hotel-Motel Tax	1,980,800

* does not include property taxes of \$26,133,867 for the Anchorage School District.

Sincerely,


Gene Dusek
Budget Officer

GD:pjt



RECEIVED DEC 07 1981

Municipal Utilities System

of the City of Fairbanks
645 FIFTH AVENUE
P.O. BOX 2215
FAIRBANKS, ALASKA 99707
907-456-1000

December 2, 1981

Frank Worth & Associates
224 - 108th Avenue N. E.
Suite 211
Bellvue, Washington 98004

ATTENTION: Madelyn Lavello

RE: Request for 1981 Financial Statement
& 1982 Proposed Budget

Dear Ms. Lavello:

Pursuant to our telephone conversation of November 30, 1981, I am enclosing a copy of the Fairbanks Municipal Utilities Systems Financial Statement for the years ending December 31, 1979, 1980. I am also enclosing per your request a copy of the Proposed Budget for the year of 1982, pertaining to MUS.

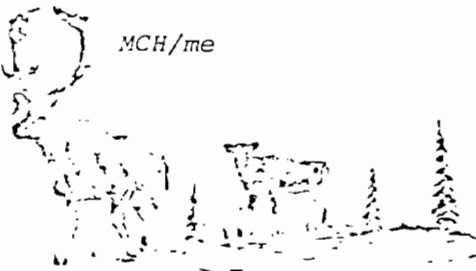
A financial statement for the year of 1981 will not be available until approximately March of 1982. I have placed your Company's name on the mailing list and I will forward the statement to you as soon as they become available.

Should you find that I can be of any further assistance to you, please do not hesitate to contact me.

Sincerely,
Fairbanks Municipal Utilities System

Chris Hayes
(Mrs.) Chris Hayes
Secretary to the Controller

MCH/me





RECEIVED DEC 02 1981

ANCHORAGE
SCHOOL DISTRICT

4600 DeBarr Avenue
Pouch 6-614
Anchorage, Alaska 99502
[907] 333-9561

November 30, 1981

Frank Orth and Associates
224 108th Avenue N.E.
Suite 211
Bellevue, Washington 98004

Attention: Miss Lavrello

Re: Hydro Electric Study Information

Please find enclosed copies of the 1980-81 and 1981-82 budget documents.

Due to the high demand of these documents in future years, we request that they be returned after the necessary data is obtained.

If you have any questions, please do not hesitate to call area code 907 269-2356.

Sincerely

A handwritten signature in cursive script, reading "Melvin J. Greaves, Jr.", written in dark ink.

Melvin J. Greaves, Jr.
Budget Director

MJG:ng

Enclosures

RECEIVED DEC 04 1981



Mitchell W. Henning, Mayor

November 23, 1981

Frank Orth and Associates
Suite 311
224 108th Ave., NE
Bellevue, Washington, 98004

ATTN: Miss Laurello

Dear Miss Laurello:

Please find the attached budget information from the City of Houston for the current and immediate past fiscal years.

We hope that this information will aid you in your study.

Sincerely,

Elsie M. O'Bryan
Elsie M. O'Bryan
City Clerk



Matanuska-Susitna Borough, Inc.

BOX B, PALMER, ALASKA 99645 • PHONE 745-3246

PLANNING DEPARTMENT

November 20, 1981

Mr. Palmer McCarter, Director
Alaska Department of Community
and Regional Affairs
Division of Local Government Assistance
Pouch B
Juneau, AK 99811

Dear Mr. Carter:

RE: 1) MSB Initial 1981 Population Estimation Submittal 9/30/81
2) Your Letter of 11/4/81

Enclosed please find somewhat revised estimates of the Matanuska-Susitna Borough's 1981 total population, its three incorporated cities, and various pertinent service areas, together with the supporting data requested by your letter of November 4, 1981.

The revisions occurred in the recalculation of data previously used for other purposes. We are also forwarding revised service area information sheets, which were incorrectly filled out in our first submittal. Much of this information was provided to the State Demographer, Mr. David Swanson, at the recent Alaska Municipal League Conference so that he could begin his review.

We have a large amount of raw data, survey forms and other detailed background information developed during the vacancy survey conducted by the Borough last summer and will be happy to supply whatever additional information you might require. We have expended considerable effort in development of these figures and feel the methodology conforms closely to guidelines prescribed by your department, i.e., The Housing Unit Method.

Thank you for your indulgence.

Rodney Schulling
Principal Planner

Approved by:

Gary Thurlow
Manager

RS:mu

Enclosure



Matanuska-Susitna Borough

BOX B, PALMER, ALASKA 99645 • PHONE 745-4801

DEPARTMENT OF FINANCE

December 4, 1981

Frank Orth & Associates
224 108th N.E.
Suite 311
Bellevue, Washington 98004

Attention: Madelaine Laurello

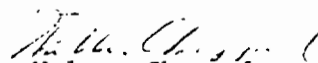
Dear Ms. Laurello:

Enclosed please find copies of our correspondence directed to the State of Alaska Department of Community and Regional Affairs dated November 20, 1981 which is our most recent submittal in reference to population of the Matanuska-Susitna Borough. I am sure that this information will be helpful as it relates to the questions you asked yesterday.

I have discussed with the Assessment Department the information you requested regarding a separation of improved lots into commercial and residential. They indicate that this is not possible from the standpoint of the current programming of our computer, however, at some later date we will probably be able to pull that information from our new computer data once we have converted to our new system. We will be happy at times in the future, of course, to give you information if it is available, such as computer runs. Naturally there is a cost involved in things of that type.

We appreciate your interest in our Matanuska-Susitna Borough.

Sincerely,


Walter Chappel
Controller

nm



RECEIVED DEC 03 1981

UNIVERSITY OF ALASKA
Institute of Social and Economic Research
707 "A" St., Suite 206
Anchorage, Alaska 99501
Phone (907) 278-4621

November 25, 1981

Peter Rogers
Frank Orth and Associates
225 108th Avenue N.E.
Suite 311
Bellevue, Washington 98004

Dear Peter,

Enclosed is the output you requested. All variables are from the moderate case economic projection for the Battelle Railbelt power alternatives study.

I hope the variable titles are self-explanatory.

Sincerely,

A handwritten signature in dark ink, appearing to read "O. Scott Goldsmith", written over a faint, larger signature.

Oliver Scott Goldsmith
Associate Professor of Economics

Enclosure



Battelle

Pacific Northwest Laboratories

Date: 10/19/81
To: Peter Rogers
From: MICHAEL J. SCOTT

This is the material you
requested on the moderate growth-
moderate spending case

Mike

RECEIVED OCT 22 1981

SENDER
1 DETACH YELLOW COPY
2 SEND WHITE AND PINK COPIES
TO PERSON ADDRESSED

Personal[®] LETTER

RECIPIENT
1 WRITE REPLY AT BOTTOM
2 RETAIN WHITE COPY AND RETURN
PINK TO SENDER

TO NAME ANDY WOLFORD	DATE 2/2/81	FROM NAME Matanuska Telephone Association, Inc.
ADDRESS FRANC ORTH & ASSOC		ADDRESS P. O. Box 1388 - 907-745-3211 Palmer, Alaska 99645 EXT 269
SUBJECT MAT-SU VALLEY TELEPHONES		SIGNED Donald M Taylor

Attached is data regarding telephone service in Mat-Su valley per our telephone conversation this date. If I can be of further assistance don't hesitate to call

Don Taylor

R
E
P
L
Y

SIGNATURE

DATE

RECIPIENT RETAINS

STATE OF ALASKA

DEPARTMENT OF LABOR ADMINISTRATIVE SERVICES DIVISION

JAY S. HAMMOND, GOVERNOR

3301 EAGLE STREET
POUCH 7-018
ANCHORAGE, ALASKA 99510
(907) 264-2400

January 16, 1981

Received 1-19-81

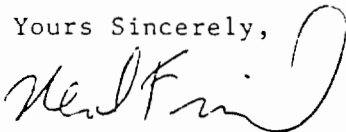
Frank Orth & Associates
Economic and Business Consultants
225 108th Ave. N.E., Suite 311
Bellevue WA 98004

Dear Mr. Woolford:

I just got back to Anchorage and I was talking to Cal about your visit to this office. He mentioned you were interested in multipliers which have been used in Alaska. I have just finished a project concerning the University of Alaska using various multipliers borrowed from literature on the subject. I have xeroxed this literature and you will find it enclosed.

I hope you find it useful and do not hesitate to call us if you need any further information.

Yours Sincerely,



Neal Fried
Labor Economist

10 - METHODOLOGIES

10.1 - OVERVIEW

The goal of this analysis is to provide an assessment of socioeconomic changes that could occur if hydropower is developed from the Susitna River. The following tasks were conducted to meet this goal:

1. Review the literature;
2. Determine availability of data;
3. Define impact areas;
4. Describe and analyze baseline conditions and trends;
5. Develop baseline (without project) forecasts;
6. Develop impact (with project) forecasts;
7. Compare and contrast baseline and impact forecasts; and
8. Determine the significance of projected socioeconomic changes.

Various types of literature such as Federal Energy Regulatory Commission applications, environmental impact statements and methods for socioeconomic impact assessment were reviewed. The main objectives were to: become more familiar with recent socioeconomic assessments in Alaska; identify and evaluate state-of-the-art assessment methods and techniques; and to understand problems in implementing these methods and techniques. The availability of time-series data for different geographic areas of Alaska was determined. The available data limited the choice of assessment methods because it was not possible to collect a significant amount of primary data.

Impact areas were defined based upon data availability, probable worker residence and commuting patterns, and locations of most of the socioeconomic changes. Because this project involves work camps and a village and due to the vastness of Alaska, the impact areas defined in this study are larger than most impact areas reviewed in the literature.

In order to better understand the impact areas and make baseline forecasts, recent socioeconomic conditions were described and analyzed. These included employment population, income, housing, facilities and services, fiscal, land use, and other socioeconomic elements.

Baseline forecasts were made for each socioeconomic element. A brief description of the forecasting technique used for each element and subelement is shown in Table 10.1-1. Forecasts were made for the years 1981-2005.

Impact forecasts were made for each of the above socioeconomic elements. An accounting model was developed to handle the several labor categories and geographic disaggregations. This model was computerized to provide for efficient analysis and to make sensitivity analysis feasible. A brief description of the forecasting techniques used for each element and subelement is provided in Table 10.1-2. The impact forecasts were made from 1983, the year in which construction is to begin, to 2005.

Baseline and impact forecasts were compared and contrasted to identify project-induced changes in the forecasted baseline conditions. Next, the significance of these changes was analyzed and discussed.

10.2 BASELINE FORECASTS

(a) Employment Forecasts

Baseline forecasts were made for the state, Impact Area 3 and most important, Impact Area 2 (Mat-Su Borough). Numerous types of methods were investigated and evaluated for potential application. After considerable analysis, it was determined that the Institute of Social and Economic Research's (ISER's) Man-in-the-Arctic Program (MAP) model was most appropriate to serve as the basis for employment forecasts.

ISER's forecasts are currently the best available for the state and for Impact Area 3 and its regions, Anchorage, Fairbanks and Valdez. This is

TABLE 10.1-1
BASELINE FORECASTING TECHNIQUES

<u>ELEMENT</u>	<u>FORECASTING TECHNIQUE</u>
EMPLOYMENT	
State and Regional Census Division	Time-series econometric ^(a) Linear regression
POPULATION	
State and Regional Census Division Community	Time-series econometric ^(a) Linear regression Population Share (judgmental)
INCOME	
State, Regional and Census Division	Trend analysis and judgment
HOUSING	
Regional and Census Division	Person per household trend multiplier
FACILITIES AND SERVICES	
Census Division and Community	Per capita planning standards
FISCAL	
Census Division and Community	Per capita multiplier

(a) Includes Results from Institute of Social and Economic Research's
Man-in-the-Arctic Model, October, 1981.

TABLE 10.1-2
IMPACT FORECASTING TECHNIQUES

<u>ELEMENT</u>	<u>FORECASTING TECHNIQUE</u>
EMPLOYMENT	
State, Regional and Census Division	Accounting model
State and Regional	Time-series econometric (for comparison purposes only) ^(a)
POPULATION	
State, Regional and Census Division	Accounting model
State and Regional	Time-series econometric (for comparison purposes only) ^(a)
INCOME	
State, Regional and Census Division	Accounting Model
HOUSING	
Regional and Census Division	Person per household trend multiplier
FACILITIES AND SERVICES	
Census Division and Community	Per capita planning standards
FISCAL	
Census Division and Community	Per capita multiplier

(a) Includes Results from Institute of Social and Economic Research's
Man-in-the-Arctic Model, October, 1981.

because the growth of state and regional employment will be determined in large part by natural resource development and state government spending over the next twenty years. Moreover, the Mat-Su Borough's economy and other Impact Area 3 Census Divisions' growth will be dictated mostly by these same factors. Thus, it was appropriate to disaggregate ISER's regional employment forecasts to obtain employment forecasts for the Mat-Su Borough and other Census Division.

ISER's MAP model is described in Goldsmith and Husky (1980) and the key employment and government assumptions underlying statewide and regional employment forecasts of Sections 4.2(f) and 4.3(c) are provided in Battelle Pacific Northwest Laboratories (1981). For this study, assumptions associated with ISER's "moderate economic growth" and "moderate government expenditure" cases were adopted. For state government spending, it was assumed that spending will increase at the rate of growth in real per capita income. These assumptions, with some minor adjustments, were used by ISER to develop state and regional employment forecasts.

Forecasts for Mat-Su Borough employment were made by regressing each Census Division's share of Anchorage Region employment against time (1970-1979). The annual rate at which each Census Divisions' share of Anchorage Region employment will change was calculated from the regressions and applied to ISER's employment forecasts for the Anchorage Region. This method was chosen because it is probable that future changes in Census Divisions' shares will be similar to past changes. For example, it is expected that the Alaska Highway Pipeline will effect the relative share of employment in the Census Divisions in much the same way that the trans-Alaska Pipeline affected these shares. Further, there are no major projects that are assumed to occur during 1981-2000 in these Census Divisions. Thus, the potential for significant changes in the 1970-1979 share trends is relatively small

ISER's employment forecasts were extended from 2001 to 2005 using the methods described in Section 4.3(c)(ii).

Employment forecasts were not developed for Mat-Su communities. Employment data is not available for these communities. Employment could have been estimated by distributing Mat-Su employment to communities according to each community's population share. This was rejected because it is known that there is no typical ratio of employment to population for these communities.

(b) Population

Population forecasts for the State and Anchorage, Fairbanks and Valdez regions (Impact Area 3) were those developed by ISER during September, 1981 using the MAP model. Like the employment forecasts, the moderate economic growth and state government spending scenarios were the basis for these forecasts. The forecasts period used by ISER was 1981-2000.

To obtain population forecasts in the Fairbanks North Star Borough and SE Fairbanks Census Division, average Borough and Census Division shares of the Fairbanks region population were calculated and applied to ISER's population forecasts for the Fairbanks region during 1981-2000. It was assumed that these population shares would remain constant during the forecast period. Forecasts for 2001-2005 were made using the same methodology as that discussed in Section 4.3(c)(ii).

Population forecasts for each Census Division of the Anchorage region, Anchorage, Kenai-Cook Inlet, Seward, and Mat-Su, were made as follows. Census Division shares of regional population for 1966 and 1970-1980 were regressed against time. The annual rate at which each Census Division's share was calculated from the regressions and applied to ISER's population forecasts for the Anchorage region. This provided annual population forecasts for each Census Division for 1981-2000. Forecasts for 2001-2005 were made using the same methodology as that discussed in Section 4.3(c)(ii).

Population forecasts for important communities of the Mat-Su-Borough were made by assuming an annual rate of population growth for each community

within the overall constraint of the population forecast for the Mat-Su Borough. These rates are provided in Table 4.1-2.

(c) Housing

The baseline forecast demand for housing (i.e., number of households) was developed by applying population per household (PPH) measures to the forecasts of population. The PPH measures are assumed to decline from the 1980 level (U.S. Census Bureau information) to a projected national average of 2.657 in the year 2000, for each Census Division and Mat-Su Borough community.

It is not possible to predict housing stock by year, since future construction of residential units is a function of a large number of factors. To obtain an approximation of the number of housing units, an average vacancy rate was applied to the forecasted number of households, for each Census Division and Mat-Su Borough community.

The forecasts of number of households and number of housing units were compared to yield an approximate number of vacant housing units for each location.

(d) Facilities and Services

The general approach to forecasting public facility and service requirements during 1981-2005 was: (1) to develop appropriate standards for each service category and for each relevant community that relate service and facility requirements to the size of population, (2) to assess the adequacy of existing facilities and services and to quantify any over- or under-capacity using these standards, and (3) to estimate future needs based on the application of these standards to the population growth forecasts.

First, standards can be divided into two basic categories--average and prescriptive. Average standards are based on recent data on existing ser-

vice levels on a per capita basis for a given area. These data are often obtained from the latest available census or survey. A commonly used set of national average standards is the U.S. Census of Governments, which contains data on selected service types and population serviced. Average standards may be based on national, regional, or state averages, or on averages for a given type or size of community; their distinguishing feature is that they are based on an average of what currently exists and not on what should exist. On the other hand, for some service types there exist prescriptive standards that are set by relevant agencies or associations. These standards often vary by size, type, and community, and may be of a voluntary or mandatory nature. For instance, a state government may require certain standards for health care and education; standards for fire protection based on insurance tables may be used widely.

A mix of average and prescriptive standards have been used in this analysis. The objective has been to provide detailed measures of adequate service levels while keeping in consideration the resource constraints that most communities face.

Second, the required level of public facilities and services per capita will vary from community to community, based on factors such as the size of the community, the type of community (urban, rural, or suburban), demographic and socioeconomic characteristics, and geological conditions. To the extent that these factors are taken into account in the development of standards, these standards are preferred. Other sources that were reviewed are listed in the List of Literature.

Third, in some cases relevant standards may be based on variables other than population per se--for example, the number of dwellings or the number of school-age children. These variables are related to population levels, but the actual ratios may change over time. Service categories such as education and health care are especially sensitive to demographic changes. Where possible, forecasts of demographic changes have been incorporated into the analysis.

Fourth, it is cautioned that, due to the many factors that influence the needs for public facilities and services, the uniqueness of each community, and the subjectivity in deciding what service levels are adequate, the standards listed should not be considered absolutes but rather general indicators.

The standards recommended in the following discussion have also included consideration of local preferences, based on conversations with local, Borough, and State officials. For instance, a conversation with an official at the State Troopers' post in Palmer indicated that this agency looks at the average caseload per trooper as a major determining factor in deciding whether the local force is adequate. This consideration has accordingly been included into the discussion of law enforcement.

Finally, standards are recommended for the level of public service most appropriate -- the community, Borough, or State level. This methodology reflects the facts that (1) the responsibilities of these government entities vary depending on service type, (2) the areas that will be affected by the project may also vary, and (3) some per capita standards may be constant regardless of the characteristics of the community, whereas others will be different for each community. Most public facilities and services will be affected at the community and Borough level.

A summary of the recommended standards is displayed in Table 10.2-1. In the sections below, specific considerations relating to the choice of standards are discussed.

(i) Water Supply

Water systems are comprised of three components -- the supply source, the treatment facility, and the pipe distribution network. The most widely used standards for water service are the average and peak water consumption per capita, in terms of gallons per day (gpd). Facility standards sometimes include pipe length per thousand dwellings, and treatment capacity.

TABLE 10.2-1
SUMMARY OF PUBLIC FACILITY AND SERVICE STANDARDS FOR
SELECTED COMMUNITIES IN THE MATANUSKA-SUSITNA BOROUGH

	<u>Palmer</u>	<u>Wasilla</u>	<u>Houston</u>	<u>Talkeetna</u>	<u>Trapper Creek</u>	<u>Total Mat-Su Borough</u>
<u>Water Supply</u>						
Average Water Supply & Treatment (gpd per capita)	150	150	-	-	-	-
Peak Water Supply & Treatment (gpd per capita)	230	230	-	-	-	-
<u>Sewage and Solid Waste</u>						
Sewage Treatment (gpd per capita)	150	-	-	-	-	-
Solid Waste Disposal (acres per 1,000 population)	.21	.21	.21	.21	.21	.21
<u>Education</u>						
Maximum Primary School-Age Children to Teacher Ratio	25	25	-	25	25	25
Maximum Secondary School-Age Children to Teacher Ratio	20	20	-	-	-	20
Primary School Space (square feet per pupil)	90	90	-	90	90	90
Secondary School Space (square feet per pupil)	150	150	-	-	-	150
Teacher to Support staff ratio	8:1	8:1	-	8:1	8:1	8:1
<u>Health Care</u>						
Hospital Beds (beds per 1,000 population)	-	-	-	-	-	- ^a
Desired Hospital Bed Occupancy Rate	-	-	-	-	-	55%
Hospital Staff (staff per 100 patients)	-	-	-	-	-	250

^aBased upon a formula shown on page 8.

TABLE 10.2-1
(continued)

SUMMARY OF PUBLIC FACILITY AND SERVICE STANDARDS FOR
SELECTED COMMUNITIES IN THE MATANUSKA-SUSITNA BOROUGH

	<u>Palmer</u>	<u>Wasilla</u>	<u>Houston</u>	<u>Talkeetna</u>	<u>Trapper Creek</u>	<u>Total Mat-Su Borough</u>
Hospital Space (square feet per bed)	-	-	-	-	-	750-800
<u>Law Enforcement</u>						
Police Officers (officers per 1,000 population)	1.5	-	-	-	-	1.0-1.5
Police Vehicles (vehicles per 1,000 population)	.5	-	-	-	-	1.0
<u>Fire Protection</u>						
Fire Flow of Water ^a (gpm and duration)	1,750 gpm for 7 hours	1,500 gpm for 6 hours	200 gpm for twenty minutes	200 gpm for twenty minutes	200 gpm for twenty minutes	-
Pumpers Per Station	2	2	2	2	2	-
Maximum Response Time (in minutes)	3.5	3.5	3.5	3.5	3.5	3.5
<u>Libraries</u>						
Library Collection (numbers of volumes)	15,000-20,000	15,000-20,000	10,000	10,000	10,000	3.5 per capita
<u>Parks and Recreation</u>						
Playgrounds (acres per 1000 dwelling units)	3.9	3.9	3.9	-	-	-
Neighborhood Park (acres per 1,000 dwelling units)	3.3	3.3	3.3	-	-	-
Community Park (acres per 1,000 dwelling units)	-	-	-	-	-	4.8

^a Analysis is based upon ISO class standards discussed on page 10.

gpd = gallons per day

gpm = gallons per minute

The standards are relevant only for communities that have or are expected to develop water systems. Only two communities in Impact Area 2 -- Palmer and Wasilla -- have city-wide water supply systems. Other residents rely on individual wells or "community" systems that serve a particular subdivision, trailer park, or other small area.

Water consumption is a function of use by residential, commercial/industrial, public, and miscellaneous users. The estimated percentages which each of these categories of users represent are shown in Table 10.2-2. Commercial and industrial users account for more than 40 percent of normal water consumption, and this should be taken into account when looking at communities that do not have much industry.

Standards for average water consumption per capita vary. The estimate of 150 gpd is considered most appropriate as it is in the mid-range of estimates and as it seems to be most consistent with present and future conditions in Alaska, and especially in the Mat-Su Borough. For instance, Palmer currently has an average water usage rate of 120 gpd and this relatively low usage might be attributed to the small amount of industry in the area. It is expected that future growth will include an increase in industrial activity and hence a rise in average per capita water consumption to about 150 gpd by the year 2000. Associated with this average rate is a peak water consumption level of 230 gpd. From 2001 to 2005, these standards are held constant.

Treatment facilities should have a capacity equal to at least peak water consumption needs. No fixed standards are available for storage capacity, though three days' worth seems to be a norm. Storage capacity is also sometimes related to firefighting needs.

(ii) Sewage Collection and Treatment

The amount of sewage generated is a function of the amount of water that is used daily. It has been estimated that an average 65 percent of total

TABLE 10.2-2
NORMAL WATER CONSUMPTION
(Gallons Per Capita Per Day)

<u>Class of Consumption</u>	<u>Normal Range</u>	<u>Average</u>
Domestic	15-70	50
Commercial, Industrial	10-100	66
Public	5-20	10
Miscellaneous	10-40	25
Total	40-230	150

Source: Fair G., et al. 1966 Water Supply and Wastewater Removal. John Wiley and Sons. New York, NY, in Stenehjem, E. J. and J. E. Metzger. May 1980. A Framework for Projecting Employment and Population Changes Accompanying Energy Development, Volume II. Prepared for U.S. Department of Energy. Argonne National Laboratory, Argonne, IL, 78 pp.

water supplied becomes sewage, or 100 gpd per capita, with the remainder used for miscellaneous purposes such as watering lawns and gardens, fire-fighting, and generating steam (Stenchjem and Metzger, 1980, p. 40). This standard may be appropriate for a moderate-sized city such as Anchorage, but seems to be less accurate when looking at rural communities. For instance, Palmer's sewage flows are currently equal to 100 percent of average water usage, or 120 gallons per day per capita. A constant standard of 120 gpd has been used.

(iii) Solid Waste Disposal

Solid waste can be disposed of through incineration or sanitary landfill disposal; sanitary landfill has become the prevalent mode.

Facility requirements for solid waste disposal can be measured in terms of the amount of land needed per capita on an annual basis. Published standards range from 0.2 to 0.3 acres per thousand people, depending on assumptions of pounds of waste per capita, depth of the site and the rate of compression of the waste.

A lower standard of .11 acres per thousand population has been assumed initially for the Mat-Su Borough, based on the premises that waste production per capita is much lower and the fill depth of the central landfills is twice as high as national averages. This standard is calculated to rise to 0.21 acres by 2000, and held constant at this level between 2001 and 2005.

To the extent that garbage collection facilities are provided, approximately 1/3 truck per 1000 housing units and three employees per truck are recommended. These standards are of limited use, since in Impact Area 2, only Palmer provides garbage collection service.

(iv) Education

The major determinant of the requirement for educational facilities and services is the number of school-age children per capita, modified to take into account private school attendance. It is assumed that the present school-age children per capita ratio will fall in the short-term, and then begin to rise. The Mat-Su Borough has indicated that approximately 27 percent of the total Borough population was of school-age. For long-range planning purposes this percentage has been rounded to 25 percent. Short-term planning through 1987 uses an estimate of 22.8 percent. For purposes of this study, the ratio is assumed to rise gradually from 22.8 percent in 1987 to 25 percent in 2000 and then held constant at that level through 2005.

A major service standard for education relates the number of school-age children to the number of classes and teachers. The maximum acceptable class sizes are usually considered to be 30-32 in primary schools and 30-35 in secondary schools. The Mat-Su Borough uses optimum standards which are substantially lower: 25 students per class for primary schools and 20-22 for secondary schools. In addition, Mat-Su Borough School District statistics show that teachers (including vocational teachers, guidance counselors and library teachers) comprise about 50 percent of total school district personnel requirements.

With regard to classroom space, the standards that can be used are number of classrooms (one for each class), or alternatively, the square feet per pupil (90 square feet for primary school students and 150 square feet for secondary school students). For the purposes of this study, space required has been projected in terms of number of classrooms.

In addition, the Mat-Su Borough uses certain concepts and design parameters as standards which indicate need, location and size for new schools. The design parameters are displayed in Table 10.2-3.

TABLE 10.2-3
SCHOOL DESIGN PARAMETERS
IN THE MATANUSKA-SUSITNA BOROUGH

<u>Parameter</u>	<u>Elementary</u>	<u>Junior High</u>	<u>Senior High</u>
Grades	1-6	7-8	9-12
Students per Class	25	22	20
Optimum Number of Classrooms	24	27	60
Optimum Enrollment	600	600	1,200
Minimum Size (Rural)	6 room or 150 students	12 room or 300 students	-
(Other)	10 room or 250 students	14 room or 300 students	20 room or 400 students

Source: Matanuska-Susitna Borough Planning Department. March, 1978. Ten Year Program for School Sites.

The Borough's Ten Year Program for School Sites (March, 1978) assumed the concept of a neighborhood unit served by a single elementary school with a group of neighborhoods served by one junior and one senior high school. In the southern part of the Borough, where population density is expected to increase most rapidly, it is expected that elementary schools will serve approximately five square miles of developed area. Secondary schools will serve approximately 15 square miles.

It is assumed that the present ratios of primary school students (54 percent of total) and secondary school students (46 percent of total) will remain constant. It is beyond the scope of this analysis to forecast changes in distribution by school and by grade.

(v) Health Care

Standards for acute public health care focus on the capability of hospital facilities and staff to accommodate the expected number of patients without building overcapacity that will then add to hospital costs. While rule-of-thumb bed multipliers of between 2.1 and 5.8 beds per 1000 population are often used, it has become appropriate to base the number of beds on a measure of the long-term average daily census of patients using the hospital divided by the desirable occupancy rate. In Alaska, the recommended occupancy rates are 80 percent for urban hospitals and 55 percent for rural hospitals. The formulas used are:

$$\begin{array}{lcl} \text{Acute Care Patient Days at Valley} & & \text{Borough} \\ \text{Hospital plus Days at Alaska/} & & \text{Population} \\ \text{Providence for Borough Residents} & & \text{= Hospital Use Rate} \\ & & \text{for Borough} \\ & & \text{Residents} \end{array}$$

$$\begin{array}{lcl} \text{Hospital Use Rate for} & \text{Estimated} & \\ \text{Borough Residents} & \text{Borough} & \text{365 days} \\ & \text{Population} & \text{in year} \\ & & \text{= Projected Average} \\ & & \text{Daily Census} \\ & & \text{(PADC)} \end{array}$$

$$\begin{array}{lcl} \text{Projected Average} & \text{Proportion} & \text{Minimum} \end{array}$$

Daily Census	x	of Bed Need	Occupancy =	Valley Hospital
		Met at Valley	for Rural	Acute Care Bed
		Hospital	Hospital	Need
			55%)	

A significant aspect of the hospital system in Alaska needs to be taken into account. The Municipality of Anchorage has developed a comprehensive acute and long-term health care system that provides the main medical care for the residents of Southcentral Alaska, as well as other areas of the State. A large percentage of people living in areas such as the Mat-Su Borough presently elect to use hospital in Anchorage over the local hospital due to the larger number of doctors (especially specialists) and the more modern facilities. However, the percentage of patients that use the Valley Hospital has been rising rapidly in recent years, and this trend should be encouraged by the planned addition to and renovation of this hospital, and the possible addition of certain medical specialists to the staff. It is assumed that the usage of Valley Hospital as a percentage of total Alaskan hospital use by Mat-Su Borough residents will rise from 38 percent in 1980 to 75 percent in 2000 and remain constant at that level through 2005.

Age and sex distributions of the population are important determinants of hospital use. For the purposes of this study, demographic factors have been assumed to remain constant.

Other components of public health care systems include ambulance service, long-term nursing homes and public health clinics. The effects of population growth on these components will be discussed qualitatively, as no specific standards exist.

(vi) Law Enforcement

Police service standards range from one officer per thousand population in unincorporated rural areas to 1.5 officers per thousand in small communities and 2 officers per thousand in moderately large cities.

Alaska State Troopers judge the relative adequacy of their staffs in terms of the average case load (i.e. number of crimes) that each Trooper is charged with investigating. Six cases per Trooper is about average, and eight is considered the level at which additional staff is needed. Indirectly, this confirms the usefulness of the standard for rural areas mentioned in the first paragraph. The staff of 20 officers stationed in the Mat-Su Borough have been averaging about six cases per Trooper and are servicing a population of 19,050 (this excludes the City of Palmer, which has its own police force). This implies a current average of 1.05 officers per thousand.

The standard range for vehicles used is between one-third to one vehicle per thousand population.

(vii) Fire Protection

The major variables that are used to judge fire protection are (1) the available flow of water, (2) the frequency of response, and (3) the manpower needed.

There are several standards that relate these variables to population size. Water flow, response time or service radii, and the equipment capacity are of particular use. It is common in communities of less than 7,000 to rely on volunteer firefighters, and thus standards for manpower are not applicable to the communities under study.

Fire protection planning in Alaska, as in many other areas, often takes the form of trying to achieve a certain fire rating as measured by the Insurance Service Organization (ISO). The ISO is a national organization that rates fire protection on a scale from one (best) to ten (worst); fire insurance rates closely reflect these ratings.

Communities without a community water system can at best achieve an ISO rating of 8 (which is the objective that the Mat-Su Borough presently hopes

to achieve for its most populous fire districts). The requirements, to achieve a rating of 8 are: that dwelling class property be within five road miles of a fire station (on roads that are in good condition) and that the fire department has demonstrated its ability to deliver 200 gallons per minute (gpm) for a period of twenty minutes without interruption. The latter requirement implies a need for a capacity of 4,000 gallons of water "on wheels."

(e) Fiscal Impact Analysis

Introduction

The fiscal impact analysis aims to project impacts of population change on local government revenues and expenditures. The results are to be treated as trend indicators and not predictions of actual experience. The per capita multiplier fiscal impact method will be used to supply average cost data per person, per pupil and per household where applicable. The analysis assumes that current average costs are a good approximation of the real costs to provide services to future residents, and current per capita revenues or their relative proportions will remain constant in the future. Projections will be provided for the period 1981-2005.

The Data Base

The analysis relies heavily on secondary data sources including actual 1981 expenditures and revenues from FY 1981/82 budgets; budgets for previous years, and estimates of revenues and expenditures anticipated in FY 1982/83 budgets. Capital Improvement Programs and plans have been consulted and time series data was collected and analyzed where available. Some primary data was obtained during personal interviews with local government officials.

Major Factors Affecting Fiscal Impact Analysis

Population Forecasts

- Baseline population forecasts were developed by FO&A, Inc. These forecasts form the basis of the per capita multiplier fiscal impact method and are therefore extremely important. Please refer to section 11.2(b) for assumptions utilized in the development of population forecasts.
- The anticipated population influx is assumed to be similar to the composition of the current population utilizing social services and facilities.

Inflation

- The revenue and expenditure projections will be presented in current 1981 dollars and will represent real increases or decreases in spending, unless noted otherwise.
- Should the reader wish to factor in inflation a 10% (10 percent) annual inflation rate should be assumed. Current studies in Alaska are using 10% as a moderate scenario, with 8% for an optimistic scenario and 12% for a pessimistic scenario.

Assessed Valuation

- Both real and personal property are used to calculate total assessable property for generating local property taxes.
- Projections are based on time series data between 1970 and 1981.
- Projections consider both new additions to property tax rolls and increases in the value of existing property.

Tax Rates

- Tax rates remain constant over time unless stated otherwise.

Levels of Service

- The supply of services is assumed to remain at current levels (i.e. quantity and quality) with the exception of new or expanded service facilities described in current Capital Improvement Programs.
- Service area boundaries are assumed to remain constant throughout the projection period.
- The demand schedule for certain services may be different for the incoming population. e.g. the existing rural residents may not demand the same level of services that new incoming residents from urban areas will demand because they are used to a different type of lifestyle. However, the limitations of a per capita multiplier fiscal impact method require the analyst to assume that the current demand schedules for services remain constant.

Costs of Service

- The per capita multiplier method does not take into account economies or diseconomies of scale or threshold effects, unless otherwise stated.
- It is assumed that communities currently experiencing minimal excess service capacity will cause the analysis to overstate the incremental costs due to development; conversely, cases of minimal deficient service capacity will result in an underestimate of the incremental costs due to development.

Revenue Sources

Major sources of revenue will be identified and projections computed from 1981 to 2005. The analysis does not attempt to identify all current sources of revenue as many of these contribute relatively small amounts of the total revenues collected. Therefore, the reader should view the revenue projections as trend indicators of future revenue schedules and not as predictions of actual future receipts.

- The composition and relative proportions of revenue sources will remain constant, unless stated otherwise.
- Public policies regarding the allocation of and distribution of revenues will remain unchanged.
- Current surpluses or fund balances will be projected over time. Approximately 5% of the total budget can be assumed to remain as a fund balance.

Regional Economic Changes:

There are many local, state and national events that could affect economic trends in Alaska in general, and in Impact Area 2 in particular. These events would cause the rates of population and economic growth to increase, thereby altering many of our assumptions which in turn would alter the analysis. These include but are not limited to:

- The proposed capital move to Willow. The analysis assumes this will not take place.
- Industrial development of Point MacKenzie.
- Construction of the Knik Arm crossing providing increased access to Anchorage from the Matanuska-Susitna Borough. It is assumed this will be open by 1989.

- Development of mineral resources.
- Development of additional agricultural resources within the Mat-Su Valley and expansion of existing agricultural developments.
- Construction of the Trans Alaska Gas Pipeline.

Matanuska-Susitna Borough Fiscal Impact Assessment

General Assumptions

- Growth of the Borough will be continuous and gradual as new developments are phased in over time.
- Relatively more of the growth will be outside of the incorporated communities, i.e., in the outlying areas between Butte and Wasilla. The outlying areas embody the preferred lifestyle; people seeking urban environments are not necessarily attracted to the incorporated communities.
- There are currently no building codes in the Mat-Su Borough and none are anticipated in the foreseeable future.
- Individual wells and septic tanks are an acceptable method for obtaining fresh water and disposing of waste respectively. There will be no demand for a central water supply system and sewage collection and disposal system beyond those which currently exist within the Borough.

Revenue Sources

- Analysis assumes composition of revenues remains within the following range based upon current proportions:

General Fund	36%	General Fund Range	31-41%
Service Areas Fund	3%	Service Areas Fund	2-4%

Land Management Fund	3%	Land Management Fund	2-4%
Education Operating Fund	58%	Education Operating Fund	57-67%

General Fund-Revenues

Impact projections are provided for General Fund Revenues based on the following assumptions.

Property taxes are a function of assessed values of real and personal property.

- Per capita assessed value of real and personal property increases at an annual average of four percent per year in real terms. This is assumed to continue. (Time series data for the Mat-Su Borough 1970-1979).
- The following mill rates will be levied per \$1000 assessed valuation for property tax revenues:

6.5 mills for 1981-1989.

6.75 mills for 1990-2005.

The breakdown is as follows:

0.5 for non-areawide services	1981-1989
6.0 for areawide services	
0.75 for non-areawide services	1900-2005
6.00 for areawide services	

- Passage of House Bill #279 would provide for 100% State funding for school debt service payments. Upcoming session of Alaska legislature expected to pass this Bill. (Currently, State reimburses 80% of school bonded indebtedness for organized Boroughs and 100% for non-organized Boroughs.) There is a two year lag in State reimbursements which is anticipated to remain unchanged.

Miscellaneous sources of revenue, including interest on earnings and recovery of wages and fringe benefits, account for approximately 7 percent of total General Fund revenues.

- Currently no local taxes are raised for capital projects due to abundant State funding from petroleum revenues. This situation is assumed to continue as petroleum revenues are anticipated to rise steadily, peaking in 1986 and falling off gradually until 2005. (University of Alaska. ISER. July 1978.)
- The ratio of total bonded indebtedness to total assessed valuation is not anticipated to exceed 0.075.
- Bonded indebtedness will remain until existing issues are retired, or new bonds are issued.

Revenues from the Federal PILOT program (Payment in Lieu of Taxes) are not included in the analysis. The Matanuska-Susitna Borough Budget estimated that Federal PILOT for FY82 would be -0- due to reduced Federal funding.

Service Areas Fund - Revenues

Baseline projections are provided for Service Areas Fund Revenues based on the following assumptions.

Composition of revenue assumed to remain constant as follows:

- Current local property tax mill rate 0.5 for non-area-wide services, including fire and road services, anticipated to remain at 0.5 for 1981-1989; and 0.75 for 1990-2005.

Land Management Fund - Revenues

Baseline projections are provided for Land Management Fund Revenues.

- Revenues from the sale of private lands is not expected to increase in real terms unless the Capitol is moved to Willow. The analysis presumes that move will not be made.

Matanuska-Susitna Borough Budget General Fund; Service Areas Fund; Land
Management Fund: Expenditures:

Baseline projections are provided for the Mat-Su Borough expenditures based upon the following assumptions:

- Real costs (1981 \$) of services provided by Borough will not change significantly until approximately 1990 or 1995 when gradual increases in real terms will begin to occur.
- In general, assume current average per capita costs are a good approximation of future real costs (inflation not included).
- The costs of services that are relatively capital intensive and utilize expensive machinery are assumed to increase in real terms. The increases will be a result of high interest rates in the early 1980s which cause the cost of borrowing money to rise dramatically. These additional costs are built into the cost of capital equipment and thereby drive up the costs of service delivery.

Assume real rate of increase in road maintenance costs, annual average increase = 10%. This 10% annual increase appears reasonable after, looking at the trend of previous expenditures on road maintenance; adjusting for increased demand by new residents for adequate road maintenance; and after talking with local officials regarding those increases.

1980 - 1981 increase in expenditures per mile 33.3%

1981 - 1982 increase in expenditures per mile 25.0%

Discussion with local officials revealed tremendous increase in demand for improved road maintenance of existing roads and maintenance expanded to rural roads, currently not served by Borough.

Matanuska-Susitna Borough School District Budget

Revenues

Baseline projections are provided for Federal, State and local sources of revenue based upon the following assumptions:

Composition of revenue assumed to remain within +3% of current proportions:

State sources 68%	State Range	65-71%
Local Property Taxes 26%	Local	23-29%
Federal Sources 6%	Federal	3-9%

Local Property Taxes

Formula for computing local share:

areawide assessed valuation x mill levy

- School taxes vary according to assessed value vs market value, and total population and not according to the number of pupils.
- A mill rate of 6.0 mills per \$1,000 assessed valuation is assumed to remain constant.

Expenditures

Baseline projections are provided for expenditures on education based upon the following assumptions:

The following relative proportions are assumed:

	<u>1985-2005</u>	<u>1981-1984</u>
Regular Instruction	30%	33%
Vocational Education	2%	4%
Special Education	10%	6%
Support Services	18%	18%
Operations and Maintenance	18%	19%
Pupil Transportation	10%	8%
Other	12%	12%

- The proportion of regular instruction and vocational education will be reduced from 1981 levels to reflect the increase in special education. PL 94142 requires that a school district provide whatever special educational services may be required by a pupil in that school district. Passage of this law has resulted in tremendous increases in expenditures for special education.

Capital Improvements Program

- The 1980 Six Year Capital Construction Plan is assumed to remain unchanged, however, annual requests to the legislature for additional projects may be forthcoming.
- (see discussion of school bonded indebtedness in section 4.1(c)(iv).)

City of Palmer: Fiscal Impact Assessment

General Assumptions

- Palmer is growth oriented and the majority of residents support efforts to expand the local industrial and economic base.

- Palmer will attempt to attract industry through an aggressive on-going campaign.
- Factors influencing additional industrial growth include:
 - Development of industrial park
 - Railroad spur at industrial part site
 - Municipal airport at industrial park site that can handle large C-130 cargo planes.
- Palmer, as a first class city offers more services:
 - Own police protection
 - Own fire station
 - Levies taxes - currently low
 - Completion of water supply system and sewer system will allow orderly growth to occur
- Current expansion of jail 6 miles outside of the city limits is expected to generate an additional 150 full time permanent jobs.

Baseline projections are provided for revenues and expenditures for the City of Palmer Budget based upon the following assumptions:

Composition of General Fund revenues will remain within +3% of the current proportions.

The current per capita costs are assumed to remain constant in real 1981 dollars.

City of Wasilla: Fiscal Impact Assessment

General Assumptions

- The Knik Arm Crossing will have a significant impact on the Wasilla and Big Lake areas and the area west of Wasilla.
- Wasilla is a growth oriented community but as a second class city it is not able to offer a wide variety of services.
- It is assumed that voter approval to levy property taxes will not be forthcoming.
- Individual household will continue to be responsible for pumping of septic tanks by private contractor.
- There will not be a demand for a centralized sewage collection and treatment system before 1995.

City of Houston: Fiscal Impact Assessment

General Assumptions

- There is potential for significant growth and change in the City of Houston resulting from the completion of the Knik Arm Crossing and development of Point Mackenzie. These developments will increase access to the Houston area. Currently there is gradual steady growth.
- The community presently is construction oriented and many workers currently commute between the Houston area and construction workcamps; this is assumed to continue.
- Schools and roads are anticipated to be impacted the most by future growth; there is currently no school in Houston, though construction is planned to begin in 1985.

- Current funding for roads is adequate for maintenance only of roads within the city limits; current funds are not adequate for making road improvements.
- Houston does not levy a property tax and this is assumed not to change.
- City residents generally do not favor growth; they desire to maintain their current lifestyle.
- The influx of new people are anticipated to display a demand for social services that is greater than the current demand of existing residents.
- The existing camper park is an important source of additional retail sales in the Houston area. The space of this park is to be doubled by summer of 1982. There are not any local funds for parks and recreation. Funds are derived from the Borough, State Shared Revenues and State Grants, but are administered by the City.
- Water is supplied through on-site wells and sewage is handled by on-site septic tanks. This is assumed to remain constant through 2000.
- Currently police protection provided by State troopers, not stationed close enough to City of Houston. By 1990 foresee demand for local police force which would initially operate out of the fire hall.
- Anticipate obtaining a State Grant for a post office; currently have an identity problem as mail goes to City of Wasilla.
- Local bonded indebtedness not anticipated until 1995 or 2000 as State Grants will provide major portion of capital improvement costs.

Community of Talkeetna

(Provides an example of the Service Areas Fund as part of the Mat-Su Borough Administration Budget).

Municipality of Anchorage: Assessment of Fiscal Expenditures

Baseline projections for expenditures in the Municipality of Anchorage are provided. In general it is assumed that population changes in the Municipality of Anchorage induced by the Susitna Hydroelectric project will not cause changes in the real cost of delivering social services. Present average per capita costs will provide a good approximation of future service costs; these are assumed to remain constant in real \$ terms.

City of Fairbanks: Assessment of Fiscal Expenditures

Baseline projections of expenditures for the City of Fairbanks are provided. In general it is assumed that population changes in the City of Fairbanks induced by the Susitna-Hydroelectric project will not cause changes in the real cost of delivering social services. Present average per capita costs will provide a good approximation of future service costs; these are assumed to remain constant in real \$ terms.

10.3 - IMPACT FORECASTS

(a) Employment

(i) Direct (On-site Construction Operations)

Construction and operations workforce data was available by year (1983-2005) and by trade for 1990. Workers were divided into the following labor categories according to skill level: laborers; semi-skilled/skilled and administrative/engineering. Assumptions were made regarding what per-

centage of each labor category would come from: Impact Area 3 and Census Divisions within this area; outside of Impact Area 3 yet within Alaska; and outside of Alaska. Depending on the labor category, 30-55 percent of the workers were assumed to come from outside of Impact Area 3.

It was assumed that some of the construction workers currently living in the Anchorage, Fairbanks and Kenai-Cook Inlet Census Divisions would migrate to the Mat-Su Borough during the 1980's. Additionally, it was assumed that about 30 percent of the construction workers initially residing outside of Impact Area 3, would relocate to Impact Area 3. The other 70 percent would maintain their primary residence outside of Impact Area 3 and live temporarily at the work camp or village. Assumptions were also made regarding where the relocating workers would choose to relocate within Impact Area 3.

The relocation patterns of workers, coupled with determinations of how many current residents in Impact Area 3 would be employed on the project, provided estimates of direct employment for Mat-Su communities and Census Divisions of Impact Area 3 for each year during 1983-2002.

(ii) Indirect and Induced

Total indirect and induced employment that will accrue to Census Divisions of Impact Area 3 was derived by applying aggregate employment multipliers to the direct construction and operations workforces that will reside in these Census Divisions. Multipliers used are as follows:

<u>Census Division</u>	<u>Multiplier (Time-Period</u>
Anchorage	2.1 (1983-1984); 2.2 (1985-1987); 2.3 (1988-1996); 2.4 (1997-2005)
Mat-Su	1.8 (1983-1987); 1.9 (1988-2005)
Kenai-Cook Inlet	1.4 (1983-1989); 1.5 (1990-1999); 1.6 (2000-2005)
Seward	1.3 (1983-1999); 1.4 (2000-2005)

Fairbanks	1.5 (1983-1989); 1.6 (1990-1999); 1.7 (2000-2005)
S.E. Fairbanks	1.2 (1983-1999); 1.3 (2000-2005)
Valdez-Chitina Whittier	1.3 (1983-1999); 1.4 (2000-2005)

The multipliers for the Mat-Su Borough were increased by one-tenth in each year (over what they would normally be) to account for expenditures in the Borough made by workers who reside at the camp or village and outside of the Mat-Su Borough.

(b) Population

The forecast of population influx resulting from the project has been predicated on the forecasts of direct indirect/induced employment and the associated level and geographic distribution of workers immigrating from other areas. The number of immigrating workers was multiplied by an appropriate dependents per accompanied worker or household size standard measure, for each Census Division and selected communities in Impact Area 3.

(i) Associated With Direct Work Force

Empirical studies of construction worker characteristics indicate that those workers who bring their families with them to new work locations tend to have family size which differs from the general population. This study has utilized the findings of a recent study conducted for the U.S. Army Corps of Engineer. (U.S. Army Corps of Engineers, 1979), which indicates that workers accompanied by dependents have an average of 2.11 dependents.

Further, it is assumed that 95 percent of the on-site construction workers who immigrate into Impact Area 3, from out-of-state or other areas of Alaska, are accompanied by dependents. The facilities at the work camp, the schedule of work and the remote nature of the site make it unlikely that many workers without families would have any incentive to establish a residence outside of the work camp. On the other hand, workers with fami-

lies outside of the Railbelt region may decide that the duration of the project is long enough to justify settling closer to the project.

(ii) Indirect and Induced

Workers who immigrate into Impact Area 3 to fill a portion of the indirect and induced jobs generated by the project, are assumed to have characteristics similar to other residents of Alaska. Accordingly, the population influx associated with the immigrant indirect and induced work force has been calculated by applying forecasts of average household size for each year. These forecasts, developed by the Institute of Social and Economic Research, decline over time to reflect the national trend toward smaller average households.

(c) Construction Workforce Expenditure Patterns and Personal Income

The methodology for determining construction work force payroll expenditure patterns is built upon the basic premise that place of residence is the primary factor determining where income is spent. For the purposes of this analysis, workers are grouped into three categories according to residence/commuting patterns: 1) local workers (those originating from within Impact Area 3 as well as those relocating to Impact Area 3 communities; 2) Alaska non-Impact Area 3 workers (those not relocating in the Borough and residing at the construction camp/village); and 3) out-of-state workers (those not relocating in the Borough and residing at the construction camp/village). The reason for these different classifications is that it is assumed that each group will exhibit different wage and salary spending behavior. Tables 5.3-4 and 5.3-5 (See Section 5) are estimates of construction work force spending patterns in various Census Divisions and areas based on place of residence. For example, Table 5.3-4 indicates that on average, construction workers living in Anchorage can be expected to spend 95 percent of their income in Anchorage and 5 percent in the Mat-Su Borough; workers living in the Mat-Su Borough can be expected to spend 25 percent of income in Anchorage, 10 percent in Fairbanks

and 65 percent in the Mat-Su Borough; and et cetera. In all cases, it is assumed that the majority of workers will reside at the base camp for a few weeks at a time, but will have dependents living at their permanent place of residence. This accounts for the high percentage of income spent at place of residence.

Table 5.3-5 reveals similar information for the Alaska non-local and out-of-state construction work force residing at the construction camp or village. This table takes into account all workers that do not relocate to Impact Area 3. They live at the construction camp or village. The fact that they will in all likelihood have dependents and/or other financial obligations outside of the Impact Area accounts for the large percentage of income spent out-of-state or outside of Impact Area 3. The out-of-state work force is assumed to spend a higher percentage of income in Impact Area 3 relative to the Alaska non-local work force because the out-of-state work force will be less inclined to travel to their place of residence during time off, consequently resulting in more income being spent locally.

The derivation of the total disposable income to be spent in the various Census Divisions is based on the summation of each column of Tables 5.3-4 and 5.3-5 combined. For example, total income to be spent in Fairbanks equals 90 percent of Fairbanks residents payroll; 15 percent of S.E. Fairbanks residents; 10 percent of Mat-Su; 5 percent of Alaska non-Impact Area 3 work force payroll; and 7 percent of out-of-state (non-relocating) for each Census Division.

The values associated with the different percentages, i.e., 95 percent of Anchorage residents' income spent in Anchorage and five percent in Mat-Su, are based on the ratio of the number of Susitna project construction workers living in Anchorage to total Susitna construction workers living in Impact Area 3 by year (the percentage changes over time due to the influx of relocating workers to Impact Area 3, from Alaska non-Impact Area 3 and out-of-state). The percentage calculated is then applied to local and Impact Area 3 immigrant construction "expendable" payroll for each year, to

show that portion of income which will be spent by the work force residing in Anchorage. Local and Impact Area 3 immigrant construction work force payroll represents a portion of the total payroll, as does Alaska non-local and out-of-state, based on residence distribution. Based on these percentage distributions, total payroll can be allocated to on-site construction work force by residence (Table 5.3-2) and operations work force (5.3-3).

Expendable payroll (payroll which can be spent after taxes and savings) is determined based on the assumption that 30 percent of wage and salary is taxed and 10 percent of net payroll is saved. When these assumptions are applied to total payroll per year, expendable payroll equals 63 percent of the total.

Quantitative estimates of personal income that will accrue to construction and operations workers that reside permanently and temporarily/intermittently in the Borough were made. These estimates were made by adding savings and all taxes except for social security taxes to the expendable payroll in the Borough in each year during 1983-2002

(d) Housing

Off-site project-induced housing demand is based upon the number of immigrant households (i.e. the number of immigrant direct, indirect and induced employees). This demand is then compared to projected available supply (based upon five percent vacancy rate) in order to obtain an approximation of the future adequacy of housing to accommodate the population influx. For areas in which baseline forecasts vacant housing do not appear to be adequate, possible problems and possible changes in settlement patterns are discussed.

(e) Facilities and Services

Impacts of the project on public facilities and services in Impact Area 2 have been addressed using a three-step procedure.

First, demands for each service category were estimated by applying the per capita standards explained in Section 10.2(d) to the forecasts of population with the project. These population forecasts include immigrant workers and dependents that resettle off-site, and cover both direct and secondary population influx. As a result of the planned provision of extensive community facilities at the work camp/village, on-site residents are not expected to have significant impact on most facilities and services. The exceptions are transportation and recreation; the impacts that the on-site residents will have on these service categories are discussed qualitatively.

Second, these forecasts of requirements for public facilities and services were compared to the baseline forecasts of service requirements to illustrate the magnitude of change in demand. To the extent possible, threshold levels (the population size at which it becomes necessary to provide more extensive facilities and services) and economies of scale were identified.

Third, the forecasts of service requirements were compared to present and planned facilities, taking into account present capacity utilization.

(f) Fiscal Impact Analysis

The baseline forecast provides all the necessary data to implement the impact forecasts for 1981-2005. The analysis assumes that current average costs are a good approximation of the real future costs of service, and current per capita revenues or their relative proportions will remain constant in the future, with or without the project. The hydroelectric project will therefore not change real per capita costs or receipts, but will alter gross revenues and expenditures.

The reader is referred to the detailed baseline forecast methodology (10.2-(e)) which outlines all the assumptions for each section of the analysis. Major factors affecting the fiscal baseline analysis are assumed to

also affect the impact analysis. Impact forecasts will be made for all budgets analyzed in the baseline forecast, and will follow the baseline methodology at all stages except where noted below.

(i) Matanuska-Susitna Borough Budget General Fund Revenues

- Property Taxes
- School Debt Service

The remainder of the impact forecast will follow the baseline forecast methodology.

ERRATA SHEETS FOLLOW

ERRATA

SUBTASK 7:05: SOCIOECONOMIC ANALYSIS

This insert is to accompany the Environmental Studies Final Report, Subtask 7.05: Socioeconomic Analysis. The report was prepared by Frank Orth and Associates, Inc. for Terrestrial Environmental Specialists, Inc., and Acres American, Inc. as part of the environmental studies for the proposed Susitna Hydroelectric Project.

The errata provide a list of all the information either corrected or omitted due to errors in the writing and production of the report. The data is arranged by section number and title as in the table of contents. The page number and relevant paragraph and line number are provided to ensure easy application. Any portion of a paragraph appearing at the top of a page is considered the first paragraph. All references to dollars are in 1981 dollars.

Frank Orth and Associates, Inc. apologize for any inconvenience this may have caused the reader.

ERRATA

<u>Page Number</u>	<u>Paragraph Number</u>	<u>Line(s)</u>	<u>Correction</u>
<u>List of Tables</u>			
xviii			Insert page titled 'List of Tables (continued)' after page xviii. See attached.
<u>Summary</u>			
xxviii	1	1 & 2	delete lines 1 and 2.
xxxi	2	5	change to read: "Per capita share declines to \$199 ..."
xxxii	3	1	delete: 'Actual'. change to read: "Total fiscal impacts will be relatively very small."
1.,2.,3. <u>INTRODUCTION; DESCRIPTION OF PROJECT; IDENTIFICATION OF IMPACT AREAS.</u>			
1-2	3	10	delete: 'a cross reference to the Socioeconomic Feasibility Report,'
2-3	2	5	Disregard Table 2.3-1. Refer to page 5-2, Table 5.1-1
2-3	3	3	Disregard Table 2.3-2. Refer to page 5-29, Table 5.3-1
2-8	5	2	delete: 'to portal'.
3-2	1	1	Insert: "Fairhanks North Star" after 'Mat-Su'.
4. <u>BASELINE DESCRIPTION AND BASELINE FORECASTS.</u>			
4-27	1	1	change 'or' to "on".
4-46	4	1 & 2	delete '(19%)' after 'Anticipated State Funding' and delete '(81%)' after 'Areawide Borough Funding'. These funds are in addition to the bonds issued after the election, October 6, 1981.
4-61	2	14	change: 'cost \$10-12 per square foot' to "per running foot".
4-65		*footnote	Insert: "Drawn from funds available from grant of" before '\$1000 per person...'

ERRATA

<u>Page Number</u>	<u>Paragraph Number</u>	<u>Line(s)</u>	<u>Correction</u>
<u>List of Tables</u>			
4-74	Table 4.1 - 26	footnotes	refer to footnotes as follows: (A) column 3 (B) column 4 (C) column 5 (D) column 6
4-81	Table 4.1 - 28	footnote	Insert: "independent rounding" after 'due to'
4-89	2	8	change table # to: 4.1-27
4-96	3	6	change 'six' to "four".
4-143	3	4	Figure 4.1-5 4.1-6
<u>5. OUTCOMES OF THE PROJECT</u>			
5-16	2	4	Insert: "or 827 persons" after 'represent 13 percent'.
5-16	2	8&9	Insert: "or 318 persons" after 'approximately 5 percent'.
5-16	4	2	Insert: "(764 persons)" after 'approximately 12 percent'.
5-16	4	4	Insert: "(3,819 persons)" after 'remaining'.
5-20	1	9	Insert: "(764 persons)" after 'remain after 2002'.
<u>6. IMPACTS OF THE PROJECT</u>			
6-10		Column 1, Row 7	incomplete word. "students"
6-10	Table 6.2-3,	footnote C	refer to Table 6.2-2, page 6-9, footnote (c). This applies to Wasilla.
6-18	1	1	Replace: 'were assessed' with "was assessed".
6-22	4	5	Replace: 'This represents' with "These represent..."
6-24	2	2	Replace 'are' with "is".

ERRATA

<u>Page Number</u>	<u>Paragraph Number</u>	<u>Line(s)</u>	<u>Correction</u>
<u>List of Tables</u>			
6-28	Table 6.2-11	Heading Column 4	Correct spelling "with".
6-31	3	13	Replace: 'will accrue to' with "will accrue to".
6-34	Table 6.2-13	Row 7, heading.	"Mat-Su" Region.
6-45	Table 6.2-18	Footnotes	Refer to footnotes as follows: (A) column 4 (B) column 5 (C) column 6 (D) column 7 (E) column 8 (F) column 9 (G) column 10
6-46	1	14	Replace: 'user changes' with "user charges".
6-72 and 6-72	3, 4, 5 1, 2, 3		Delete paragraphs. Delete paragraphs. These are repetitions of text on pages 6-70, 6-71.
6-101	1	7	Replace 'and others (37 percent)' with "and others (47 percent)".
6-104	Table 6.3-4	Row 7, Heading	"Mat-Su Region".
6-107	5	2	Insert: "The greatest impact" instead of 'Railway impact'.
6-111	Table 6.3-8	Footnotes	Refer to footnotes as follows: (A) column 3 (B) column 4 (C) column 5 (D) column 6 (E) column 7 (F) column 8 (G) column 9 (H) column 10
6-114	Table 6.4-2	Column 5, Row 2	Replace '7,365' with "6,365".
6-115	5	6	"about \$4.1 million"

ERRATA

<u>Page Number</u>	<u>Paragraph Number</u>	<u>Line(s)</u>	<u>Correction</u>
<u>List of Tables</u>			
10. <u>METHODOLOGIES</u>			
10-5	1	7	Change 'Census Division' to plural.
10-6	4	5	Insert: "will change," between 'share' and 'was calculated'.
10-21	1	3	Replace 'refer to section 11.2(b)' with "refer to section 10.2(b)".
10-35	1	3	Insert: "workers who reside <u>temporarily</u> at the camp or village and <u>permanently</u> outside of", to replace 'workers who outside of'.
10-38	2	2&3	replace 'salary is taxed' with "salary is paid in taxes".

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6.2-17 Property Tax Impact Forecast for Mat-Su Borough	6-43
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