COASTAL ENERGY IMPACT PROGRAM

City of Bay City

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Section I

Demographic and Infrastructural Inventory

Introduction

This section provides a baseline inventory of existing conditions in Bay City. This inventory will be used to help determine the extent to which the city can absorb new population growth resulting from coastal energy facilities. The critical determinants will be those public failities and services, or other infrastructural features, that presently are being utilized at or near their capacity. By comparing the present capacity of these services to projected demands (Section II), the city will obtain information that can be used to anticipate impacts and manage energy-related growth.

The baseline inventory follows the outline below. It includes municipal services and non-municipal public services such as education and health.

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The methodology used in conducting the inventory consisted of a review of published secondary sources, supplemented by interviews with city administrative staff and other local officials. The inventory focuses on (1) a description of the existing facilities and their capacity; (2) the present adequacy of the facility or service as determined by comparison to service ratio standards or by evaluations provided by city or other administrative staff.

Regional Setting

Bay City is located just east of the Colorado River in Matagorda County, about 24 miles inland from East Matagorda Bay and 23 miles inland from the Gulf of Mexico. It is the county seat and principal commercial center for Matagorda County. State highways 60 and 35 intersect the city.

With its nearby petrochemical plants and petroleum processing facilities, Bay City is part of the vast Texas coastal petroleum industry. Bay City is the nearest major community to the South Texas Nuclear Project (STNP)

in southern Matagorda County. This nuclear power plant is one of only two now being constructed in the state, and is the only such plant along the Texas coast.

With its extensive coastal plains, Matagorda County is among the state's leading agricultural producers. Major crops are rice and soybeans, grown in rotation, and grain sorghum. Table I-1 shows county production figures and ranking within the state. Bay City has several grain elevators and food processing plants.

Population

The populations of Bay City and Matagorda County have increased consistently over the last six censuses (Table I-2). The city's growth rate has been greater than the county's. By 1976 Bay City contained nearly half of the total county population, and had become the county's primary growth center. The estimated (U.S. Census Bureau) 1975 populations for Bay City and Matagorda County, respectively, were 13,567 and 27,720.

Another trend shown by Table I-2 is that the rate of population growth in Bay City decreased sharply between 1970 and 1975. Population grew by 62 percent between the 1920 and 1940 censuses; by the 1960 and 1970 census, however, the rate had decreased to only 15.3 percent. Between 1970 and 1975, it grew only slightly.

Since 1975, however, this second trend has been dramatically reversed. The South Texas nuclear plant and other nearby facilities (Section II) appear to have accelerated population growth rapidly in the last few years.

Table I-1

AGRICULTURAL STATISTICS, MATAGORDA COUNTY, 1976

Indicator		State County Rank
Rice Production	2,527,000 cwt.	3rd
Soybean Production	748,400 bu.	4th
Grain Sorghum Production	3,596,100 bu.	27th
Value of Sales	$43,199,000	35th

Table I-2

POPULATION TRENDS

Year	Bay City Number	Bay City % Change From Preceding Census	Matagorda County Number	Matagorda County % Change From Preceding Census	Ratio--City to County Population
1910	3,156	--	13,594	--	23.2%
1920	3,454	9.4	16,589	22.0	20.8
1930	4,070	17.8	17.678	6.6	23.0
1940	6,594	62.0	20.066	13.5	32.9
1950	9,427	43.0	21,559	7.4	43.7
1960	11,656	23.6	25,744	19.4	45.2
1970*	13,445	15.3	27,913	8.4	48.2
1973	13,332	-0.8	27,585	-1.2	48.3
1975	13,567	+0.9	27,720	-0.7	46.6
1976**	14,291	6.3	29,121	4.3	49.1
1979	20,403	51.8	36,482	30.7	55.9

*The Bay City Chamber of Commerce claims that the official 1970 census undercounted the population of Bay City. That figure was 11,733. Consistent with this claim, subsequent U.S. Census Bureau corrections indicate a revised figure of 13,445. The higher figure is used in Table I-2; however, the lower figure is necessarily retained in Table I-3 and I-4.

**This study uses a different value for 1976, (Table II-11), based on the analysis of energy-induced population.

Sources: A.H. Belo Corporation, Texas Almanac and State Industrial Guide, 1978 - 1979 (from official census figures). Rice Center for Community Studies, 1979 Population by Voting Precints, Matagorda County (unpublished data). U.S. Bureau of the Census, 1976 Population Estimates and 1975 and Revised 1974 Per Capita Income Estimates for Counties and Incorporated Places in Texas, Report P-25 #782, January 1979.

Table I-3

ETHNIC CHARACTERISTICS OF POPULATION
1960 and 1970

Ethnic Characteristic	Bay City				Matagorda County			
	1960		1970		1960		1970	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White	8,977	77.0	8,863	75.5	20,417	79.3	22,352	80.1
Spanish Surname or Spanish Language*a			(2,735)	(23.3)			(5,162)	(18.5)
Black	2,677	23.0	2,784	23.7	5,323	20.7	5,371	19.2
Indian	2	*	21	0.2	4	*	31	0.1
Japanese	0	0	1	*	0	0	3	*
Chinese	0	0	0	0	0	0	0	0
Filipino	0	0	1	*	0	0	2	*
Other races	0	0	63	0.5	0	0	154	0.6
Total:	11,656	100.0	11,733	99.9	25,744	100.0	27,913	100.0

*a The 1960 Census did not classify population by Spanish heritage. For all censuses since 1930, however, all people of Ino-European stock are classified as white.

* Indicates less than 0.1 percent; percentages may not total 100 because of rounding.

Source: 1960 Census of Population Vol. 1, Characteristics of The Population, Part 45, Texas, U.S. Department of Commerce, Bureau of The Census, 1963: 1970 Census of Population Vol. 1, Characteristics of The Population, Part 45, Texas, U.S. Department of Commerce, Bureau of the Census, 1972; 1970 Census of Population, General Social and Economic Characteristics, Texas, P C (1) C45, 1972.

Table I-4

AGE DISTRIBUTION OF POPULATION, BAY CITY

Age Group	1960 Number	1960 Percent	1970 Number	1970 Percent
Under 5	1,493	12.8	1,094	9.3
5 - 14	2,569	22.0	2,449	20.9
15 - 24	1,516	13.0	1.881	16.0
25 - 34	1,503	12.9	1,289	11.0
35 - 44	1,468	12.6	1,270	10.8
45 - 54	1,367	11.7	1.311	11.2
55 - 64	854	7.3	1,207	10.3
65 +	886	7.6	1,232	10.5
Under 18	4,653	29.9	4,271	36.4
18 - 64	6,117	52.5	6,230	53.1
65 +	886	7.6	1,232	10.5
Median Age		26.7		28.1

Source: U.S. Bureau of the Census. Census of Population: 1970. Vol. 1, Characteristics of the Population, Part 45, Texas-Section 1, U.S. Government Printing Office, Washington, 1973.

Estimates of Bay City's 1979 population range, from just under 20,000 to over 22,000; the figure of 20,403 used in Table I-2 is derived from a study by the Rice Center for Community Studies. Population is discussed in greater detail in the concluding protion of Section II.

Social Characteristics. The latest official data available on social characteristics of the city and county populations comes from the 1970 census. (See qualifying note in Table I-2). These figures are shown in Tables I-3 to I-5.

Table I-3 illustrates ethnic composition. Of the 11,733 people counted in Bay City in 1970, 75.5 percent were white; of these, 23.3 percent had Spanish surnames or spoke Spanish as their native language. The percentage of Blacks was 23.7, and other ethnic groups made up 0.7 percent of the population. These figures compare with 80.1 percent white (18.5% Spanish surnames or Spanish language), 19.2 percent Negro, and 0.7 percent other ethnic groups for Matagorda County.

The age composition of the city changed between 1960 and 1970, with a slightly older population in 1970 than in 1960. The median age for Bay City increased between 1960 and 1970, with a median age of 26.7 in 1960 and 28.1 in 1970. The number of people 65 and over increased during that same period (Table I-4). In 1960, 7.6 percent of the population were 65 years and older; in 1970, 10.5 percent.

Table I-5 illustrates the education level attained by persons 25 years and older in 1970, for Bay City and Matagorda County. The majority of the population of Bay City (67 percent) and Matagorda County (62 percent) had some years of high school or college. Median school years completed for

persons living in the city was 10.2 which was somewhat higher than the county's median 9.6 school years.

Employment and Income Characteristics. Employment figures for Bay City and Matagorda County are shown in Tables I-6 and I-7. In Bay City, the largest number of employed persons worked in skilled and semi-skilled jobs, with 23 percent of all employed persons, ages 16 and over, in those occupations. Matagorda County followed the city trends closely, with the exception of the professional/technical and farm occupations.

By industry group, about 13.4 percent of employed persons in Matagorda County worked in manufacturing, with 12.1 percent in agriculture, forestry, and fishing, and 10.4 percent in construction. In manufacturing, the major categories of employers were chemicals, food products, and nundurable goods.

Unemployment among persons 16 years and older was slightly higher in Bay City than in the county as a whole. Unemployment levels were 3.67 and 3.35 percent, respectively. This 1970 data is supplemented by 1978 data from the Bay City Chamber of Commerce, showing a 3.8 percent unemployment rate for the county. Unemployment rates for minorities, 5.6 percent, and women, 4.8 percent, were higher than the average.

Recent labor statistics show that Bay City residents have higher average incomes than the county as a whole, regardless of category (Table I-8). Per capita incomes in Bay City and Matagorda County were $4,007 and $3,784, respectively. Per capita incomes of the black and Spanish populations were only about half that of the population as a whole.

Table I-5

EDUCATION LEVEL ATTAINED BY PERSONS 25 YEARS AND OLDER, 1970

Grade Level	Bay City		Matagorda County	
	Number	Cumulative Percent	Number	Cumulative Percent
4 or More Years College	633	10.0%	1,179	7.9%
1-3 Years College	684	20.9	1,452	17.6
High School	1,443	43.8	3,275	39.5
1-3 Years High School	1,480	67.3	3,293	61.6
Through 8th Grade	414	73.9	1,392	70.9
5-7 Years School	914	88.4	2,525	87.8
1-4 Years School	453	95.6	1,197	95.8
No School Years	280	100.0	624	100.0

Summary:

Median School Years	10.2	9.6

Source: Same as Table I-4.

Table I-6

COMPARATIVE EMPLOYMENT BY OCCUPATION, 16 YEARS AND OLDER, 1970

Occupation	Bay City		Matagorda County	
	Number	% of Total	Number	% of Total
Professional/Technical	658	15.0	1,142	11.8
Managers/Administrators, except farm	429	9.8	857	8.8
Clerical/Sales	765	17.5	1,491	15.4
Craftsmen/Foremen	609	13.9	1,477	15.3
Operatives/Laborers, except farm	1,008	23.0	2,352	24.3
Farmers, Farm Managers/Laborers/Foremen	152	3.5	835	8.6
Service	759	17.3	1,525	15.8
Total Employed	4,380	100.0	9,679	100.0
Experienced Unemployed	167	3.67*	336	3.35*

* As percent of total employed and unemployed.

Source: U.S. Bureau of the Census, Census of Population, 1970.

Table I-7

EMPLOYMENT BY INDUSTRY, MATAGORDA COUNTY, 1970

Industry	Number	Percent
Agriculture, Forestry, and Fisheries	1,168	12.07
Mining	599	6.19
Construction	1,006	10.39
Manufacturing	1,297	13.40
Transportation and Communication	268	2.77
Utilities	232	2.40
Wholesale Trade	172	1.78
Retail Trade	1,829	18.89
Financial Services	232	2.40
Business and Repair Services	264	2.73
Personal Services	804	8.30
Health Services	479	4.95
Education	757	7.82
Other Professional Services	172	1.78
Non-profit Organizations	97	1,00
Public Administration	303	3.13

Source: U.S. Bureau of the Census, Census of Population, 1970.

Table I-8

FAMILY AND PER CAPITA INCOME, 1978

	Bay City	Matagorda County
Mean Family Income:		
Total	$10,704	$8,940
Black	5,616	4,879
Spanish	6,309	5,997
Per Capita Income:		
Total	4,007	3,784
Black	2,114	1,774
Spanish	1,972	1,942

Source: Bay City Chamber of Commerce.

Infrastructure

Land Use Patterns. Figure I-1 is a land use map for the City of Bay City. It divides the city into five types of areas: (1) commercial; (2) industrial; (3) public; (4) residential; and (5) undeveloped.

Commercial development is centered in two relatively narrow, criss-crossing segments, located along State highways 60 and 35. Highway 60 (Avenue F) runs north-south through the city; highway 35 (7th Street), east-west. Small commercial establishments are also scattered within several of the residential areas.

Light industrial districts are clustered in several areas, mainly adjacent to the numerous railroad tracks which transect the city. These districts consist primarily of grain elevators and other agricultural processing facilities. The largest light industrial area is located along the Texas and New Orleans tracks, in the north central portion of the city. The city has an industrial park north of the city limits, but it has undergone only minor development.

Public land consists of city and county properties, and of areas occupied by schools, hospitals, and churches. City and county areas include several public buildings in the downtown area, major recreational facilities (swimming pools and ballparks) located mostly on the north side of town, and assorted utility-related properties. There are also eight public schools and one hospital.

The rest of the land within the city limits is split between residential and undeveloped areas. Residential patterns are described below in the

Land Use Patterns

MAP OF
CITY OF BAY CITY
MATAGORDA COUNTY, TEXAS

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research and planning consultants
Austin, Texas

Undeveloped
Residential
Public
Commercial
Industrial

This map was prepared with financial assistance from the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

section on housing. Undeveloped areas are located mostly on the fringes of the newer residential areas. Some of these areas, particularly on the south side of town, consist of farmland which was apparently annexed in order to connect isolated residential areas with the rest of the city.

Housing Patterns and Programs. Figure I-2 divides the city into ten residential areas. Boundaries for those areas have been selected according to considerations of geography relative age-composition of the housing, and housing quality (standard, substandard, dilapidated).

Area I is a small rectangular area which extends south from the downtown business district. It is bounded on the west by state highway 60; on the north, by state highway 35. The southern and eastern boundaries are less distinct geographically, and are drawn rather arbitrarily for purposes of this survey. Generally, the eastern boundary extends to the Pierce School area along Avenue L, where Area V begins. South of 4th Street, which is the main accessway (other than highway 35 and streets north of it) to the section of town east of the school, Area I is cut off from Area V by Cottonwood Creek. To the south, Area I blends into the more recently-built housing of Area VIII.

Area I is characterized almost entirely by single-family units. These units, which can be classified as standard, are mostly older houses reflecting their close proximity to the original center of town. Many of them are spacious two-story units; many have been stylishly refurbished.

Area II is located west of highway 60 and mainly south of the Missouri Pacific Railroad tracks. However, it extends north of the tracks to about

Housing Patterns

MAP OF
CITY OF BAY CITY
MATAGORDA COUNTY, TEXAS

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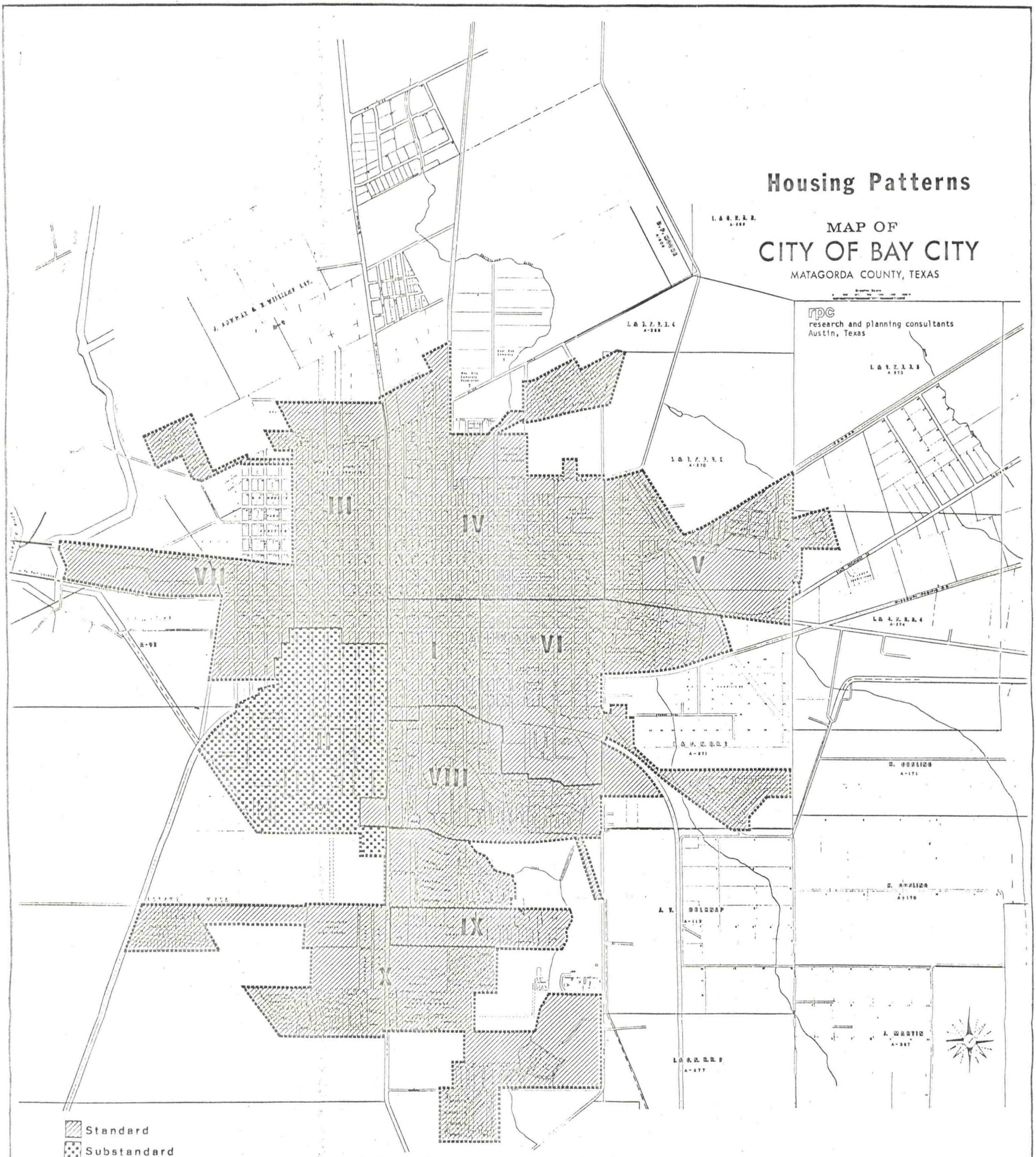


Standard
Substandard

This map was prepared with financial assistance from the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

5th Street, where it blends into Area III. It is cut off from Area VII to the northwest by an uncleared, shrub-filled area just west of Avenue A.

Area II is characterized by a mixture of standard, substandard, and dilapidated and/or abandoned single-family units. The predominant trend is substandard, although houses of all three types may be interspersed on the same block. Almost all of the homes are owner-occupied.

The area is the center of the city's black population. It contains one elementary school (Linnie Roberts) on its eastern edge, numerous small commercial establishments dotted among the residences, and an industrial district located along the railroad. There is a government-subsidized multi-family unit on Whitson Street just east of the elementary school.

Area III is located on the northwest side of the city. Like Area II, it is characterized by a mixture of standard and substandard housing; unlike Area II, substandard housing is not really the dominant pattern. The area consists primarily of single-family units, but it contains several mobile home areas north of the 12th Street and a multi-family unit on Avenue C between 12th and 13th. The extreme northwestern end has a significant Chicano population.

The area contains two new housing developments. One is the San Jose addition, which is connected to the rest of the city by a thin sewer easement Extending west from Grace Street. The addition is only partially developed, containing about 15-20 modern single-family units. The other addition is a group of 100 multi-family units now under construction along the west side of highway 60, near the northern edge of the city limits. These units are

government-subsidized.

Area IV, on the north central side of the city, is bounded by highway 60, highway 35, and Nichols Avenue. The southwest corner contains the city's main industrial district, which has been described previously. About six blocks north of the industrial district, in the middle of a residential area, is the Matagorda County Hospital. Finally, the eastern half contains Bay City High School, Bay City Junior High, and John Cherry Elementary. The new city swimming pool is located adjacent to the high school, and there are five baseball/softball parks southwest of the junior high.

The area consists primarily of single-family standard housing. There are scattered mobile homes, mostly in the upper Cottonwood Creek vicinity southwest of Bay City Junior High. Apartment units are located north of the junior high school, on the southwest side of the high school, and at two other sites. The area contains a smattering of substandard housing, almost all of which is within an area extending two blocks north from the industrial district. An important sub-area is the Del Norte Subdivision, a modern single-unit housing development located on the north side of the area, relatively isolated from the other portions.

Area V is located next to Area IV, east of Nichols Avenue and north of highway 35. Housing in the area consits almost entirely of modern single-family units. The housing resembles that in the Del Norte Subdivision (see above), but the landscape and vegetation indicates that it has been settled longer. There is a mobile home area along the north side of Highway 35 near the eastern edge of the city limits.

Area VI is located on the east side of the city, south of Highway 35, with Pierce School and Avenue L along its western edge. The western half of the area is a continuation of Area I; however, it is somewhat separated from that area by a relative lack of east-west connecting streets. On th northwest side, 5th and 6th streets lead into the downtown area near city hall. Besides Pierce Elementary, the area contains Tenie Holmes Elementary School. There is a small light industrial area along Nichols Avenue near the railroad tracks.

Housing in the area resembles that on the eastern side of Area IV. As with most other areas, the basic trend is standard-housing, single-family units. However, there are four rather new apartment units along 5th Street and another on 1st Street across from the small industrial area. In addition, there is a set of government-subsidized duplexes (Live Oak Village) for elderly citizens in a small horseshoe-shaped section south of Matthew Street. To the east of these is another apartment unit. North of the duplexes, adjacent to the railroad, is a concentrated area of mobile homes; there are other scattered mobile homes in the vicinity of Tenie Holmes Elementary.

Area VII is a small area located on the western side of the city, along Highway 35 and to the west of Moore Avenue. The area, especially the portion south of the highway, is among the city's most affluent areas. It is dominated by modern, single-family standard units, some occupying an entire block. The only other significan sub-area is a mobile home establishment on the far western edge of the city limits.

Area VIII is located on the south central portion of the city, east of highway 60 and south of Areas I and VI. It is cut off from Area X to the south by the Nile Valley Canal. It is dominated by modern, single-family standard units, set in a landscape similar to that of Area V. There is one set of apartment units on Marguerite Street, and several commercial establishments along the highway. There are a few mobile homes on the southern end of Brooks Avenue.

Area IX is a very visually distinct area. It comprises the Strawberry Farms Addition east of Highway 60, on the south side of the city. The geographic element which distinguishes the area is Horn Road, a long, straight road which extends east from Highway 60. Horn Road comes to a dead-end at Cottonwood Creek, not far west of Nichols Avenue. Since a bridge across the creek has yet to be constructed, and since the area is not connected to additions to the north or south, the only entrance and exit is via Highway 60 at the western end.

The area is a hodgepodge of single-family standard units, mobile homes, small light industrial and commercial establishments, and undeveloped or agricultural land. The addition was originally laid out with exceptionally long and narrow lots, all adjoining Horn Road. Since then, many owners have subdivided and sold off the back portions of these lots, access to which is provided by an irregular series of short, gravel sidestreets. Numerous mobile homes are located on these sidestreets.

Area X comprises the remainder of the city south of the canal, on either side of Highway 60. It contains five or more major housing additions; these

developments are among the newest in the city. Their relative size indicates that most of the city's recent expansion has occurred on its south side.

The area includes McAllister Junior High School, plus several commercial establishments along the highway. Also, it includes sizable blocks of undeveloped agricultural land, which connect the city with two isolated additions on the far western and southern ends of the area. Otherwise the area is characterized largely by new, standard, single-family units. However, it also has the city's four largest and newest apartment complexes, containing a total of 496 units. The two largest, Baywood Square and Barcelona Apartments and Townhouses, are located on the east side of the highway, south of Baywood Drive and north of Palm Village Boulevard, respectively. The other two, Morningside Manor Apartments southeast of the junior high, and Bordeaux Apartments on the south side of Hammon Road, are located off the highway.

Bay City has experienced a general housing shortage due to influx of new residents associated with construction of major energy facilities. (See Section II). Even in early 1976, just after work on the South Texas nuclear plant was begun, the city reported no vacant available housing units. Table I-9 is an updated 1976 survey on housing stock availability and housing conditions.

The housing shortage has stimulated the growth of the mobile home population within the city. Since the city has no zoning standards, these units are scattered randomly about the city as well as in a few large mobile

Table I-9

HOUSING CONDITIONS, BAY CITY, 1976

Status and Condition of all Housing Units	NUMBER OF HOUSING UNITS					
	All Units		Owner		Renter	
	Total	Deteriorating	Total	Deteriorating	Total	Deteriorating
Occupied Units - Total	5,316	1,040	3,194	386	2,122	654
Substandard	310	61	186	23	124	38
Standard and All Other	5,006	979	3,008	364	1,998	615
Vacant Available Units - Total	0	--	0	--	0	--
Substandard	--	--	--	--	--	--
Standard and All Other	--	--	--	--	--	--
Housing Stock Available	5,316	--	3,194	--	2,122	--
Vacancy Rate	0%	--	0%	--	0%	--

Source: Houston-Galveston Area Council

home parks. Based on data from the city tax department it appears that there are about 200 isolated units. This represents approximately a doubling of numbers since 1976.

Apartment expansion, particularly in Area X, has accommodated some of the city's growth. One survey indicated that only 15 percent of these apartment residents were involved in the nuclear plant construction; however, the apartment units are apparently absorbing much of the offshoot population growth resulting from the project. The most recent count shows a total of 650 apartment units, over three-fourths of which are located in Area X.

New housing additions in Areas III, IV, VI, and X have numerous lots available for construction of new homes. Also, observations made during the course of the land use and housing surveys revealed one location with several newly-constructed homes available for sale. These homes were found in the addition centered on the eastern end of Palm Village Boulevard.

These partially developed additions should accommodate new home construction for a few years, before they are saturated. Looking beyond them, the building inspector reports at least three additional areas being considered for future development. The whereabouts of future expansion is rather indeterminate, however, with no precise geographic trends being apparent. Most of the land surrounding Bay City is agricultural land, and the choice of subdivision sites depends simply on which areas are available for acquisition. There has been considerable growth on the south side of the city recently, yet two of the new subdivisions are on the north and another on the east.

Bay City is a general law city. The city therefore must have a request from and the approval of any area designated for possible annexation. Home rule status, which the city is seeking would give the city general annexation powers.

Meanwhile, the city council is revising its ordinances relating to housing. A subdivision ordination has been approved recently. Developers anticipating annexation will have to conform to these regulations. They must pay for street lights, which until recently were provided by Central Power and Light. Also, developers must conform to upgraded street specificiations. Main entrance streets are to be paved with concrete, and curbs, gutters, and sidewalks are required. No subdivision will be approved by the city until streets and utilites are physically installed. These revisions should assure that the city will not have to incur unwarranted development expenses. A mobile home ordinance is under consideration.

Bay city has utilized various kinds of federal housing funds, especially Section 8 rent-subsidization money. As previously described, there are subsidized units in Areas II, III, and VI. Also, the Chateau Oaks addition consists of FHA homes.

Because of the nature of its housing, Area II is the prospective target of a rehabilitation project under the Department of housing and Urban Development Community Block Grant Program. The city is applying for a two-year grant of $1.5 million. The first year program would include major improvements on 58 homes, demolition of 96 homes with relocation of residents. The second year schedule would include average improvements on 85 homes,

moderate improvements on 75 and demolition of 4 houses with relocation of the residents. Improved water lines and fire protection is planned during both years. In mid-June of 1979, the city council appointed additional members to a Citizens Advisory Committee for the project.

Water, Sanitary Sewer, and Drainage. Bay City draws its water supplies from underground sources. The city has six wells, the most recent of which was added a year and a half ago. The others range from 9 to 34 years old. Drinking water quality is adequate.

The average daily water use in March of 1979 was 3.1 million gallons per day (mgd); maximum use, about 3.7 mgd. Maximum flowthrough capacity is 7.2 mgd, but actual capacity based upon nondepletion of storage tanks is 5.6 mgd. The city has about 1,050,00 gallons of ground storage capacity (two tanks) and about 450,000 gallons of elevated storage capacity (two towers). The storage facilities and wells are distributed as follows:

East side of town	1 well; 1 elevated storage
Center of town	2 wells; 1 elevated and 1 ground storage
West side of town	2 wells; 1 ground storage
South side of town	1 well (direct flow)

While aggregate current use does not approach aggregate capacity, the city water supply system is not fully adequate. More storage facilities and/or wells are needed in some parts of the city. In a 1976 survey, the State Board of Insurance found that the city needed 1000,000 gallons additional ground storage capacity and 300,000 gallons additional elevated storage to assure adequate supply for firefighting purposes. One of the

two wells and one of the storage tanks in the center of town recently malfunctioned. The two wells in the center of town are of about the same age and each has a capacity of 500 gallons per minute (gpm). The tank was a ground storage tank of 1.0 million gallons capacity. Possible action by the city includes replacing both wells with one well of 1,000 gpm capacity and replacing the storage tank. The city has plans to add one more well and storage facility on the north side of town. This well, with a planned capacity of 1.4 mgd, would bring total capacity to 7.0 mgd. In addition, on a longer range basis, in order to meet the requirements of the Insurance Board, the city plans to construct an additional million gallon storage tank in the southern part of the city.

Revenue, expenses, number of customers, and rates for the water system are shown in Table I-10. Financially, the system appears to be in excellent condition.

The city has two sewage treatment plants, both located on the same site on the southeast side of town, outside the city limits and just west of Nichols Avenue. These plants have a combined design capacity of 2.1 mgd. Permitted effluent limits are 20 mg/l BOD and 20 mg/l TSS; the plants are in general compliance with the effluent standards. Both facilities discharge into Cottonwood Creek, a tributary of a system that eventually empties into East Matagorda Bay.

Wastewater treatment facilities were last expanded in 1967-1968, when the second plant was added. The older unit, an activated sludge treatment plant, has a capacity of 1.1 mgd. The newer unit, a contact stabilization

Table I-10

WATER SYSTEM DATA

Income

Fiscal Year	Operating Revenue	Operating Expenses	Customers
1974-75	$261,146	$159,248	4,366
1975-76	341,692	197,112	4,539
1976-77	422,559	218,262	N.A.*
1977-78	458,415	303,351	4,869

*Figure reported by Texas Municipal Reports is inaccurate.

Rates

Minimum, first 2,000 gallons	$4.25
Next 3,000 gallons	.65/1,000 gallons
Next 5,000 gallons	.60/1,000 gallons
Next 12,000 gallons	.55/1,000 gallons
All over 22,000 gallons	.50/1,000 gallons

Sources: City of Bay City, Audited Financial Statements and Other Financial Information, 1976-1978.
Municipal Advisory Council of Texas, Texas Municipal Reports, 1976-1978.
City of Bay City, Utilities Department.

treatment plant, has a capacity of 1.0 mgd.

The system is generally adequate, except for problems with infiltration resulitng form occasionally heavy storm runoff. However, the margin of surplus capacity is very small, such that the system could not withstand significant population increases. Reported flows are about 2.0 mgd, with heavy storm runoff sometimes producing an excess flow of 2.7 mgd.

Because of these limitations, the city plans to expand its wastewater treatment facilities. It is now in Step I of a three-year construction program financed partly by an Environmental Protection Agency (EPA) grant. The federal government will contribute 75 percent of the funds; the city, 25 percent matching funds.

Step I, with a total budget of about $82,000, includes an inflow and infiltration survey being conducted by an engineering consultant firm. This survey will seek to determine whether it is more economical to repair existing lines or to build another sewer plant to treat storm water.

According to material on file with the Texas Department of Water Resources, Step I will involve a determination of cost-effective alternatives for developing a treatment system with a recommended design capacity of 4.0 mgd, and effluent limits of 20 mg/l BOD and TSS. Estimated total budgets for Steps II and III are $225,000 and $3,762,000, respectively. The improvement program would conceivable involve (1) new treatment plant facilities; (2) a relief interceptor lift station to accommodate system overload; (3) a new interceptor lift station to allow abandonment of privately owned treatment facilities in areas that have recently been annexed;

and (4) an extension of the sewer collection system to areas outside the city limits.

Revenue, expenses, and number of customers for the sewer system are shown in Table I-11. The system produces less net revenue than the water system but is in no financial difficulty .

Solid Waste. City garbage collection is organized as part of the public works department, rather than being organized with the other utilities. The main difference is that it is organized financially under the general fund, although it is a user fee operation which ideally should be self-supporting. Garbage receipts and department expenditures are shown in Table I-12. Since FY 1974-75, the department has been operating at a deficit.

The city of Bay City has four 20-yard-capacity trucks for solid waste collection. Two of these are in use six days per week for residential pickup, and one is used six days per week for commercial refuse. The fourth truck is reserved as a backup unit in the event one of the other three trucks is out of service. On Monday, Wednesday, and Friday, the city averages three dump trips; on other days, the average is two dump trips. In addition, a private disposal service collects solid waste in the new subdivisions of the city and from all Bay City businesses with dumpsters.

According to the Commissioner of Matagorda County Precinct #1, the city-owned landfill was closed in April 1978 when the new county landfill six miles east of Bay City began operation. This new county landfill has

Table I-11

SEWER SYSTEM DATA

Fiscal Year	Operating Revenue	Operating Expenses	Customers
1974-75	$114,441	$102,547	4,366
1975-76	165,446	128,814	4,539
1976-77	208,598	166,945	N.A.*
1977-78	227,945	209,682	4,893

*Figure reported by Texas Municipal Reports is inaccurate.

Sources: City of Bay City, Audited Financial Statements and Other Financial Information, 1975-1978.
Municipal Advisory Council of Texas, Texas Municipal Reports, 1976-78.

Table I-12

GARBAGE DEPARTMENT RECEIPTS AND EXPENSES

Fiscal Year	Fee Receipts	Expenses	Net Revenue
1972-73	$ 95,011	$ 80,274	$ 14,737
1973-74	118,743	110,959	7,784
1974-75	132,989	149,915	(16,926)
1975-76	145,783	189,406	(43,623)
1976-77	160,772	199,309	(38,537)
1977-78	181,549	222,864	(41,315)

Source: City of Bay City, Audited Financial Statements and Other Financial Information, 1973-78.

a 15-year life expectancy.

In June 1978 The city of Bay City revised its rate schedule in order to reverse the four-year deficit for its solid waste disposal service. It was estimated earlier this year that the new rate structure would result in a surplus of $30,000 for 1978-1979. By October of 1979 the Bay City Public Works director estimated that they still expected a surplus as a result of the new rate schedule, but it will not be as large as $30,000.

Transportation. The municipal role in transportation has three aspects: (1) maintenance of streets and bridges; (2) traffic engineering; and (3) operation of the city airport. Until recently, parking meter management comprised a fourth role. However, the meters are tentatively being phased out, based on a vote taken in early 1979. The parking meter department had been operating at a deficit.

Street and bridge maintenance is organized with garbage collection under the public works department. The street and bridge department is responsible for maintaining the city's streets, as well as for keeping utility lines clear. It has other duties associated with traffic management and recreational improvements. Expenditures for the street and bridge department, along with those for police and fire protection, are given in Table I-13.

Public works has or borrows (from the utility department) numerous pieces of equipment, including a street sweeper, maintainer, hydraulic drain cleaner, crane, and two brush loaders. It has been handicapped by the fact that some of this equipment is outdated and constantly in need of repair. During a recent tour of city departments by incoming council

Table I-13

EXPENDITURES - STREET AND BRIDGE, POLICE, AND FIRE DEPARTMENTS

	Street and Bridge	Police	Fire
1972-73	$132,486	$164,955	$27,466
1973-74	185,898	198,738	27,305
1974-75	200,405	235,371	32,373
1975-76	260,847	269,230	38,176
1976-77	287,795	351,739	63,579
1977-78	302,572	407,693	67,375

Source: City of Bay City, Audited Financial Statements and Other Financial Information, 1973-78.

members, several pieces of equipment were identified as needing to be purchased. Consequently, the council has allocated an extra $115,000 in the new budget for a grader, street sweeper, small crane, and crew truck.

The city has completed a comprehensive traffic engineering study, undertaken by a Houston consulting firm specializing in this field. The final report, issued in June of 1978, contains numerous recommendations designed to meet state standards or otherwise enhance traffic safety. Included within these recommendations are various sign and signal changes (e.g., installation, substitution, relocation, synchronization, removal), pavement marking improvements, and a suggested conversion of two streets to one-way systems. The recommended modifications would bring the city into full compliance with guidelines in the Texas Manual of Uniform Traffic Control Devices (TMUTCD).

The final report contained a priority-ranked implementation plan, estimated some of the costs associated with these projects, and identified likely sources of funding for their completion. That plan is summarized in Table I-14. The city has not yet implemented it, aside from certain amendments to the city code which were advised during the course of the study, and aside from priority item 18, which has been approved by the state. For the major projects, excluding implementation of the two one-way streets, the report estimates that expenditures of about $18,500 in city funds, $25,000 in state funds, and $11,600 in federal funds would be required.

One important point mentioned by the report is a policy of the State Highway Commission related to maintenance, installation, and operation of

traffic signals on state highway routes within the city. For cities with a population below 15,000, these activities are the responsibility of the State Department of Highways and Public Transportation (SDHPT). With the 1980 census, however, the city will officially exceed this threshold and will have to assume this traffic signal responsibility itself. According to the report, both additional signal maintenance personnel can capital expenditures will be needed.

Possibly for this reason, the proposed implementation plan called for completion of several signal improvements during 1978 and 1979, while SDHPT funds and personnel were still available. Otherwise, with delays in implementation such as exist now, the city's immediate burden might be increased by at least another $25,000.

A potential traffic-related problem concerns possible gasoline shortages similar to that recently experienced by Houston and surrounding coastal areas, including Bay City. Matagorda County was among the counties adopting an odd-even rationing system. Inadequacy of gasoline supplies could become a significant problem, because of commuting patterns associated with industrial (often, energy-related) expansion in the Brazosport-Sweeny-Bay City vicinity. This expansion induces rapid population increases, which create temporary housing shortages, which in turn force employees to venture considerable distances from their workplace to find housing. Lack of sufficient gasoline supplies only compounds the general problem. At one point, before rationing took effect, car lines at Bay City gasoline stations were being swelled by Brazosport residents who had travelled over 30 miles in search of rumored

Table I-14

BAY CITY TRAFFIC PLAN IMPLEMENTATION

PRIORITY	LOCATION	DESCRIPTION	JUSTIFICATION	COST	YEAR	SOURCE OF FUNDING
1	VARIOUS OFF-SYSTEM	SIGNS FOR STREETS OFF-FEDERAL AID SYSTEM	TMUTCD	$ 9,927.75	1978	Sec. 402
1A	VARIOUS OFF-SYSTEM	POSTS AND INSTALLATION FOR SIGNS OFF FEDERAL AID SYSTEM	TMUTCD	11,020.00	1978	City
2	VARIOUS ON-SYSTEM	SIGNS AND POSTS FOR STREETS ON FEDERAL AID SYSTEM	TMUTCD	2,737.50	1978	City
3	VARIOUS SCHOOLS OFF-SYSTEM	SIGNS FOR SCHOOL SAFETY	TMUTCD	1,656.50	1978	Sec. 402
3A	VARIOUS SCHOOLS	POSTS AND LABOR FOR SCHOOL SIGNS	TMUTCD	1,615.00	1978	City
4	VARIOUS SCHOOLS ON-SYSTEM	SIGNS AND POSTS FOR SCHOOL SAFETY	TMUTCD	1,289.50	1978	City
5	VARIOUS	UP-GRADE STRIPING	TMUTCD		1978	City
6	VARIOUS	REMOVE FOUR-WAY STOPs	TMUTCD		1978	City
7	AVE. M @ 13th ST.	REMOVE SIGNAL	TMUTCD		1978	City
8	VARIOUS	TRIM TREES AND SHRUBS FOR SIGHT DISTANCE TRIANGLE	SAFETY		1978	City
9	S.H. 60 & S.H. 35	IMPROVE SIGNAL PROGRESSION	SAFETY		1978	S.D.H.P.T.
10	S.H. 60 & S.H. 35	CHANGE ANGLE PARKING TO PARALLEL PARKING	SAFETY		1979	City
11	S.H. 60 & S.H. 35	RESTRIPE TO INCLUDE FOUR LANES PLUS CONTINUOUS LEFT TURN LANE	SAFETY		1979	S.D.H.P.T.
12	AVE. G @ 6th ST.	UP-GRADE SIGNAL DISPLAY	TMUTCD	900.00	1978	City
13	AVE. H @ 6th ST.	UP-GRADE SIGNAL DISPLAY	TMUTCD	900.00	1978	City
14	VARIOUS	REMOVE PARKING TO LEAVE 26' SIGHT DISTANCE	SAFETY		1978	City
15	VARIOUS	UP-GRADE CROSSBUCK DISPLAYS	SAFETY	1,200.00	1979	VARIOUS RR CO.
16	VARIOUS	REPAIR STREETS AT RAILROAD CROSSINGS	OPERATIONS	3,500.00	1979	VARIOUS RR CO.
17	6th ST. & 8th ST.	IMPLEMENT ONE-WAY SYSTEM	OPERATIONS	897,000.00	1979	URBAN SYSTEM FUNDS
18	S.H. 60 @ BAYWOOD DRIVE	REQUEST S.D.H.P.T. TO INSTALL FULL ACTUATED SIGNAL	CAPACITY	25,000.00	1979	S.D.H.P.T.
19	C.B.D.	RESTRIPE AND IMPROVE PARKING STALLS	OPERATIONS		1979	City
20	C.B.D.	OFF-STREET PARKING LOT	OPERATIONS		1979	City DOWNTOWN MERCHANTS ASSOCIATION
21	AVE. K @ MARGUERITE	IMPROVE ALIGNMENT OF AVE. K	OPERATIONS		1979	City
22	S.H. 60 @ 4th ST.	MOVE SIGNAL FROM 3RD 4th ST.	OPERATIONS		1979	S.D.H.P.T.

Source: Traffic Engineers, Inc., Traffic Engineering Plan, Bay City, Texas, June 1978.

gasoline supplies.

A third transportation-related service is the Bay City Municipal Airport. Located southeast of Bay City, the airport was dedicated in 1970. Much of the $800,000 capital investment has been funded by federal revenue sharing. With completion of a south taxiway and T-hangars in FY 1977-78, further municipal expenditures on the project should be negligible.

Operation of the airport has not been without problems. Private firms contracted to operate and maintain it have sometimes performed very unsatisfactorily. The city council has now established a three-member Airport Advisory Board to consider airport issues.

Other non-municipal transportation services include a bus line and three railroads. Another major facility is the Port of Bay City, located south of the city on the Colorado River. The port, which is connected to the Gulf Intracoastal Waterway (GIWW) via the river, offers both dry and liquid loading and unloading facilities with a turning basin. A significant percentage of port business consists of barges carrying gasoline and fuel oil.

Police and Fire Protection. The Bay City police department consists of the chief, 3 supervisors, 17 patrolmen, 3 detectives, 1 park ranger, 1 nigh watch head, 1 dispatcher, 2 court clerks, and 1 dog catcher. Altogether, there are 25 sworn officers. The City Council authorized this year the hiring of three additional officers, for a total of 26 in the department. At this time, two of the three additional officers have been hired. The department

has five patrol cars, with three detective cars and chief's and supervisors' cars as backup. The department can also rely if necessary on county law enforcement personnel and county police vehicles.

Both the police chief and coucil have recognized that the addition of more officers would allow the department to operate more smoothly--especially when officers are absent due to illness or vacation. Consequently, the city council has approved the addition of three more officers in the new budget, for a total of 26. Although this figure falls short of the National Safety Council's recommended ratio of 1.5 officers per 1,000 residents, it is considered adequate. Department expenditures are given in Table I-13.

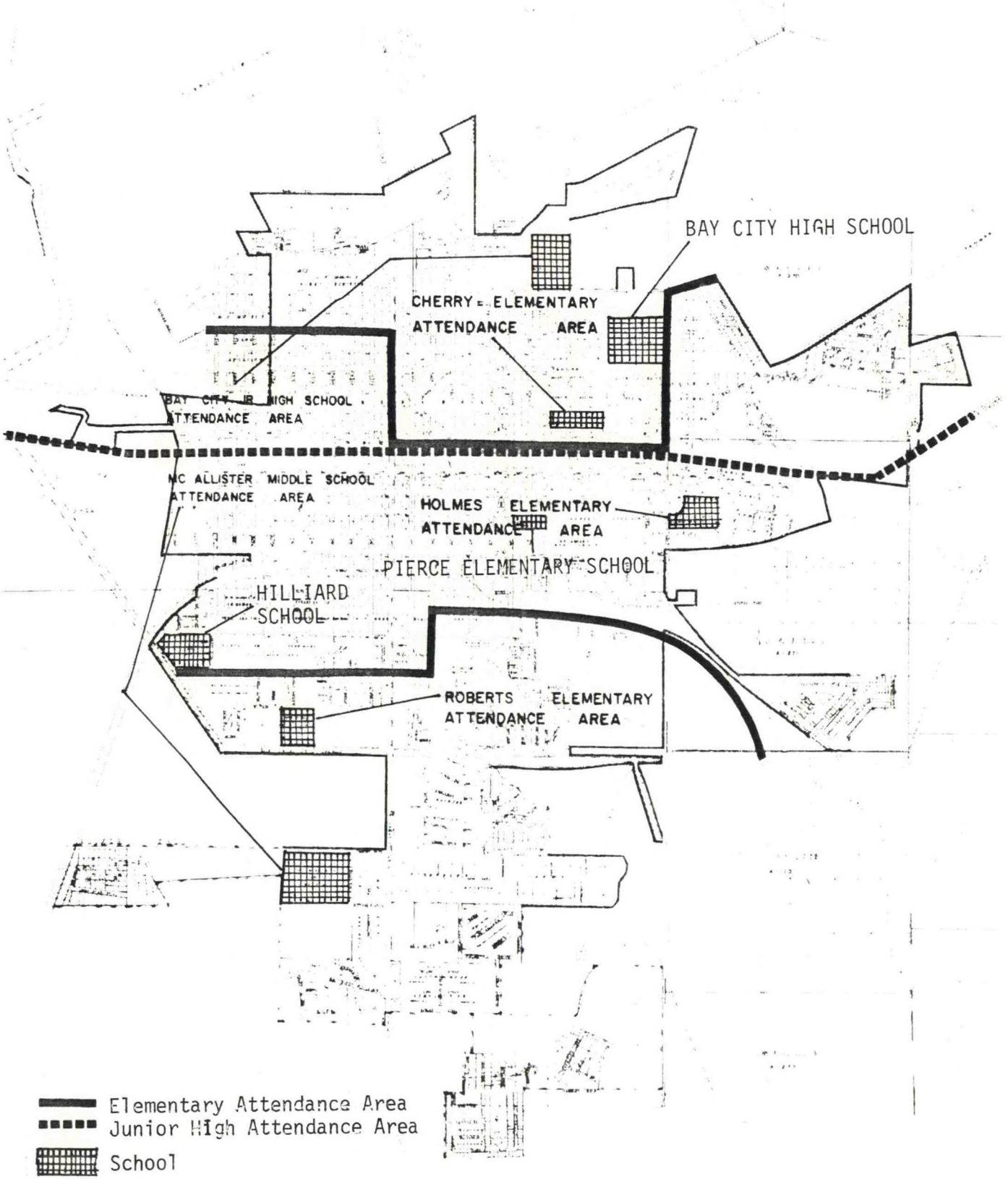
The police department is currently housed at city hall and is overcrowded. Some rearrangement of department space has already occurred, but the city would like to build new facilities across the street. This project will be undertaken in two or three years.

The fire department consists of 4 paid dispatchers and 48 volunteer firemen. Equipment includes six regular fire trucks and one emergency truck with a combined pumping capacity of 3,400 gallons per minute, one tank truck with a capacity of 7,500 gallons, one ladder truck with a 65-foot ladder, and one emergency station wagon. Fire protection appears adequate. Department expenditures are also given in Table I-13.

Schools. The Bay City Independent School District includes four elementary schools (John H. Cherry, Linnie Roberts, Pierce, and Tenie Holmes), two junior high schools (McAllister and Bay City), Bay City High School,

Figure I-3

BAY CITY PUBLIC SCHOOLS AND ATTENDANCE AREAS



Source: Traffic Engineers, Inc., Traffic Engineering Plan, Bay City, Texas

Table I-15

BAY CITY SCHOOL ENROLLMENT*

	1976-77	1977-78
Pre-Kindergarten	41	38
Kindergarten	287	264
Grade 1	351	379
Total	679	681
Grade 2	255	317
Grade 3	258	255
Grade 4	322	263
Grade 5	282	329
Total	1,117	1,164
Grade 6	322	287
Grade 7	407	337
Grade 8	386	410
Total	1,115	1,034
Grade 9	370	383
Grade 10	346	332
Grade 11	325	309
Grade 12	269	
Total	1,310	
TOTAL	4,221	4,206

*These figures are the fall enrollment figures rather than average daily attendance. A breakdown of students per grade is not available in terms of average daily attendance.

Source: Texas Education Agency

Table I-16

GROWTH TRENDS IN THE BAY CITY
INDEPENDENT SCHOOL DISTRICT, 1970-1979

School Year Ending	Average Daily Attendance	No. of Teachers*	Student/Teacher Ratio*
1970	3,829	---	--
1971	3,815	---	--
1972	3,743	239.4	15.6
1973	3,660	239.0	15.3
1974	3,657	243.1	15.0
1975	3,578	250.8	14.3
1976	3,530	250.2	14.1
1977	3,580	250.6	14.3
1978	3,612	257.6	14.0
1979	3,716	259.5	14.3

*Number of Teachers in this table includes all teachers: regular program teachers, special education, vocational education, etc. When The Texas Education Agency provides student/teacher ratios for the state or for individual school districts, they apply only the regular program teachers. Thus, the ratios in this Table are lower than those given in the text and in Table I-17.

Source: Texas Education Agency

Table I-17

COMPARISON OF BAY CITY INDEPENDENT SCHOOL DISTRICT
WITH STATE AVERAGES AND HOUSTON INDEPENDENT SCHOOL DISTRICT

	1976 - 1977	1977 - 1978
Bay City Independent School District Expenditures per student	$1,520	$1,620
Student/teacher ratio	20.3	20.1
Houston Independent School Disctrict Expenditures per student	$1,220	$1,461
Student/teacher ratio	27.4	26.1
State average Expenditures per student	$1,205	$1,391
Student/teacher ratio	27.1	26.3

Source: Texas Education Agency

and one special education school (Hilliard). All kindergarten students and first graders attend Pierce. Grades 2-5 attend the other three elementary schools; grades 6-8, the two junior highs; and grades 9-12, the high school. The location of these schools and the attendance boundaries for grades 2-8 are shown in Figure I-3.

Recent fall enrollment figures for the school district are shown in Table I-15. These figures are higher than average daily attendance, which is used for state audit reports and computation of expenditures per student and student/teacher ratios.

The average daily attendance of the Bay City Independent School District showed a steady decline from 1970 through 1976. However, in the 1976-1977 school year, this trend reversed, with an average increase of 62 students per year over the past three years (Table I-16). The Bay City Independent School District has greater expenditures per student and a lower student/teacher ratio than the state average and the Harris County Independent School District (Table I-17).

Health. Hospital care in Bay City is provided by the Matagorda County Hospital District. The district operates two hospitals, Matagorda General Hospital at Bay City and Wagner General Hospital at Palacios and a 28-bed nursing home in Bay City. The Bay City hospital has 110 beds; the Palacios hospital, 43 beds. The national average ratio of hospital beds to population is four per 1,000. Based upon the estimated 1979 city (20,403) and county-wide (36,482) populations, current facilities seem to be adequate, with 5.4 and 4.2 beds per 1,000 population, respectively.

Table I-18

MATAGORDA GENERAL HOSPITAL STATISTICAL DATA
Bay City, Texas

	1975	1976	1977	1978
Admissions	3,639	3,605	4,119	4,399
Average Length of Stay	6.94	6.27	6.17	6.00
Patient Days	25,331	22,958	25,342	26,778
Occupancy:				
Annual Average--				
Hospital Total	64.85%	58.62%	64.88%	68.56%
Medical				63.2
Surgical				74.3
Obstetrics				43.7
Intensive Care				89.8
Monthly Average Range--				
Hospital Total				52.3-77.8
Daily Variance--				
Hospital Total				50-100
Emergency Room Visits	7,365	6,322	6,437	7,060
Surgical Procedures	1,092	1,077	1,253	1,419
Deliveries	448	497	604	623

Source: Matagorda General Hospital.

Table I-18 provides recent data on admissions, patient days, occupancy rates, and other hospital-related figures at Matagorda General Hospital in Bay City. From 1975 to 1978, the number of admissions increased by almost 21 percent. However, the average length of stay has declined by almost a whole day; thus, the number of patient days has increased by only 5.7 percent. Hospital-wide, yearly average occupancy rates have ranged between 58 and 69 percent. Monthly average and daily occupancy rates, as well as occupancy rates within the various wards, have naturally had a wider range. The intensive care unit has had a particularly high occupancy rate--almost 90 percent on an annual average basis.

Ancillary services in Bay City include a 28-bed skilled nursing home, a dialysis clinic, and a home health care clinic. These are housed in separate buildings near the hospital. The nursing home, Matagorda House, has 100 percent occupancy, with a sizable waiting list. This situation preceded the recent population growth, however.

Bay City had 28 physicians as of October, 1979. This results in a ratio of one physician per 729 population, which is within the national average ratio of 1:750. Matagorda County has a total of only 31 physicians; thus the county as a whole falls below the national average with a ratio of one physician per 1,177 population. The district itself feels that, given the present population, it needs perhaps seven more physicians, for a total of 35 which would bring the county ratio to 1:960.

In recent years, the main response to capacity pressures at the Bay City hospital has been the rearrangement and expansion of administrative and

other specialized care space. This expansion has been caused more by a general expansion in types of services offered by the facility, however, rather than by the pressures of population increase. To accommodate some of this rearrangement, the hospital has rented two additional small buildings. As to the number of physicians, the hospital district has felt that its doctors have been overworked in the recent past. This factor, plus occasional retirements, has stimulated an active doctor recruitment program within the last three years.

Financially, the hospital district seems to have benefitted from the South Texas Project. As shown in Table I-19, before the project began paying taxes in 1974, the hospital district's annual surplus had been declining at an average rate of 27 percent per year. However, since 1974, the hospital district's surplus has increased almost 20 times over its 1974 surplus, with an average annual increase of 186 percent. This increase is not entirely attributable to the South Texas Project, as the county tax rate was increased in 1976; the ensuing benefits to the hospital district can be assigned to a combination of energy development contributing to the tax base and the increased tax rate in Matagorda County.

The hospital district is fully cognizant that increasing population will generate additional demands on the health care delivery system, and it was planned accordingly. It recently contracted with a consultant for a comprehensive study on future health care needs. That report has already been released, but the district feels uncomfortable with what it considers to be unrealistically low population projects used by the consultant.

Table I-19

MATAGORDA COUNTY HOSPITAL DISTRICT
REVENUES AND EXPENDITURES, 1969-1978

FY Ending	Total Gross Revenues	% Medicare/ Medicaid	% Tax	Total Expenditures	Surplus or (Deficit)
1969	$1,566,316	--	0	$1,479,238	$87,078
1970	2,022,423	--	4.5	1,886,204	136,219
1971	2,454,434	--	5.8	2,309,572	144,862
1972	2,848,617	44.5	5.2	2,712,718	135,899
1973	3,245,965	48.4	4.3	3,139,824	106,141
1974	3,681,215	46.1	5.6	3,632.776	48,439
1975	4,225,794	49.3	8.2	4,133,397	92,397
1976	4,963.069	44.9	10.4	4,306,214	656,855
1977	5,827,221	44.9	9.9	5,146,114	681,107
1978	7,003,404	43.6	11.1	6,072,524	930,880

Source: Business Office, Matagorda County Hospital District

Consequently, the district is awaiting the final results of a multi-county population study being conducted by the Rice Center for Community Studies, under the auspices of the Houston-Galveston Area Council. Pending completion of that study, the hospital district board will move ahead with hospital expansion plans. The lead time necessary for hospital construction would be about five years; until then, present facilities should be reasonably adequate. It is presently contemplated that expansion would involve the addition of about 50 more hospital beds.

Recreation. Bay City's major park facility is the 31-acre Le Tulle Park, located along the Colorado River two miles west of the City limits. Le Tulle Park is now being revamped; groundbreaking for its restoration began in mid-April of 1979 and the project is expected to be completed by April 1980. New facilites there will include a one-mile jogging track, an improved lake facility stocked with fish and equipped with paddle boats, overnight camping areas, new lighting and parking, a concession stand, and playground equipment.

Other facilites within Bay City include two swimming pools, assorted softball and Little League fields, and about 15 tennis courts. The city just recently completed construction of a new swimming pool, a modern facility financed by federal and matching city funds; however this facility replaced one of the older pools, which had to be closed down. The other pool is in need of renovation. There are five lighted ballparks just west of Bay City Junior High, and numerous small pracitce fields located throughout the city. The only playground facilities are those at the

four elementary schools. There are several scattered vacant lots suitable for recreational purposes, including two large, grassy, church-owned properties on the northeast side of town.

Although the people of Bay City have a considerable recreational asset in LeTulle Park, the city has a need to develop neighborhood parks within the city limits. According a member of the newly formed Bay City Parks and Recreation Board, the city has a significant amount of undeveloped park space (30 to 35 acres). The problem lies in the fact that it is undeveloped. Although subdivision ordinances require developers to set aside a portion of land as park area, these areas are in many cases unsuitable for recreation in their present state; some are bare dirt, some are overgrown with weeds, and none is developed for recreational use.

The new Bay City Parks and Recreation Board is now taking inventory of the existing park sites and will draw up a list of requirements for developing them. They intend to investigate the availability of grants to help finance park development.

Revenue and Expenditures

City of Bay City. Excluding the self-supporting utilites (water, sewer, and gas) which are organized outside the general fund,[2] and other user-fee based services (garbage) organized within the general fund, the city has

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[2]The Bay City Gas Company is somewhat divorced from city control. It was donated to the city years ago, but is managed by a special board.

three major sources of revenue. These, in order of importance, are: (1) sales taxes, (2) ad valorem taxes, and (3) federal government contributions. Receipts from these sources for fiscal years since 1969-70 are shown in Table I-17, both in current and constant dollars.

Sales taxes are the largest source of operating revenue for the city. In FY 1977-78, the city collected $591,569 in revenue from municipal sales taxes. As Table I-20 shows, sales taxes have risen steadily, even in constant dollars, and at an overall rate greater than the city's population growth. This pattern is indicative of a growing, healthy economy. The preliminary pre-audit figure for FY 1978-79 is $771,942, and the collection rate for the first quarter of FY 1979-80 has been 38 percent ahead of that rate. The city expects to collect at least $900,000 in sales tax revenue this year.

Ad valorem property taxes provide another important source of revenue for the city. However, collections have grown more slowly than with sales taxes, and in fact have declined in real terms. This result is mainly attributable to city valuation methods. Increased revenue comes from new property, not from upward revaluation of existing property. When proptery changes hands, for instance, it is retained on the tax rolls at the previous amount. No general revaluation has been undertaken for at least several decades, except for a revaluation of land in the early 1960s. Principal taxpayers are shown in Table I-21; the city's tax base is reasonably diversified, not dependent upon any one major taxpayer.

As shown in Table I-22, the total assessed valuation for the city in calendar year 1977 was $28,724,570. The tax rate has remained at $1.30/

Table I-20

CITY OF BAY CITY REVENUE, MAJOR SOURCES

Fiscal Year	Current Dollars			Constant 1978 Dollars		
	Sales	Ad Valorem	Federal Revenue Sharing	Sales	Ad Valorem	Federal Revenue Sharing
1969-70	$156,986	$241,750		$307,455	$473,464	
1970-71	216,050	248,362		392,462	451,158	
1971-72	240,047	244,825		407,445	415,555	
1972-73	249,698	265,995	$145,712	400,576	426,656	
1973-74	301,650	257,616	168,857	450,929	385,104	252,420
1974-75	369,696	317,202	162,085	500,838	429.723	219.581
1975-76	458,274	326,475	1974,849	566,747	403,752	240,970
1976-77	511,735	349,490	183,455	594,369	405,925	213,079
1977-78	591,569	376,319	185,022	638,974	406,475	199,849
1978-79	771,943	395,704	162,444*	771,943	395,704	162,441*

*According to the 1979 financial report, certain aspects of noncompliance were identified in relation to Entitlement #10. Subsequently only $92,303 of the total entitlement of $162,441 is noted as revenue received by the General Fund.

Source: City of Bay City, Audited Financial Statements and Other Financial Information, 1970-1979. Constant 1978 dollar figures are based on the price deflator for state and local government purchases given in the Economic Report of the President, 1979, Table B-3.

TABLE I-21

PRINCIPAL TAX ROLL LISTINGS AND VALUATIONS

City of Bay City

Principal Taxpayers

	Name	Type of Property	1976 Assessed Valuation
1.	First National Bank of Bay City	Bank	$1,884,370
2.	Amoco	Oil Properties	1,523,670
3.	Bay City Bank & Trust Co.	Bank	1,000,550
4.	Central Power & Light Co.	Electric Utility	869,410
5.	Southwestern Bell Telephone Co.	Telephone Utility	823,510
6.	Independent Rice Drier Co.	Rice Drier, Mills & Warehouse	378,650
7.	Melvin Epstine, et al	Dry Goods Store	347,310
8.	Bay City Rice Drying Co.	Rice Drier	225,820
9.	H.E.Butt	Retail Grocer	212,010
10.	Rugeley Motor Co.	Auto Dealer	169,622
	TOTAL (28.00% of Total Assessed Valuation)		$7,434,922
	Total Assessed Valuation		$26,553,610

Source: Municipal Advisory Council of Texas, 1976

TABLE I-22

AD VALOREM PROPERTY DATA

Bay City

TAX YEAR	ASSESSED VALUATION	TAX RATE	TAX RATIO
1973	19,914,640	$1.30/$100	25%
1974	24,158,830	1.30/$100	30%
1975	24,665,800	1.30/$100	30%
1976	26,553,610	1.30/$100	30%
1977	28,724,570	1.30/$100	30%

Source: Municipal Advisory Council of Texas, 1976, 1977

$100 for several years, although the assessment ratio was adjusted upward in 1974 to 30 percent. Table I-23 compares the city tax rate and assessment ratio with those of other jurisdictions within Bay City.

The city and school district undertook a joint revaluation effort a few years ago. The school district adjusted its tax rolls; the city has not. As long as the strong recent growth in sales tax receipts continues, and as long as the utilities and garbage services have user fees which are high enough to prevent fiscal deficits, there is no special incentive to reform the property tax structures.

The third principal source of revenue for the city is federal revenue sharing funds. The city began receiving funds in FY 1973-74; the amount has remained about the same in current dollars. These funds have been used by the city for such purposes as airport construction, water and sewer system extension, and law enforcement. The city has also received funds under individual federal programs. Construction of the new swimming pool was financed with this money; also, as previously noted, the city will be receiving EPA sewer funds and HUD urban renewal funds in the near future.

Expenditures from The General Fund for FY 1978-1979 are shown in Table I-24. About 75 percent of expenditures are for the Police Department, Street and Bridge Department, Garbage Department, and General Government. Actual capital outlays are greater than indicated in Table I-24 as some capital outlays are listed in the General Government, Police Department, Airport, Garbage Department, and Street and Bridge Department accounts.

Table I-23

AD VALOREM TAX RATES OF LOCAL GOVERNMENTAL JURISDICTIONS

Jurisdiction	Rate Per $100 Evaluation	Assessment Ratio to Current Evaluation	Effective Tax Rate Current Evaluation
City	1.30	30%	.390
County	1.25	24%	.30
State	.22	24%	.053
School	1.72	60%	1.03
Special Districts:			
Hospital (County Wide)	.42	24%	.1008
Port of Bay City	.10	24%	.024
Drainage Dist. #1	.30	24%	.072
TOTAL EFFECTIVE RATE PER $100 CURRENT VALUE			1.97

Source: Bay City Chamber of Commerce

Bay City Independent School District. Table I-24 shows the school district's revenues and expenditures from 1970 to 1978. Although these figures show greater expenditures than revenues for many of the years, the district has never had an actual deficit. If expenditures exceed revenues in a given year, the difference is made up from the funds' previous year's balance.

The Bay City Independent School District receives its operating revenue primarily from ad valorem property taxes and federal and state education funds. In 1977, the school district collected about $3,493,700 in ad valorem tax revenues. Table I-25 shows the assessed valuation, tax rate, and property tax revenues for the school district between the years 1973 and 1977.

Celanese Chemical Company is the largest taxpayer in the school district and provides approximatley 20 percent of the ad valorem tax revenue. As shown in Table I-26, the ten principal taxpayers in the school district constitute about 35 percent of the tax base. Oil and gas properties (four of the ten principal tax listings) account for about 12 percent of the total assessed valuation.

As previously noted, a recent revaluation was conducted by the school district. Assessed valuation increased accordingly by about $36,000,000 (22 percent) between 1976 and 1977. However, the tax rate was lowered during that same year from $1.77 to $1.72, resulting in an 18 percent increase in revenue.

The school district has a net general obligation bond debt of approximately $3,523,500. The debt service requirement for these bonds in 1978

Table I-24

GENERAL FUND EXPENDITURES, CITY OF BAY CITY,

Fiscal Year 1978 - 1979

Purpose	Expenditure	Percent of Total General Fund Expenditures
General Government	$245,901	12.9%
Tax Department	39,713	2.1
Police Department	466,490	24.5
Parking Meter Department	22,789	1.2
Fire Department	74,266	3.9
City Airport	54.070	2.8
Garbage Department	319,044	16.7
Street & Bridge Department	402,834	21.1
Various Departments	116,609	6.1
Capital Outlay	166,191	8.7
Total:	$1,907,907	100.0%

Source: Annual Financial Report, City of Bay City, March 31, 1979.

Table I-25

BAY CITY INDEPENDENT SCHOOL DISTRICT

REVENUES AND EXPENDITURES, 1970-1978

School Year Ending	Current Revenues	Percent Federal	Percent State	Expenditures	Revenues less Expenditures
1970	$3,496,900	12.3	29.8	$3,864,058	- $367,158
1971	3,779,141	6.5	36.2	3,933,519	- 154,378
1972	4,032,870	5.4	38.2	4,732,817	- 699,947
1973	4,265,356	5.2	38.9	4,418,121	- 152,765
1974	4,445,996	3.8	41.7	4,479,324	- 33,328
1975	5,276,654	3.7	44.6	5,098,965	177,689
1976	5,700,871	4.3	42.8	5,836,174	- 135,303
1977	5,821,684	4.3	41.2	6,054,000	- 232,316
1978	6,935,301	4.0	41.6	6,530,456	404,845

Source: Texas Education Agency.

Table I-26

BAY CITY ISD TAX REVENUES

TAX YEAR	ASSESSED VALUATION	TAX RATE	ESTIMATED REVENUE
1973	$128,561,880	$1.75	$2,249,833
1974	154,168,010	1.65	2,543,772
1975	158,070,870	1.78	2,813,661
1976	167,052,400	1.77	2,956,827
1977	203,120,160	1.72	3,493,667

Source: Municipal Advisory Council of Texas, 1978

Table I-27

1977 BAY CITY ISD PRINCIPAL TAX ROLL LISTINGS AND VALUATIONS

Principal Taxpayers

	Name	Type of Property	1972 Assessed Valuation
1.	Celanese Chemical Co.	Chemical Plant	$41,658,890
2.	Amoco	Oil and Natural Gas Properties	10,015,890
3.	Marathon and/or Sun Oil Company	Gas Properties	6,211,790
4.	Skelly Oil Company	Oil and Natural Gas Properties	4,571,560
5.	LoVaca Gathering Company	Oil and Natural Gas Properties	3,550,060
6.	Central Power & Light Co.	Electric Utility	1,263,280
7.	Southwestern Bell Telephone Company	Telephone Utility	990,750
8.	Big Three Industrial Gas & Equipment Company	Gas Plant	887,250
9.	Dow Chemical Company	Plant Site	464,960
10.	E.L. McDonald	Real Estate & Oil and Natural Gas Properties	456,860
	Total (34.50% of Total 1977 Assessed Valuation)		$70,071,290

Source: Texas Municipal Advisory Council, 1978

was about $450,830. Thus, the fiscal year 1978 debt service requirement constitutes about 13 percent of the school district's ad valorem property tax revenue.

Section II

Energy Facility Inventory

Introduction

Section 308(c) of the Coastal Zone Management Act (CZMA) of 1972, as amended[1], provides for planning grants to study economic or social consequences occurring or likely to occur as a result of new or expanded energy activities or facilities. Regulations of the National Oceanic and Atmospheric Administration define the type of energy activities and facilities covered by these Coastal Energy Impact Program (CEIP) funds. These are listed in Table II-1.

One particular anomaly is that the CEIP definition omits the petrochemical industry. That is, it excludes chemical industries which use refined derivatives of petroleum merely as feedstocks to produce non-energy-related products. An example in Matagorda County is the Celanese Chemical plant, which employs over 400 people.

The purpose of this section is to make a preliminary inventory of new or expanded energy activities and facilities affecting Bay City, and to estimate composite employment and population effects on the city. New or expanded activities or facilities are those occurring since July of 1976, when the CEIP provisions of the CZMA took effect. A summary of the major activities is given below.

Table II-1

ENERGY FACILITIES/ACTIVITIES DEFINED BY CEIP REGULATIONS

1. Electric generating plants (fossil fuel, biomass, nuclear, geothermal, direct solar, ocean thermal, tidal power, wave power, wind power)
2. Uranium enrichment or nuclear fuel processing facilities
3. Facilities to separate oil, water, and gas
4. Oil and gas processing facilities
5. Petroleum refineries and associated facilities
6. Gasification plants
7. Facilities for geopressurized gas
8. Facilities/activities associated with transportation, conversion, treatment, transfer, or storage of liquefied natural gas
9. Drilling rigs, platforms, subsea completions, subsea production systems
10. Construction yards for platforms and exploration rigs
11. Pipe coating yards
12. Bases supporting platforms and pipeline installation
13. Crew and supply bases
14. Marine pipeline systems (pressure source, gathering lines, pipeline, intermediate pressure boosting facilities, landfall sites)
15. Marine terminals serving OCS energy activities
16. Transportation facilities (heliports, tug boats, crew boats, supply boats, production utility boats, ocean and seismic vessels, barges, "spread vessels," workover rigs, diving tenders, drilling tenders, etc.) serving OCS activities
17. Facilities/activities (including deepwater ports) related to transportation, transfer, or storage of oil, gas, or coal

Note: Allowable uses of Section 308(c) grants include planning for impacts of new or expanded energy facilities and activities significantly affecting the coastal zone. "New or expanded" facilities and activities are those occurring after July 26, 1976. This is the date that the CEIP provisions of the Coastal Zone Management Act became law.

Source: 15 CFR 931, 43 Fed. Reg. 7546 (February 23, 1978).

Energy Activities and Facilities

Current direct employment and projected employment in 1985 in energy facilities in the Bay City area are presented in Table II-2. Employment in 1979 is approximately 8,900; of this, 6,900 (78 percent), is associated with construction of two major facilities. One of these facilities (Phillips Refinery) will be completed in 1980, and the construction employment associated with the other (South Texas Nuclear Project) will reach its peak in 1983. Employment associated with other energy facilities is expected to remain fairly stable such that total energy activity direct employment in 1985 is projected to range between 3,675-3,925.

As noted above, chemical facilities are not energy facilities under the CEIP definition. Potential new construction in this industry may be sufficient to absorb some of the construction work force released from nuclear plant construction.

South Texas Nuclear Project. The South Texas Nuclear Project (STNP) is located on FM Road 521 just west of the Colorado River, and 15 miles southwest of Bay City. (See Figure II-1). The site contains 12,300 acres, of which about 600 acres are allotted to the plant itself and another 7,000 acres to a cooling lake. Units 1 and 2, upon completion, will have a total capacity of 2,500 MW (1,250 MW each); however, the site is large enough to accommodate a near-doubling of size up to about 4,600 MW.

Brown and Root is the major contractor for construction of the plant, with at least eight sub-contractors. Preliminary work began in September of 1975, under a limited work authorization from the Nuclear Regulatory

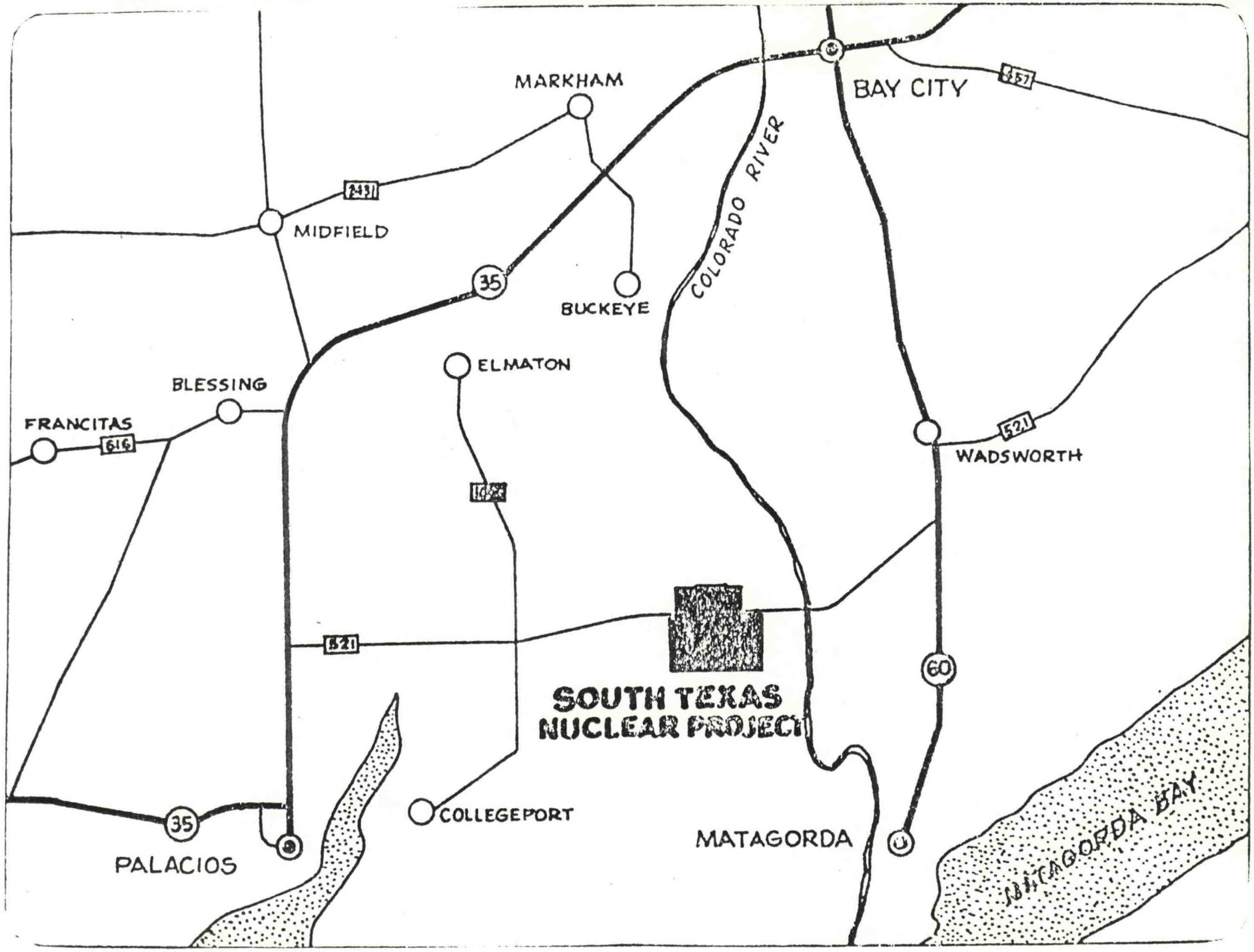
Table II-2

SUMMARY OF PROJECTED DIRECT EMPLOYMENT

MAJOR ENERGY AND CHEMICAL FACILITIES IN BAY CITY AREA

	Activity	Plans	Employment 1979	Employment 1985
I.	Energy			
	Phillips Refinery			
	Construction	Completion - 1980	2,400	-
	Operation	Expansion - 1980	1,000	1,250
	South Texas Nuclear Project			
	Construction	Completion - 1984-1986	4,500	850
	Operation	To begin in 1984	-	425
	Onshore Oil & Gas			
	Existing Gas Processing	No or minimal expansion	350	350
	Clemville LPG	Unknown	-	250 (?)
	Extraction, Storage, Services	No or minimal expansion	650	650
	Offshore Gas			
	Gas Field Services	Jetty project complete by 1984	-	175
	Marine Services	Jetty project complete by 1984	-	150
	Total Energy-Related		8,900	3,675-3,925
II.	Chemical			
	Union Carbide (construction)	Unknown - preliminary work begun	-	4,000 (?)
	Dow (construction)	Unknown	-	2,000 (?)
	Celanese (operation)	Minimal expansion	650	650
	Total Chemical		650	650 - 6,650

Figure II-1 SOUTH TEXAS NUCLEAR PROJECT SITE



Commission (NRC). An NRC construction permit was received in December of 1975 and full-scale construction began in early 1976.

The project has experienced both construction delays and cost overruns. Originally, Unit 1 was scheduled for completion in October of 1980, followed by Unit 2 in March of 1982. Presently, completion of Unit 1 is targeted for April of 1984, and Unit 2 for April 1986.[2] The eventual construction cost for the two units is anticipated to be about $2.7 billion ($1,080/kilowatt of capacity), which represents more than a doubling of original estimates. However, the $800/kilowatt capital cost is still below the national average for nuclear power plants.

The plant is jointly owned. The four participants and their respective shares are shown below:

Houston Lighting and Power	30.8%
City of San Antonio	28.0
Central Power and Light	25.2
City of Austin	16.0

The main recipients of property tax revenue from STNP are Matagorda County and the Palacious Independent School District. Until project completion, much of the site will be carried on the tax rolls of these jurisdictions as agricultural land. Eventual property tax revenue depends upon the final cost of the project.

The city of Bay City does not participate in these direct tax benefits, however. Rather, any additional municipal revenue is derived indirectly from associated increases in sales and property taxes, resulting

in turn from new population influx and multiplier effects within the local economy.

The Bay City school district does not receive any direct tax benefits from the project, either. However, since the hospital district encompases the entire county, it shares in STNP property tax revenue. Upon completion of the project, hospital district collections should amount to about $1.2 million annually.[3]

Estimates of STNP construction workforce are given in Table II-3. Distribution of these workers in terms of residence can be estimated based on a July 1977 survey undertaken by Brown and Root. That survey found that 71 percent of the workers lived in Matagorda County. Of these, 54 percent lived in Bay City; 27 percent, in Palacios.[4] Thus, it can be estimated that of the peak construction force, about 1,725 (4,500 X .71 X .54) reside in Bay City.

This figure does not distinguish between new-resident workers and local-hire workers. Only the former would be a source of energy-induced population increase. Yet Houston Lighting and Power's environmental reports on the project do not provide percentage allocations between these two categories. Consequently, a rough estimate must be made, based on comparable project estimates or other data.

One nearby project which appears comparable, at least superficially, is the now-abandoned El Paso Eastern proposal for a liquefied natural gas (LNG) terminal on the opposite side of Matagorda Bay. The final environmental impact statement for that project postulated a peak construction force of 1,252 workers, most of whom were expected to be drawn from a

local pool of construction workers. The project was reviewed in a pilot study of socioeconomic assessment techniques developed as part of the Texas Coastal Management Program; in that study, it was estimated that 50 percent of the workers would consist of local hires.[5]

This percentage figure is not transferable to STNP, however. First, the LNG terminal construction force was considerably smaller. Second, the nearest city was Victoria; its relative size would have ensured a larger local labor pool than Bay City. Third, and most significantly, the LNG estimates were directly tied to the expected schedule of STNP; the peak construction force for the terminal, expected in 1981, coincided favorably with the original expected completion date for STNP Unit 1. Thus, the LNG project was to have absorbed new-resident construction workers generated by STNP; the nuclear project, in contrast, had no large project immediately preceding it.

Other data indicate that the percentage of local-hire workers at STNP (based on the 1976 beginning date) has to have been very low; and the percentage of new-resident workers very high. For example, Matagorda County in 1975 only had 10,840 total employees and only 495 of these were in construction. Of these, only about 4,000 of the total and 200 of these would have been allotted as residents of the city. Given an unemployment rate of only 3.5-3.8 percent (Table I-6), the total surplus labor pool in Bay City in early 1976 could not have been more than about 150. The percentage of new hires would thus appear to be at least 95 percent, and the number of new-resident STNP workers presently living in Bay City about 1,650.

Table II-3

CONSTRUCTION EMPLOYMENT FOR STNP

Period - January of:	Personnel
1976	1,000
1977	2,120
1978	3,458
1979	4,500
1980	4,500
1981	4,500
1982	4,500
1983	4,500
1984	3,500
1985	1,700
1986	27

Sources: San Antonio Light, June 7, 1973 (1976 estimate). Houston Lighting and Power, Environmental Report, Operating License State: South Texas Project, Units 1 and 2 (Houston: Houston Lighting and Power), July 1978, Table 8.2-2 (1977-1979 actual figures). Figures of employment in the Environmental Report were adjusted to reflect the revised construction schedule (1980-1986 estimates).

Since the major employment impacts of STNP have already occurred, the main future impact on Bay City resulting from the project would be the completion of its construction. As the Houston Post commented at one point, the construction force "will shrink like a deflated balloon when the job is finished in the early 1980s."[6] The completion date for Unit 2 has since been postponed by construction delays; nevertheless, there will inevitably be a significant reverse employment impact. The determining factor with respect to continued economic growth would then seem to be the issue of whether alternative employment opportunities become available by that time.

Construction of STNP beyond 1986 by the addition of one or two reactors does not appear to be one of those alternatives. Houston Lighting and Power has informed the Nuclear Regulatory Commission that it has no plans for new units at this time.[7] Of course, these plans could change by 1986; if nuclear expansion continues, an established site with reactors already in operation might be given preference over a completely new site.

Phillips Refinery. This facility, located east of Bay City near the town of Old Ocean, is the largest of Phillips' five U.S. refineries. It is now undergoing expansion to accommodate a shift to processing of heavy crudes. In 1976, the refinery had a capacity of about 100 thousand barrels of crude oil per day (MBD). After expansion, capacity will be doubled to approximately 200 MBD (range of 190-230 MBD). With its completion, the facility will be able to handle approximately 150 MBD of high-sulfur oil.

The refinery is associated with the Phillips petrochemical complex. Between the two, operating employment was about 750-800 in July of 1976 and has since expanded to about 1,000. By late 1979 to mid-1980, this figure should increase by another 25 percent, to approximately 1,250. No further increases are expected through the early 1980s.

Construction employment had had a significant impact upon the area. Construction began in April of 1978 and should be completed by mid-1980. Brown and Root is the largest constrctor, employing about 2,200 workers at the site. Other construction workers raise this total to about 2,400.

Although the plant is located in Brazoria County 15-20 miles away, Bay City has shared significantly in the associated residential impacts. Brown and Root has done one survey, in connection with a traffic study, on the distribution of construction workers among surrounding communities. That survey found that 25 percent of the employees lived in Bay City. This would amount to about 600 workers.

The percentage of new-resident employees among these 600 would probably be about the same as with STNP. Old Ocean and the surrounding towns of Sweeny and West Columbia are all small; the construction force has thus spilled over into various parts of Matagorda and Brazoria Counties, particularly Bay City and the Brazosport area. Yet the labor force in these areas in mid-1978 had already been tapped by nuclear plant construction and chemical plant construction, respectively. Thus, it can be assumed that at least 575 of the refinery construction workers allocated to Bay City were new residents.

Other Petroleum-Related Activities. There are no petroleum refineries in Matagorda County itself. However, the county is a producer of both oil and gas, and it has seven gas processing plants (Table II-4) and 18 petroleum bulk stations and terminals. Also, it has numerous oil field service companies.

According to U.S. Census Bureau employment data, these petroleum activities, exclusive of gas processing, employed about 600-675 people in the county in 1976. The Bay City Chamber of Commerce has more precise figures for the three Bay City processing plants listed in Table II-4, and for three of the major oil well service companies in the county. Census Bureau and Chamber of Commerce data are summarized in Table II-5.

Combining the two sets of data, it appears that about 50 persons are engaged in crude and natural gas extraction, 500 in oil and gas field services, 100 in management of petroleum bulk stations and terminals, and perhaps 350-400 in gas processing.[8] Thus, the total for all petroleum-related activities is about 1,000. This estimate is for the county as a whole.

Production of oil and gas has been declining in Matagorda County, as shown in Table II-6. This has occurred, in the case of gas, despite new production from adjacent portions of the federal Outer Continental Shelf (OCS) that has taken place since 1972. Gas production from state waters has fluctuated since 1970, but the general pattern has been one of decreased production. Inland production has dropped to less than one-third the 1970 level. Oil production in inland areas of the county has decreased by one-half over the same period. Only negligible amounts are being produced in state and federal waters.[9]

Table II-4

GAS PROCESSING PLANTS, MATAGORDA COUNTY

Company and Location	- MMcfd of Gas - Capacity	Throughput	Production
Bay City Vicinity:			
Amoco Production Co., East Bay City Plant and Field	150.0	18.0	2,871 gpd condensate
Lo-Vaca Gathering Co., Bay City Plant	500.0	197.2	38,465 gpd LP-gas mix 82,843 gpd ethane-propane mix
Marathon Oil Co., Markham Plant, North Markham-Bay City Fields	165.0	112.8	96,399 gpd LP-gas mix
Rest of County:			
Exxon Corp., Sugar Valley Plant and Field	12.0	11.4	672 gpd condensate
Monsanto Co., El Maton Plant and Field	15.0	1.0	
Tenneco Oil Co., Leebo Plant, Palacios Field	95.0	23.0	30,000 gpd raw NGL mix
Texaco, Inc. Blessing Plant	65.0	52.0	20,000 gpd propane 15,000 gpd butane 47,300 gpd debut, nat. gaso.

Source: Petroleum Publishing Company, International Petroleum Encyclopedia, Tulsa, 1976.

Table II-5

EMPLOYMENT, PETROLEUM AND GAS ACTIVITIES, MATAGORDA COUNTY

U.S. Census Bureau	
Crude petroleum and natural gas extraction (SIC Code 132-)	20-99
Oil and gas field services (SIC Code 138-)	488
Petroleum bulk stations and terminals (SIC Code 5171)	91
	599-678
Bay City Chamber of Commerce	
Processing plants:*	
Amoco	184
Marathon	90
Lo Vaca Gathering	23
Oil field service:	
Townsend Lease Service	135
Richards Drilling	122
George R. Brown	94
	648

* Employment is not proportionate to throughput in Table II-3 because of differences in the end products.

Sources: U.S. Bureau of the Census, County Business Patterns, Texas, 1976.

Bay City Chamber of Commerce, 1978.

Table II-6

OIL AND GAS PRODUCTION, MATAGORDA COUNTY

	STATE WATERS						FEDERAL WATERS		INLAND		TOTAL
	------Gulf------		-----Bays------		----Combined----						
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount
Gas Well Gas (mcf)											
1970	59,327,159	30.1	1,802,612	0.9	61,129,711	31.1	----	--	135,661,098	68.9	196,790,869
1971	50,103,450	30.2	2,885,207	1.7	52,988,657	31.9	----	--	112,951,021	68.1	165,939,678
1972	44,102,517	28.0	1,922,287	1.2	46,024,804	29.2	16,630,019	10.6	94,702,552	60.2	157,357,375
1973	34,389,227	22.6	4,335,031	2.8	38,724,258	25.4	33,525,724	22.0	79,969,391	52.5	152,219,373
1974	41,590,998	28.8	5,149,345	3.6	46,740,343	32.3	31,856,264	22.0	66,049,972	45.7	144,646,579
1975	39,049,225	31.1	4,455,641	3.5	43,504,866	34.6	32,414,226	25.8	75,919,092	60.5	125,564,815
1976	36,850,016	30.1	4,516,407	3.7	41,366,423	33.7	30,354,245	24.8	50,886,002	41.5	122,606,670
1977	40,073,469	34.8	5,606,014	4.9	45,679,483	39.7	27,177,310	23.6	42,148,721	36.6	115,005,514
Crude Oil (bbls)											
1970	----	--	19,573	0.3	19,573	0.3	----	--	6,766,163	99.7	6,785,736
1971	----	--	8,763	0.1	8,763	0.1	----	--	6,276,319	99.9	6,285,082
1972	----	--	4,776	0.1	4,776	0.1	----	--	5,517,919	99.9	5,522,695
1973	----	--	2,089	*	2,089	*	----	--	5,096,260	100.0	5,098,349
1974	----	--	----	--	----	--	----	--	4,424,153	100.0	4,424,153
1975	----	--	----	--	----	--	----	--	4,212,416	100.0	4,212,416
1976	----	--	----	--	----	--	----	--	3,977,660	100.0	3,977,660
1977	----	--	----	--	----	--	----	--	3,458,667	100.0	3,458,667
Casinghead Gas (mcf)											
1970	----	--	3,262	*	3,262	*	----	--	25,841,474	100.0	25,844,736
1971	----	--	12	*	12	*	----	--	25,508,156	100.0	25,508,168
1972	----	--	5,210	*	5,210	*	----	--	24,269,927	100.0	24,275,137
1973	----	--	6,330	*	6,330	*	----	--	21,246,481	100.0	21,252,811
1974	----	--	----	--	----	--	----	--	17,998,530	100.0	17,998,530
1975	----	--	----	--	----	--	----	--	16,023,606	100.0	16,023,606
1976	----	--	----	--	----	--	----	--	13,304,799	100.0	13,304,799
1977	----	--	----	--	----	--	----	--	11,274,263	100.0	11,274,263
HC Liquids (bbls)											
1970	----	--	205	*	----	--	----	--	669,501	100.0	669,501
1971	----	--	252	*	----	--	----	--	474,825	100.0	475,077
1972	----	--	289	*	----	--	----	--	526,883	100.0	527,172
1973	----	--	40	*	----	--	----	--	541,675	100.0	541,715
1974	9,119	2.6	104	*	9,223	2.6	----	--	346,324	97.4	355,547
1975	9,208	3.3	90	*	9,298	3.4	----	--	267,728	96.6	277,026
1976	1,413	0.6	216	*	1,629	0.6	----	--	245,768	99.4	247,397
1977	156,661	43.2	1,400	0.4	158,061	43.6	----	--	204,384	56.4	362,445

Source: Railroad Commission of Texas.

Decreased production does not necessarily mean a corresponding decrease in petroleum industry employment. On the contrary, the energy crisis and associated price increases for crude oil and gas have stimulated a surge in exploratory drilling, in search of more marginal energy deposits. This increased activity supports the oil field service industries, and should logically be reflected in increased employment among them.

Table II-7 shows the number of wells and footage drilled in Matagorda County from 1970 to 1978. Drilling activity fell off sharply in 1971, but has since rebounded. The total number of wells in 1978 was 86 percent of the 1970 level; the amount of footage, 90 percent of that level.

The pattern for employment in the oil and gas extraction sector has been similar, although the low point was reached in 1973 rather than 1971. (See Table II-8). Employment has rebounded since 1973; by 1977, it was equal to 88 percent of the 1970 level. In the short term, reworking of older wells should prevent another decline similar to that experienced in 1971-1973. However, conversations with a local drilling company indicate that oil and gas prospects are unclear, due to uncertainties about national energy policy.

Another component of intensified oil and gas exploration is offshore drilling. Responding to increasing imports of foreign fuel, the U.S. Department of Interior has opened up the federal Outer Continental Shelf (OCS) by significantly expanding its leasing program. Compared to earlier leases, which were concentrated off the Louisiana coast, the Texas federal OCS is now experiencing a larger share of activity. Four sales in the

Table II-7

WELL COMPLETIONS, MATAGORDA COUNTY

	New Field Wildcats					Other Exploratory Wells					All Oil and Gas Wells					Ratio to 1970 Drilling	
	Oil	Gas	Dry	Total	Footage	Oil	Gas	Dry	Total	Footage	Oil	Gas	Dry	Total	Footage	Wells	Footage
1970	3	4	21	28	230,451	4	13	9	26	199,650	13	21	37	71	574,127	100%	100%
1971	0	0	10	10	62,261	6	10	8	24	120,753	8	16	22	46	268,842	65	47
1972	0	5	13	18	137,103	8	14	10	32	186,101	10	21	26	57	393,326	80	69
1973	0	2	10	12	93,711	8	13	10	31	204,018	12	20	25	57	426,669	80	74
1974	1	2	15	18	164,504	5	9	17	31	245,119	9	13	36	58	488,946	82	85
1975	0	4	19	23	176,442	2	6	10	18	139,128	5	10	35	50	394,906	70	69
1976	2	3	17	22	177,032	5	9	9	23	162,267	10	16	37	63	497,061	89	87
1977	0	1	16	17	119,193	3	11	8	22	146,524	7	16	34	57	402,218	80	70
1978	0	2	18	20	177,410	0	3	8	11	110,156	2	21	38	61	518,018	86	90

Source: Petroleum Information Company, Petroleum Information Yearbook (courtesy of Elf Aquitaine Oil and Gas, Houston).

Table II-8

EMPLOYMENT IN OIL AND GAS EXTRACTION. SECTOR, MATAGORDA COUNTY

Year	Employment	Percent of 1970 Level
1970	1020	100%
1971	827	81
1972	685	67
1973	564	55
1974	711	70
1975	786	77
1976	814	80
1977	901	88

Source: U.S.Bureau of Economic Analysis, computer printouts, 1971-1976 and 1972-1977 (courtesy of Bureau of Business Research, University of Texas at Austin).

Texas Gulf of Mexico have occurred since July of 1976; two more are planned for 1979, plus one each in 1980 and 1981.

Table II-9 shows figures on drilling in the three offshore areas which adjoin Matagorda County. Combined footage for the three areas has risen from 106,000 in 1973 to 513,000 in 1978. The latter figure is almost equal to the footage for onshore wells within the county.

Figure II-2 illustrates offshore activity more graphically. Of 67 total active tracts, 26 have been leased since August 1977. Moreover, only ten exploratory wells had been drilled on those 26 tracts as of October 1978.[10] Given that fact, plus the footage increases shown in Table II-9 and the probability of additional federal lease sales, it seems that there is considerable potential for increased offshore gas well drilling and production.

Up to now, this offshore energy-related activity has probably had little impact on Bay City, since the city is inland. Local officials say that there has been significant employment growth among the oil field service industry, but this growth is in all likelihood due to the resurgence of inland drilling activity since 1971. Bay City's geographic location discourages nearby siting of major facilities such as platform, drilling rig, or pipeline fabrication yards, which have significantly affected other portions of the Texas coast. While Bay City does have an inland port, this faciltiy is connected only with the Gulf Intracoastal Waterway (GIWW). There is not an adequate outlet to the Gulf along Matagorda Peninsula.

Table II-9

WELL COMPLETIONS, OFFSHORE

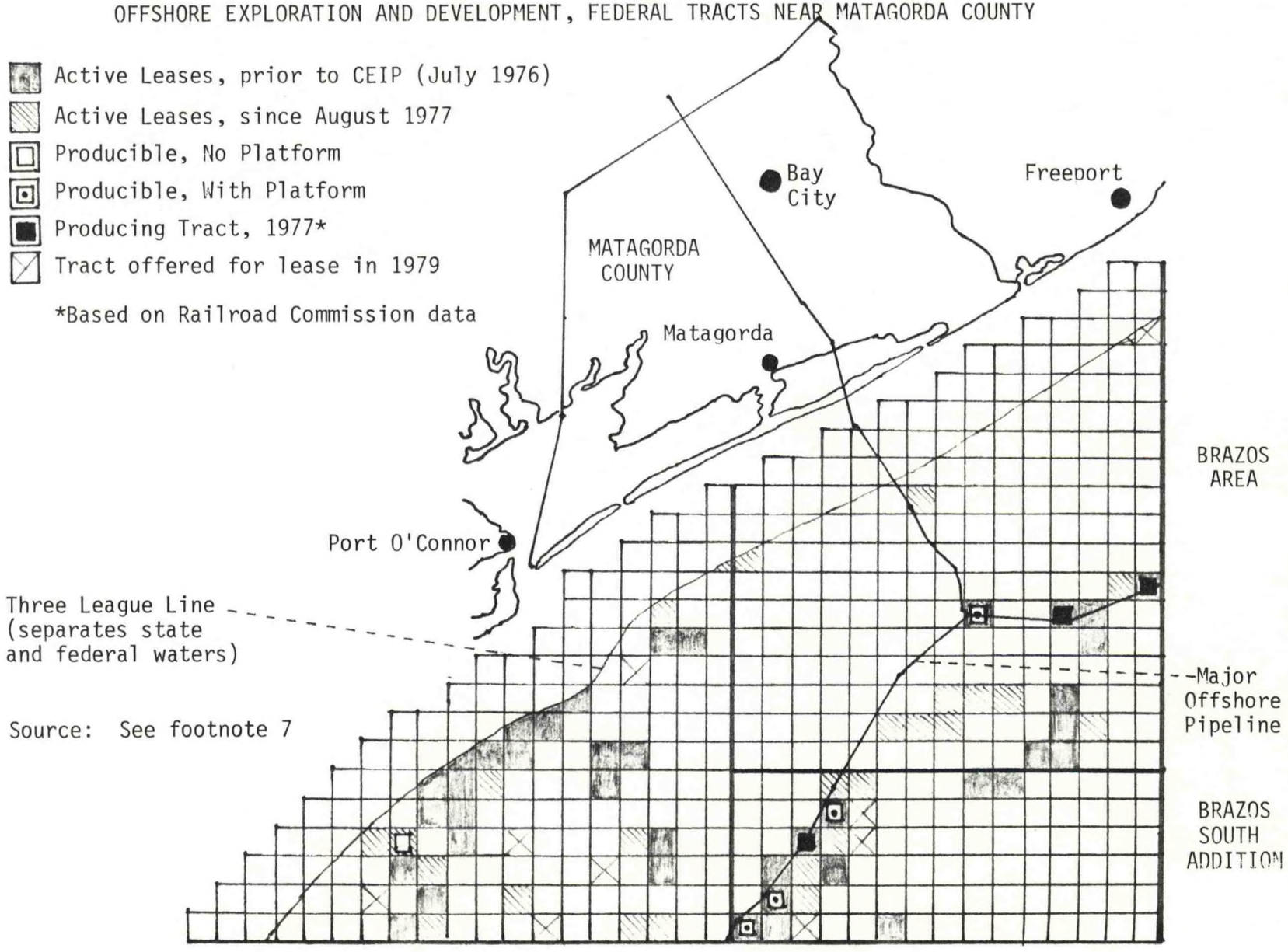
	New Field Wildcats					Other Exploratory Wells					All Oil and Gas Wells				
	Oil	Gas	Dry	Total	Footage	Oil	Gas	Dry	Total	Footage	Oil	Gas	Dry	Total	Footage
Matagorda:															
1970	0	0	1	1	13,306	0	0	0	0	-	0	1	1	2	24,216
1971	0	0	1	1	11,500	0	0	0	0	-	0	0	1	1	11,500
1972	0	0	6	6	36,560	0	0	0	0	-	0	0	6	6	36,560
1973	0	0	6	6	40,861	0	0	0	0	-	0	0	6	6	40,861
1974	0	1	10	11	78,217	0	2	0	2	12,011	0	5	10	15	106,524
1975	0	1	6	7	54,914	0	0	0	0	-	0	1	6	7	54,914
1976	0	2	17	19	168,417	0	1	0	1	4,600	0	5	17	22	192,408
1977	0	1	15	16	128,021	0	3	0	3	25,291	0	4	19	23	186,624
1978	0	3	21	24	206,302	0	4	1	5	53,480	0	9	25	34	295,178
Brazos:															
1970	0	0	15	15	142,809	0	0	0	0	-	0	0	15	15	142,809
1971	0	1	11	12	129,297	0	1	0	1	7,875	0	2	12	14	148,151
1972	0	1	6	7	54,668	0	1	0	1	10,530	0	2	6	8	65,151
1973	0	3	3	6	55,900	0	3	3	6	51,183	0	7	6	13	114,884
1974	0	0	6	6	58,100	0	1	1	2	17,700	0	2	7	9	83,650
1975	0	1	9	10	88,385	0	1	0	1	8,150	0	4	9	13	116,789
1976	0	2	7	9	70,818	0	6	0	6	14,406	0	8	9	17	135,094
1977	0	3	9	12	115,242	0	2	0	2	17,800	0	9	11	20	178,623
1978	0	2	9	11	96,029	0	0	1	1	10,001	0	4	11	15	135,192
Brazos South:															
1970	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-
1971	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-
1972	0	0	7	7	90,282	0	0	0	0	-	0	0	7	7	90,282
1973	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-
1974	0	0	1	1	10,252	0	0	0	0	-	0	0	1	1	10,252
1975	0	0	5	5	55,306	0	0	0	0	-	0	0	5	5	55,306
1976	0	0	1	1	10,340	0	0	0	0	-	0	0	2	2	20,829
1977	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-
1978	0	0	4	4	59,016	0	0	0	0	-	0	0	6	6	82,626

Note: These areas include both state and federal waters. Figures for offshore drilling given in this table are not included in the county figures given in Table II-6. This accounting system differs from that for production given in Table II-5. There, the Railroad Commission allocates to Matagorda County all offshore production in the Brazos and Brazos South areas, including both state and federal waters; this offshore production is included in the county total.

Source: Petroleum Information Company, Petroleum Information Yearbook, courtesy of Elf Aquitaine Oil and Gas, Houston.

Figure II-2

OFFSHORE EXPLORATION AND DEVELOPMENT, FEDERAL TRACTS NEAR MATAGORDA COUNTY



Source: See footnote 7

That situation could be changed by a proposed project of the U.S. Army Corps of Engineers at the mouth of the Colorado River. This project, often known as the jetty project, would involve the development of an entrance channel from the Gulf, 15 feet deep and 200 feet wide, connected to new harbor facilities at the town of Matagorda on the GIWW. Pending final approval, work on the three-year project might get underway by late 1980.

In terms of energy-related impacts, the jetty project could be expected to encourage various kinds of offshore service companies to relocate in the Matagorda area. Such relocation would enable offshore service boats to reduce their running times to portions of the Gulf; availability of such marine services would, in turn, attract other oil field service companies. According to the final environmental statement, several companies now in Freeport, Port O'Connor, and Galveston have indicated their intentions to move to the proposed Matagorda harbor.[11]

Composite future employment expansion within the oil field service industries, resulting from both onshore and offshore drilling and development, are difficult to project. However, it appears that the main increases, if any, will come from the offshore sector. Onshore drilling, while it has increased since 1971, appears from Table II-6 to have stabilized at an annual footage of about 400,000 to 500,000. If it is assumed that oil field service employment is roughly proportional to the amount of drilling, little additional employment is the onshore sector can be expected.

If the jetty project is completed, however, an offshore sector of oil field services would be created within Matagorda County. Participation in offshore activity would no longer be precluded by lack of an outlet to the Gulf, and it is probable that the Matagorda harbor would draw some business away from the two ports on either side of it. Assuming (1) a one-third share of the activity in the three offshore areas listed in Table II-9, (2) an annual footage (conservative estimate) in these areas of 500,000, and (3) a ratio between oil field service employment and footage (based on Tables II-5 and II-7) of one per 1,000 feet, one might expect an employment increase of about 165-170 persons. Various marine and/or air transportation services might add another 100-200 persons.[12] If the project went according to schedule, these increases would occur in late 1983 or early 1984.

Future expansion of gas processing is discouraged by decreasing gas production within the county, and by under-utilization of capacity among several of the existing plants. However, there are rumors that a group based in Corpus Christi may build a liquefied petroleum gas (LPG) plant near Clemville, which would employ about 250 persons. Plans and dates for that project are very nebulous at present, however.

Finally, two energy-related facilities in the Bay City area which deserve mention are the fork-shaped Transcontinental Gas pipeline extending out into the Gulf (Figure II-2), and the proposed Texas Deepwater Port 26 miles off Freeport. The pipeline, which may be extended to the southwest to tap adjacent producible deposits, should help to assure continuing gas supplies in the face of decreased onshore production.

The deepwater port, one of only two planned offshore terminals on the entire Gulf Coast, could enhance prospects for refinery expansion in Brazoria and surrounding counties. Construction of the proposed port would require five years. The project is still pending federal and state approval, and the earliest start date is January 1980.

Non-Energy Facilities. There are other major industries which are expanding or which may locate in the Bay City vicinity. Although these are not energy-related facilities as defined by CEIP (Table II-1), they could provide important substitute employment as construction of the Phillips Refinery and STNP units is phased out. Since the phasing out of energy facility construction is an integral part of the energy-related employment cycle, a brief examination of these replacement activities is not inconsistent with CEIP planning.

The major existing non-energy facility is the Celanese chemical plant, located near the port of Bay City. Celanese, which employed about 450 people in 1976, is already in the midst of a small expansion. The Bay City Chamber of Commerce reports that the plant now employs about 650 people.

Union Carbide may also locate a major chemical facility near Bay City. It has exercised an option on a piece of land across the river from Celanese. Presently, ground borings are being taken at the site, and a few environmental scientists are conducting studies. Originally, it was anticipated that Union Carbide might coordinate its expansion with the winding down of construction at the South Texas project. However, the company has not announced any such specific plans recently, except

to say that if it does expand along the Texas Gulf Coast, the expansion will occur at the Bay City site. It is estimated that the plant would involve 4,000 construction workers and 1,200-1,800 permanent jobs.

Dow Chemical has rights to 2,200 acres just south of Union Carbide and may also add a facility. However, its plans appear even more tentative than those of Union Carbide. One factor crucial to both plants is the availability of crude oil, which remains uncertain in the face of foreign developments. Dow project would probably require about 2,000 construction workers.

A non-energy sector often mentioned by local officials as experiencing rapid growth is agriculture. This, indeed, has been the case -- but mainly in terms of output and dollar value rather than in terms of increased employment. As shown in Table II-10, planted acreage has more than doubled since 1970, while the beginning-year inventory of cattle has increased by 28 percent. Value of combined farm sales has increased accordingly.

Simultaneously, however, farm employment within the county has remained about the same. There have been increases in the agricultural service/fishing and food-product manufacturing subsectors, but these subsectors employ many fewer people than the farm subsector. Overall, agriculture-related employment has increased only slightly in the face of dramatic production increases.

Table II-10

SELECTED AGRICULTURAL INDICATORS, MATAGORDA COUNTY

Indicator	1970	1971	1972	1973	1974	1975	1976	1977
Acreage planted M crops below, plus cotton	88,850	80,050	90,300	97,850	101,000	153,200	137,000	182,600
Production of:								
Rice (1000 cwt.)	2,033	2,581	2,309	2,219	2,561	2,583	2,527	2,442
Sorghum (1000 bu.)	1,671	1,090	1,452	1,965	1,636	3,539	3,596	4,984
Soybeans (1000 bu.)	11	NA	68	131	341	620	748	2,000
Inventory of cattle	71,000	77,000	69,000	72,000	76,000	92,000	87,000	91,000
Value of farm sales:								
Crops	$13,671	$16,875	$18,116	$33,208	$32,884	$34,471	$35,142	$43,182
Livestock	6,977	8,614	8,685	11,735	8,839	7,507	6,647	7,994
Total	20,648	25,489	26,801	44,943	41,723	41,979	41,789	51,176
Employment*								
Farm	1,686	1,722	1,777	1,721	1,698	1,662	1,665	1,655
Agriculturel services/ fisheries	NA	102	100	135	156	201	203	NA
Manufacturing of food products	128	NA	NA	NA	NA	220	230	NA

*Figures for the first two groups represent total employment defined by the U.S. Bureau of Economic Analysis. Figures for the last group represent "covered" employment, as defined by the U.S. Bureau of the Census.

Sources: Texas Department of Agriculture, Texas County Statistics, 1970-1977.
U.S. Bureau of Economic Analysis, Computer printouts, 1971-1976 and 1972-1977 (courtesy of Bureau of Business Research, University of Texas at Austin).
U.S. Bureau of the Census, County Business Patterns, 1970-1976.

Composite Population Effects.

Identification of existing and prospective energy-related activities is intended for the purpose of estimating composite employment and population effects upon Bay City. Existing energy-related employment and population are estimated; both total and energy-related population are then projected to 1985. These estimates will be used together with the information contained in Section I (infrastructural inventory), in Sections III and IV to analyze service-capacity impacts and fiscal impacts associated with the population changes.

Current Energy-Related Population Estimates. The year-by-year Bay City population estimates for 1970-1979 are given in Table II-11. The first column is the mid-calendar year estimate; the second column is a mid-fiscal year estimate derived by interpolation. Estimates for 1970 through 1975 are based upon the official (corrected) 1970 census and U.S. Census Bureau estimates for 1973 and 1975, or interpolations of those figures. The 1976-1978 figures are obtained by methods described in detail in Appendex A, based on energy-related employment data. The 1979 estimate was derived by applying linear regression analysis to the revised 1979 county population estimate of the Rice Center for Community Studies.

The regression method was also used to derive population estimates for 1980-2000, as discussed below. This procedure is based on the historical relationship between the population of Matagorda County and Bay City, using censuses from 1910 to 1970 and U.S. Census Bureau estimates for 1973, 1975, and 1976. A "best-fit" equation is established, such that the city population

Table II-11

ESTIMATED CITY POPULATION, 1970-1979

	Mid-Calendar Year (as of July 1 of each year)	Mid-Fiscal Year (as of October 1 of each year
1970	13,445	13,435
1971	13,407	13,398
1972	13,370	13,360
1973	13,332	13,361
1974	13,449	13,478
1975	13,567	13,597
1976*	15,325	15,660
1977	16,711	17,189
1978	18,707	19,117
1979	20,403	**

* The estimated 1976 value is higher than the 1976 U.S. Census Bureau estimate of 14,291, given in Table I-2.

** Depending on population growth scenario, this value is estimated to range from 20,438 (low growth case) to 20,645 (high growth case). See Table II-14.

(dependent variable) can be estimated, if county estimates or projections (independent variable) are given. The linear regression technique allows for incorporation of the trend, demonstrated previously in Table I-2, whereby the city/county ratio has increased. The resulting 1979 city population estimate used in that same table, is 20,403. Current energy facility employment in the Bay City area approximates 8,900 (Table II-2). Of these, about 3,400 are estimated to reside in Bay City as shown in Table II-12. In addition, 4,300 workers whose jobs in the Bay City/Matagorda County area are indirectly tied to energy activities are estimated to reside in Bay City. These are workers who are employed due to the economic stimulus of project and worker expenditures for goods and services in the area. The total population in Bay City which is related either directly or indirectly to energy activities is 13,000 or 64 percent of the 1979 estimated Bay City population.

The city has experienced substantial population growth since 1975 (Table II-11). Most of the increase (6,738 out of 6,836) can be attributed either directly or indirectly to energy-related activities, more specifically, to construction of the Phillips Refinery and South Texas Nuclear Project.

The reader is referred to Appendix B for a detailed discussion of the derivation of the estimates in Table II-12. In developing the analysis, care was taken to establish a reasonable degree of internal consistency between information compiled on energy projects and information compiled on population. In so doing, the analysis achieves the objective of identifying quantitatively an estimate of the energy-induced popualtion increase (6,738)

Table II-12

ENERGY-RELATED EMPLOYEES AND ASSOCIATED

POPULATION RESIDING IN BAY CITY, 1979

	Major Project* Construction	Other Energy** Activities	Total
I. No of Energy-Related Employees			
Direct	2,325	809	3,134
Indirect	935	1,677	2,612
Total	3,260	2,486	5,746
II. Associated Population	7,042	5,966	13,008
III. Change in No. of Energy-Related Employees and Population, 1975 - 1979			
No. Employees			3,120
Population			6,738

* Phillips Refinery expansion and South Texas Nuclear Project.

** Operation of Phillips Refinery, onshore oil and gas activities, and offshore gas activities.

Bay City has experienced since CEIP took effect. This estimate can be used to justify any further CEIP crants or loans sought for purposes of ameliorating specific service-capacity or fiscal impacts.

Population Projections. Table II-13 contains projections of county population to the year 2000, based on three different sources. These are: (1) the Texas Department of Water Resources (TDWR); (2) the University of Texas-Austin Bureau of Business Research (BBR); and (3) the Rice Center for Community Studies, whose studies were mentioned in Section I in the subsection on health.

The Rice figures for 1980, which are preliminary projections made during a study for the Houston-Galveston Area Council (HGAC), are considerably higher than those of the TDWR and BBR. Moreover, they are the only ones consistent with 1979 estimates of the Bay City Chamber of Commerce. The Chamber estimates are 37,320 and 19,927, for the county and city, respectively. The TDWR and BBR estimates, unlike those of the Rice Center, apparently do not take into account empirical evidence of rapid recent growth.

The Rice Center has now completed a more detailed survey of present county population, based on residential electric connections. This survey estimates a 1979 county population of 36,482, or slightly higher than the preliminary 1980 projection. Consequently, the 1980 and 1985 projections have been adjusted in Table II-13 so as to be consistent with this 1979 figure. The average annual compounded growth rate from 1970-1979, equal to 3.02 percent, was applied to the 1979 survey estimate to obtain an adjusted 1980

Table II-13

POPULATION PROJECTIONS FOR MATAGORDA COUNTY AND BAY CITY

	MATAGORDA COUNTY				BAY CITY[c]			
	TDWR	BBR	RICE 1	RICE 2[a]	TDWR	BBR	RICE 1	RICE 2
1980	29,200	30,245	36,274	37,583	14,512	15,357	20,235	21,293
1985	29,850[b]	30,309[b]	39,776	41,211	15,038	15,409	23,068	24,229
1990	30,500	30,374	43,428	44,995	15,563	15,461	26,022	27,290
1995	31,500[b]	31,301[b]	47,495	49,209	16,372	16,211	29,312	30,699
2000	32,500	32,229	52,192	54,075	17,181	16,962	33,112	34,635

a. Adjusted based on 1979 survey.
b. Interpolation
c. Linear regression equation is y=mx+b, where y=city population, m=8089979774, x=county population, and b= -9111.086073.

figure. The percentage difference between this figure and the preliminary projection was then applied to the 1985-2000 preliminary projections, to yield adjusted 1985-2000 projections. City estimates in the table were derived by use of linear regression techniques, as discussed above.

The planning horizon for this analysis is to 1985. Three population growth scenarios are postulated; the results are presented in Table II-14. The "high growth" scenario assumes that growth from 1979-1985 will continue at the same average annual compounded rate of growth as occurred from 1970-1979. This rate was 4.74 percent. Under this scenario, population in Bay City in 1985 equals 26,943. This estimate is consistent with the recent Chamber of Commerce projection of 25,000-28,000.[14] Intervening growth to 1985 would be based on a combination of increased oil and gas exploration, growth in the agricultural sector, and expansions of Amoco, Celanese, Phillips or other petroleum and petrochemical firms in the wider multi-county area.

The "medium growth" scenario is based on the revised Rice Center projections, shown in Table II-13. The 1980 and 1985 projections were interpolated to derive projections fro the intervening years, and the linear regression formula was applied to the county figure for each year to obtain a corresponding city figure. The resulting 1985 estimate is 24,229. These projections imply an annual average compounded growth rate from 1979-1985 of 2.91 percent.

The "low growth" scenario assumes that moderate non-energy-related growth will occur, but that these growth effects will be overshadowed by completion of the Phillips Refinery construction and phasing down of STNP

Table II-14

ALTERNATIVE POPULATION PROJECTIONS,

BAY CITY, 1980-1985

Year	Scenario: High Growth		Medium Growth		Low Growth	
	Mid-Calendar Year*	Mid-Fiscal Year**	Mid-Calendar Year*	Mid-Fiscal Year**	Mid-Calendar Year*	Mid-Fiscal Year**
1979	20,403	20,645	20,403	20,626	20,403	20,438
1980	21,371	21,623	21,293	21,435	20,543	20,660
1981	22,384	22,649	21,859	22,002	21,010	21,130
1982	23,446	23,724	22,435	22,582	21,488	21,507
1983	24,558	24,849	23,022	23,171	21,562	21,395
1984	25,723	26,028	23,619	23,771	20,893	20,706
1985	26,943	27,262	24,229	24,377	20,143	20,079

* As of July 1 of each year.

** As of October 1 of each year.

beginning in 1983. The assumed non-energy-related growth rate was 2.27 percent; this is the maximum rate derived from 1975-1979 data. The "low growth" scenario assumes that this growth rate is sustained through 1985; subtractions are made, however, based on the phasing out of STNP/Phillips construction employment.

The "low growth" scenario is a worst case analysis. Population is postulated to increase slowly until 1983, reach a peak of 21,562 in that year, and then decline as STNP construction employment declines. Under this scenario, population would continue to decrease until 1986 (scheduled completion date for Unit 2) to a low of 20,143, and then begin to rise, finally surpassing in 1990 the 1983 population peak.

Projections of energy-related popualtion associated with direct and indirect energy activities residing in Bay City during 1980-1985 are presented in Table II-15. The methodology used to estimate energy-related population in 1979 was used to derive the energy-related population projections; this approach is discussed in Appendix B. The energy-related population is expected to repsent a declining share of total population under all three population scenarios.

In general, it appears that the rapid growth associated with the Phillips and STNP projects will slacken between now and 1985. Energy-related employment by itself is unlikely to support additional growth. Some population increase beyond tht implied in the "low growth" scenario, though, may result from other factors. One is merely the momentum of past employment growth. For instance, South Texas workers seem to be moving into

Table II-15

PROJECTED ENERGY-RELATED POPULATION,
BAY CITY, 1980-1985

Year	Energy-Related Population*	Energy-Related As Percent of Total Population** High Growth Scenario	Medium Growth Scenario	Low Growth Scenario
1979	13,008	63.8%	63.8%	63.8%
1980	12,162	56.9	57.1	59.2
1981	12,162	54.3	55.6	57.9
1982	12,162	51.9	54.2	56.6
1983	11,768-12,207	47.9-49.7	51.1-53.0	54.6-56.6
1984	10,868-11,487	42.3-44.7	46.0-48.6	52.0-55.0
1985	8,838-9,457	32.8-35.1	36.5-39.0	43.9-46.9

* Based on Tables II-2, II-3, and II-12. The same methodology employed in estimating energy-related population for 1979 was used to derive energy-related population projections. The approach is discussed in Appendix B.

** Population projections under each scenario are the mid-calendar year estimates listed in Table II-14.

Bay City from outlying areas farther from the plant, as housing becomes available in the city. Another factor is that Bay City will probably continue to share in the residential impacts from industrial expansion at Brazosport. This should occur, despite the commuting distance, because of housing shortages there. A third factor is the potential of the Bay City industrial district north of town.

The "high growth" scenario, on the other hand, implies that the growth rate between 1979 and 1985 equals or exceeds that rate between 1970 and 1979; that possibility seems unlikely. The "medium growth" scenario appears to be most reasonable.

Review of the preceding information on energy-related activities supports the more cautious perspective. Indeed, completion of the STNP in 1983 (assuming no more delays) will leave large employment gaps to be filled, with the Union Carbide and Dow plants being the only replacement activities of comparable size. Table II-2, which summarizes the major energy and chemical facilities and activites, compares actual 1979 and hypothetical 1985 employment levels.

Notes

1. 16 U.SC. 145a(c) (1976), as amended by Pub. L. 95-372, sec. 503(a), 92 State. 692 (1978).

2. San Antonio Express, June 29, 1978;
Austin American-Statesman, December 8, 1978; telephone conversation with Mr. Graham Painter, Houston Lighting and Power Co., October 2, 1979.

3. Houston Lighting and Power, Environmental Report, Operating License Stage: South Texas Project, Units 1 and 2, Volume 2, Table 8.1-7. The environmental reports figure of $666,758 has been adjusted to reflect a revised project cost of $2 billion, instead of the $1.110 billion used in the table.

4. Houston lighting and Power, Environmental Report, Operating License Stage: South Texas Project, Units 1 and 2 (Houston: Houston Lighting and Power), July 1978, Table 8.2-2.

5. Federal Power Commission, Bureau of Natural Gas, Final Environmental Impact Statement, Matagorda Bay Project, September 1977, pp. 148-149; RPC, Inc., Pilot Study of the Activity Assessment Routine, Social and Economic Component, Texas Coastal Management Program Technical Paper Number 1, July 1978, pp. 20-21.

6. Houston Post, August 28, 1977.

7. Telephone conversation with Mr. Jim Parsons, Houston Lighting and Power public information office, June 29, 1979.

8. This estimate takes into account the other four gas processing plants.

9. It should be noted that, in economic terms, this decreased production may be offset by higher oil and gas prices received by the producer.

10. Railroad Commission of Texas, Oil and Gas Division, Annual Report on Oil and Gas Production, 1977;
Transcontinental Gas Pipe Line Corporation, Map of Texas Gulf Coast and Texas Continental Shelf, 1977;
U.S. Bureau of Land Management, Bid Recap Reports (computer printouts) for OCS sales 45 and 51;
U.S. Bureau of Land Management, Draft Environmental Impact Statement, OCS Sale 58A, January 1979, Volume 1, Appendix A, and Volume 2, Visual Number 1;
U.S. Geological Survey, Gulf of Mexico Region Lease Activity Report (computer printout), September 30, 1978.

(References in text to the 10 wells drilled on 26 tracts leased since August of 1977, and map representations with respect to producible tracts and platform status, are current through September 1978. Map representations of active leases and new tract offerings include material from the DEIS for Sale 58A, current through January 1979.)

11. U.S. Army Corps of Engineers, Final Environmental Statement, Mouth of Colorado River, December 1977, p. 31.

12. For sample personnel requirements associated with offshore drilling, see General Land Office of Texas, Offshore Oil: Its Impact on Texas Communities, Volum II, June 1977. The average exploratory rig requires about three marine vessles with 16 people each, and one helicopter with about four people. A dockside supportive unit requires about 35 people. In early 1979 there were eight drilling rigs operating in the three areas of the Gulf (including state waters) listed in Table II_10. Offshore 39:3 (March 1979).

13. The TDWR model is handicapped by the fact that it takes into account only demographic trends (e.g., birth and death rates, age compostion) and anticipated migration trends. Rapid economic expansion triggered by siting of major facilities - the very kind of phenomenon for which the Coastal Energy Impact Program is intended - is not really taken into account. The BBR estimates are apparently based on a similar model. (Actually, RPC's experience has been that the BBR itself usually relies on TDWR projections; the separate projections supplied to the hospital district may therefore merely represent two different TDWR projections. TDWR adjusts its projections periodically.

he Chamber of Commerce population estimates are slightly suspect. Its 1975 city estimate was 17,423, an increase of 29.6 percent over the official (corrected) 1970 census figure of 13,445. This level of 1970-1975 increase does not correspond either to Census Bureau estimates, which show an increase of only 0.9 percent over the same period, or to Bureau of Economic Analysis employment figures, which show a five-year increase of only 4.7 percent. The 1975 Chamber estimate is even more questionable when taken in combination with the 1979 Chamber estimate of 19,927. It is incongruous that the population would increase by 4,000 before STP construction began, but only by 2,500 since then. Still, if the 1975 estimate (possibly as interpolation of the 1970 and 1979 figures) is ignored, the 1979 estimate is not unreasonable. One minor difficulty, though, is that it reportedly encompasses an area (greater Bay City) slightly beyond the city limits.

14. Conversation with Mr. Jim Sumpter, Bay City Chamber of Commerce, June 6, 1979.

Appendix A

CALCULATION OF 1976-1979 BAY CITY POPULATION

The following steps detail the procedure used to calculate the 1976-1979 Bay City population. The figures are based on information compiled elsewhere in this study, or upon assumptions using that information.

1. The STNP construction force has grown as follows, since work began in 1976:

	Number	Percent of Peak
January, 1976	1,000	22.2
January, 1977	2,120	47.1
January, 1978	3,458	76.8
January, 1979	4,500	100.0

2. It can be assumed, based on interpolation of these figures, that the mid-year construction force was:

	Number	Percent of Peak
Mid-1976	1,560	34.7
Mid-1977	2,789	62.0
Mid-1978	3,979	88.4
Mid-1979	4,500	100.0

3. The Phillips refinery construction force has grown as follows, since work began in the spring of 1978:

	Number	Percent of Peak
April, 1978	533	22.2
Mid-1979	2,400	100.0

The beginning number is estimated based on the assumption that the employment curve is similar to that of STNP. That is, the beginning force is the same percentage of the peak force, for each project.

4. It can be assumed, based on interpolation of these figures, that the mid-year construction force was:

	Number	Percent of Peak
Mid-1978	892	37.1
Mid-1979	2,400	100.0

Interpolation is based, again, on STNP. Mid-year 1978 represents one-fifth of the time elapsed from the beginning of the project to the present. Employment at a comparable stage for STNP would have been about 1,672, or 37.1 percent of the peak figure.

5. The percentage of STNP construction employees living in Bay City is 38.34 percent. The percentage of Phillips refinery construction employees living in Bay City is 25 percent.

6. The weight factors for estimating 1976-1979 population are therefore:

1976 (.3834)(1560) + (.25)(0) = 598.1040

1977 (.3834)(2789) + (.25)(0) = 1069.3026

1978 (.3834)(3979) + (.25)(892) = 1748.5486

1979 (.3834)(4500) + (.25)(2400) = 2325.3000

7. City population in 1975 (assumed mid-year) was 13,567. City population in 1979 (assumed mid-year) is 20,403. The increase is 6,836.

8. Estimated city populations for 1976-1979 are therefore:

$$1976 \quad 13{,}567 + \left(\frac{598.104}{2325.3}\right)(6{,}836) = 15{,}325$$

$$1977 \quad 13{,}567 + \left(\frac{1{,}069.3026}{2325.3}\right)(6{,}836) = 16{,}711$$

$$1978 \quad 13{,}567 + \left(\frac{1{,}748.3026}{2325.3}\right)(6{,}836) = 18{,}707$$

$$1979 \quad 13{,}567 + \left(\frac{2{,}325.3}{2{,}325.3}\right)(6{,}836) = 20{,}403$$

Appendix B

CALCULATION OF ENERGY-RELATED RESIDENT EMPLOYMENT AND POPULATION

The procedures used to estimate for 1979 the number of energy-related employees residing in Bay City and the associated population are discussed below. Employment in energy activities other than major project construction has been stable over the past five years; the change in the number of energy-related employees and the associated population is attributed to major project construction.

1. Major Project Construction. Total construction employment at STNP and the Phillips Refinery is 6,900; of these, 2,325 are estimated to be living in Bay City. This estimate is based on the worker survey undertaken by Brown and Root which indicated that 38.34 percent of the STNP workers and 25 percent of the Phillips Refinery workers resided in the city. All but about 100 of these were determined to be new resident employees rather than local hire employees.

The 2,225 new-resident project employees, of course, are not the only ones who have moved to Bay City since 1976. There are many others who do not work at the two projects themselves but who are nevertheless attributable to multiplier effects associated with them. Also, there should be a few new-resident employees whose move to Bay City is independent of the projects. A method is needed for estimating the size of these "other" new-resident groups.

This was done by comparing employment increases in the construction sector and total employment increases. In 1975, construction employment in the county was 495; by 1977, the most recent year for which data are available, the figure had jumped to 3,481. Practically all of the 2,986 increase can be assumed to be the result of STNP. Meanwhile, total county employment grew from 10,840 to 15,087, representing an increase of 4,247. Thus, the change in project employment is about 70.3 percent of the change in total employment. If 2,225 project employees have moved to the city since 1976, then the total number of new-resident employees since then (2,225/70.3% = x/100%) would be about 3,165. The difference of 940 would be the number of "other" new-resident employees - both indirectly energy-related and non-energy-related.

The ratio between the 1975-1979 Bay City population increase (6,836) and the combined Bay City new-resident employment increase (3,165) is 2.16. That ratio is not too far from the statewide average of about 2.4 residents per employed person. Part of the difference may be explained by the fact that construction workers often tend to be younger and without families; consequently, population would increase by less than the average of 2.4 per new worker. The rest of the difference would be due to normal errors of estimation.

The other question that needs to be addressed is the amount of 1975-1979 population increase that has been induced directly or indirectly (via multiplier effects) by energy-related activities. The answer is, practically all of it. If Bay City's population had

merely increased from 1975-1979 at the same slow rate it increased from 1970-1975 (annual compounded rate was 0.18%), the 1979 population would have been only 13,665.

The difference between this figure and the actual estimated population of 20,403 can be assumed to be tied directly or indirectly to energy-related activities. Thus, energy-related activities are estimated to be responsible for an increase of 6,738 persons since 1975 (the year preceding CEIP and the nuclear project), out of a total city population increase of 6,836. The energy-induced population increase is therefore approximately 98.6 percent of the total.

The same percentage can be applied to the 3,165 new-resident workers, to obtain a similar breakdown. The result is that 3,120 are energy-related; 45, non-energy-related. Of the 3,120 energy-related, it has already been determined that 2,225 are new-resident project employees; the other 895 are indirect employment associated with the project.

There is also indirect employment associated with the 100 project employees who were residents of Bay City when they were hired. The relationship between direct new-resident and indirect employment is assumed to hold; thus, employment of 40 additional resident workers is associated with the project.

2. Other Energy Activities. About 2,000 employees are directly employed in the operation of the Phillips Refinery, onshore oil and gas activities, and offshore gas activities. It is estimated that 809 of these

reside in Bay City. The number is based on these assumptions: 1) the same percentage (25 percent) of Phillips Refinery operations workers as construction workers reside in Bay City; 2) the proportion of onshore and offshore workers living in the City is equal to the proportion of total Matagorda County population living in Bay City (55.9 percent, as indicated in Table I-2).

Indirect employment was determined by applying input-output (I-O) employment multipliers for the appropriate industries to estimates of direct employment. These multipliers were developed as part of the Texas Coastal Management Program for a five-county region which included Matagorda County (General Land Office of Texas, Activity Assessment Routine, Social and Economic Component: User's Manual, Austin, 1978).

The total population estimate was derived by applying the State of Texas ratio of population to employment to the total number of direct and indirect energy-related employees postulated to be residing in Bay City.

Section III

Analysis of Capacity to Meet Future Needs

Introduction

The discussion of energy facilities (Section II) describes three cases of population growth. The High Growth scenario represents the maximum population growth projected for Bay City by 1985. Under this scenario, population is projected to equal 26,943 by 1985. This scenario is based on an extrapolation of recent growth rates; the resulting 1985 estimate is consistent with recent Chamber of Commerce estimates.

The Low Growth scenario assumes a low rate of non-energy-related expansion. Subsequently, as construction of the Phillips Refinery and STNP is completed, some decline in population is projected until 1986, at which point growth would recur. Under this scenario, population during the 1980s would fluctuate within the 20,000 to 22,000 range.

The Medium Growth projections are based on Rice Center population projections for Matagorda County and the historical relationship between county and city population. Population would approximate 24,229 by 1985.

The High Growth scenario (maximum impact case) will be used in evaluating the capacity of public facilities and services to support the growth projected by 1985. The services and facilities evaluated include housing, water supply, sanitary sewer system, solid waste, transportation, police protection, fire protection, schools, health care and recreation.

The water supply system and sanitary sewer system will be adequate to support the projected population in 1985 if present plans are implemented.

These expansions are also necessary to meet present needs. The private housing market has responded to recent population growth by extensive single- and multiple-family unit construction; new housing construction will have to continue to absorb the projected population increase. The number of police officers, firefighters, and physicians must be increased to maintain present service to population ratios. Finally, the city presently suffers from a lack of developed park space within the city limits; the problem will be exacerbated as population expands.

Land Use

The City of Bay City is expanding to the south; continued residential growth primarily in that direction is anticipated. Developers of several subdivisions in the southern part of town have indicated expansion plans; these actions will expand the residential part of the city. (See the following discussion on housing.)

Commercial development in the form of strip development south along Highway 60 and east and west along Highway 35 is anticipated. At least four areas have been targeted for commercial development in the southern end of town, all within subdivision tracts bordering Highway 60. (The subdivisions are Bay Ridge, Palm Village, Cottonwood, and Baywood.) Interest has also been shown in commercial development along Highway 35 to both the east and west. Such development implies an expanded infrastructure to provide services to the newly developed areas. More streets, for example, will be constructed to provide access to the new areas.

There is an industrial tract north of the city which may be expanded. The tract is not presently within city limits but will probably be annexed if Bay City obtains Home Rule status.

As discussed in Section I, the city is presently applying for Home Rule status. If approved, the city would be able to annex land of its own will. It is unknown whether Home Rule status would greatly accelerate the rate of annexation. There is an indication, though, that general annexation powers would be used initially to square off the city's irregular boundary lines.

The rate of change in land use in the city is tied very closely to new commercial and residential construction. Such construction, in turn, depends heavily upon the availability of financing. If there is a substantial tightening of credit during the next few months (as is expected), new construction could fall sharply, and growth could level off in the short term.

Housing

Existing housing patterns and programs in Bay City were described in Section I. This discussion focuses on describing anticipated growth patterns through 1985. The discussion provides an overall view of housing development rather than a tract by tract analysis. It is based on conversations with developers and city officials.

Residential development and growth is expected to occur predominately in the southern and southeastern sections of town. Several major developments

are in these areas which are not completely developed. These include Palm Village, Bayridge, Bordeaux, Vallaha, and McDonald Meadows. (See Figure III-1.)

The entire tract of land comprising Palm Village is 85 acres, located east of Highway 60 and west of Cottonwood Creek (adjacent to the Cottonwood subdivision). Thirty acres have already been developed. Twenty-five acres are under development with apartments and single-family homes. The remaining twenty acres have yet to be subdivided into lots; single-family housing is planned.

Bay Ridge is located west of Highway 60 in southern Bay City. The first phase was completed in 1978 and consisted of 120 single-family houses; most were sold by mid-1979. The second phase is under construction to the west of the first phase. It consists of 110 lots (single-family) and is expected to be completed by the end of 1980. When these homes are sold, construction on the third phase (also 110 single-family lots) is scheduled. This phase should begin in 1981.

The Bordeaux subdivision is east of Highway 60, off Hamman Road, and consists of apartments and single-family homes. Thirty-five lots for single-family dwellings remain to be developed.

Vallaha subdivision, west of Nichols Avenue and northwest of Cottonwood Creek, is being developed in three stages. The first sector is under development, the second is plotted and approved, and the third is in the planning stage.

Chateaux Oaks and Del Norte are two other subdivisions still to be completed. Some lots are left in Chateau Oaks, in the southwestern section of town. Del Norte subdivision is now in Phase III of development. It is

Figure III-1

Projected Housing Development

MAP OF CITY OF BAY CITY

MATAGORDA COUNTY, TEXAS

CARTOGRAPHY by:
B. J. LADAS
&
Macha Drafting
July 1970

Community Development Block Grant District

1 Bay Ridge
2 Bordeaux
3 Chateau Oaks
4 Del Norte
5 McDonald Meadows
6 Palm Village
7 Vallaha

located northeast near the junior high school. The subdivision is open to all contractors; about 40 additional homes will be constructed there.

Finally, application has been made to the city for annexation of a tract of land between Nichols Avenue (on the west) and the railroad tracks (on the north and east). This would be a residential development.

The above survey suggests as a conservative estimate that about 800 additional units are presently under construction or planned, and should be available for occupancy between now and 1982. Assuming 3.04 persons per household (1970 census data), housing for 2,432 additional persons would be provided. This compares with the projected change in population through mid-1982 of 3,043. From this comparison it is apparent that the present 95 to 99+ percent occupancy rate will continue throughout the planning period, and housing supply will remain tight.

Development activity over the past several years indicates that the private housing market has responded to the tight housing market in Bay City through an expansion of new housing supply. Major short-term constraints to growth appear to be macroeconomic. Recent moves to tighten credit, if continued and/or extended, will slow construction by making financing difficult to obtain. This, in turn, would dampen the city's population growth by limiting its ability to absorb new residents.

In addition to private residential development, the Community Development Block Grant Program will change the housing situation during the planing period. The Community Development Block Grant area is located in the southwestern and south central sections of Bay City (Figure III-1). As discussed in Section I, the two-year, two-phase program should begin in 1979. The goal of the program is to bring houses in the designated area up to HUD Section 8 standards.

Water System

The present water system is described in Section I. The system has a capacity of 5.6 million gallons per day (mgd) based upon nondepletion of storage tanks. A 1985 population of 26,943 implies maximum daily use of about 4.9 mgd. Thus, the system's present capacity would appear to be adequate through 1985.

Present problems with the system have been identified, however. A new 1,000 gallon per minute (gpm) well and a million gallon storage tank are immediately required in the central part of town. The city also has plans to construct an additional 1,000 gpm well and a million gallon storage facility on the north side of town, and a million gallon storage tank in the southern part of town. With these proposed improvements, the system should be adequate to handle the expected population increase.

In terms of service to new subdivisions, the developer is required to install approved water lines within the development. Upon compliance with city ordinances, the city then annexes the land, and the subdivision is hooked up to the main water line. The land is dedicated to the city and the city assumes maintenance responsibility.

Sewer System

The city is presently funded under a three-year EPA grant to expand its wastewater system, as discussed in Section I. The projected 1985 population implies an approximate treatment capacity requirement of 2.6 mgd; this is in excess of present system capacity but is less than the

system's capacity upon completion of the expansion program. The expanded wastewater treatment facilities should thus be adequate through and beyond the planning period of this analysis.

New subdivision development, moreover, should not produce distribution problems. Each new subdivision must include its own lift station if the capacity of the sewage distribution system is inadequate in the immediate area to support additional development. The subdivisions of Bay Ridge and McDonald Meadows, for example, were required to have their own lift stations.

Solid Waste Disposal

With its new rate schedule, its reserve truck, and the new county landfill, the city of Bay City should be able to accommodate the projected increase in solid waste disposal requirements for the next six years. If the estimated five pounds of solid waste per person per day remains constant, the projected 1985 maximum population estimate would result in a 31 percent increase in solid waste generated in the city. However, the municipal collection system will not bear the full impact of this increase, as new subdivisions and many businesses use the services of a private firm for solid waste disposal.

Transportation

With increased population to 1985, there will be greater wear and tear on the roads of Bay City. There will also be additional roads constructed as new residential and commercial areas develop.

The public works department is responsible for street maintenance and repair in Bay City. It makes road improvements where necessary. In 1979, due to extreme flood rains, the entire program budget will be used to repair the damage resulting from the flooding. Beginning in 1980, the department will continue to rework the other streets in the usual manner.

The addition of new roads in Bay City is largely a result of subdivision annexation. The developers of subdivisions are responsible for building their own thoroughfares, in compliance with city regulations, although the city then assumes responsibility for maintenance and repair, traffic controls, and extension and widening of thoroughfares. For example, with the addition of Section II to the Bay Ridge subdivision in the southern part of the town, new streets are presently under construction. There is also an area proposed for development north of Hamman Road, east of Nichols Avenue and west of the railroad tracks which is presently applying for annexation. Roads would be built there by the developer to accommodate subsequent residential development.

The Texas Highway Department is in the process of widening a 3-mile section of Highway 35 one mile west of the Colorado River to Markham. It is the only anticipated work to be done by the State in the Bay City area within the next five years. It should have no effect on Bay City except to alleviate present congestion in the widened strip.

Police Protection

The police department is authorized 26 officer positions. (There is one position vacant at this time.) This authorized strength implies a ratio

of 1.27 policemen per thousand population. It is the city's policy to provide additional officers when necessary. To maintain service/population ratio, more officers will be required as population expands. For a population of 26,943 by 1985, a total of 34 officers would be needed (at least one each year), or eight additional positions. Two more patrol cars would also be required by 1985; the first would be needed by 1982.

For patrol purposes, Bay City is divided into two zones, north and south. The dividing line is Highway 35. More patrolmen are presently assigned to the southern zone. The distribution of patrolmen is dependent on both population distribution and the location of areas with the greatest problems. As population expands, the law enforcement officers will be assigned to the zones accordingly.

Fire Protection

Fire protection personnel in Bay City, as discussed in Section I, consist of 4 paid dispatchers and 48 volunteer firemen. In order to maintain the present ratio of 2.4 volunteer firement per thousand population, an increase of 17 volunteer firemen (for a total of 65 volunteers) would be necessary to accommodate the maximum anticipated population of 26,943 by 1985. Another dispatcher may also be required.

Schools

Bay City's educational services are not expected to be adversely impacted by projected population growth in the next six years. Despite

recent population growth in Bay City, school officials report no severe capacity problems. Pierce School is becoming rather crowded, but not to the extent that a new elementary school would be needed in the near future. Capacity problems there would be met by some combination of (1) revising grade assignments among the four elementary schools, (2) revising attendance boundaries, and (3) making more efficient use of classrooms.

Between 1976 and 1979, average daily attendance and total city population increased by 186 and 4,743 respectively, resulting in a change of 39.2 new students per thousand new residents. Assuming that this same relationship will continue through 1985, an increase of 6,540 residents implies 256 new students, or an average daily attendance of 3,972. Such an increase in attendance would raise the student/teacher ratio to only 21.5, still well below the state average of 26.3 for the 1977-1978 school year.

Health Care

Although the city of Bay City currently has a ratio of physicians to population that is within the national average, by 1985 the city will need to attract eight more physicians in order to stay within the present 1:750 ratio. Matagorda County as a whole will need to attract 24 more physicians by 1985.

With the High Growth population projection, by 1985 the ratio of hospital beds to population would be 4.1 beds/1,000 population, barely exceeding the national average of 4.0 beds per 1,000. With the planned

addition of 50 beds, however, the 1985 ratio will be brought up to 5.9 beds/1,000 population for the city. Matagorda County is currently short of the national average ratio of hospital beds per population. By 1985 the county will need to provide 12 additional beds to achieve the national average ratio of four beds per 1,000 population. However, with the 50 additional beds planned for Bay City, the county's ratio of hospital beds per population will be 4.9/1,000 and would thus exceed the national average.

Recreation

Despite the improvements now underway for LeTulle Park, the city recognizes a real need for recreational facilities within the city. Present inadequacies will be more intensely felt with an expanded population. Land available for neighborhood parks must be developed and provided with playground facilities and other recreational equipment such as barbeque pits and picnic tables.

The newly formed Bay City Parks and Recreation Board is currently assessing the city's recreational needs and will seek funding to provide improvements.

Section IV

Analysis of Fiscal Effects

Introduction

This section presents an analysis of the fiscal effects that projected growth, some of which is energy-related, may have on the City of Bay City and the Bay City Independent School District. Government units such as these are affected by growth through increased tax revenues as a result of rising income, higher employment and an expanded tax base, and through increased demand for public services due to an expanded population. The net fiscal effect of growth is the difference between growth-related tax revenue and growth-related government service costs. If revenues exceed costs, a surplus is realized; if the reverse is true, a deficit is incurred.

The "High Growth" population projections (Table II-14) were utilized to estimate possible increases in revenues and expenditure for both the city and the school district for the years 1979 to 1985. These figures were used because they represent the greatest change in population anticipated for Bay City for those years. Should the other population scenarios, representing smaller population increases, prove to be more representative of the actual population for those years, trends in revenues and expenditures would be similar. The magnitude of the fiscal impacts, however, would be diminished.

The City of Bay City

The major operating funds of the City of Bay City are the general fund and the utility fund. Revenue sources for the general fund include

taxes (especially sales and ad valorem taxes), federal government contributions, and miscellaneous fees and receipts. Expenditures include general government expenses, operating outlays for most city departments, and capital outlays.

The utility fund is essentially self-supporting. Major sources of operating revenue are customer sales and tap fees; in addition, non-operating income consists of interest and federal revenue sharing funds. Operating expenses account for most of utility fund expenditures.

The fiscal analysis focuses on the general fund since it is the major fund which is supported primarily through tax revenues rather than user fees.

General fund revenues and expenditures are listed in Table IV-1 for fiscal years 1970-1971 through 1978-1979. Revenues and expenditures for fiscal years 1979-1980 through 1985-1986 were estimated through least-squares regression techniques. Mid-fiscal year population was the independent variable (Tables II-11 and II-14); revenues and expenditures were the dependent variables. A premise underlying regression analysis is "business as usual." That is, it is assumed that present relationships between revenues, expenditures, and population will continue.

The results are indicated in Table IV-2 for the high growth scenario. Slight general fund surpluses are projected for all years, ranging from $45,679 in fiscal year 1979-1980, to $48,519 in fiscal year 1985-1986.

It should be noted that the estimating equations for revenues excluding revenue sharing and other contributed funds and for non-capital expenditures

Table IV-1

GENERAL FUND REVENUE AND EXPENDITURE,
FISCAL YEARS 1970-1979

	Revenue		Expenditure	
Fiscal Year	Excluding Revenue Sharing and Contributions	Total	Non-Capital	Total
1970-1971	$ 701,472	$ 843,622	$ 502,963	$ 741,620
1971-1972	732,895	806,122	572,746	780,068
1972-1973	775,953	1,044,296	630,238	942,767
1973-1974	848,546	1,104,900	763,637	1,090,265
1974-1975	1,023,826	1,250,471	898,804	1,277,915
1975-1976	1,149,048	1,459,369	1,018,621	1,447,767
1976-1977	1,305,904	1,677,202	1,184,948	1,623,163
1977-1978	1,513,972	1,837,143	1,332,928	1,736,887
1978-1979	1,780,722	1,913,503	1,596,120	1,907,907

Source: Audited Financial Statements and Other Financial Information, FY 1971 through 1979.

Table IV-2

PROJECTED GENERAL FUND REVENUES
AND EXPENDITURES,
HIGH GROWTH SCENARIO

	Revenue		Expenditure		
Fiscal Year	Excluding Revenue Sharing and Other Contributions*	Total*	Non-Capital*	Total*	Projected Surplus (Deficit)**
1979-1980	$2,076,855	$2,323,906	$1,884,312	$2,278,227	$45,679
1980-1981	2,239,690	2,488,931	2,039,767	2,442,832	46,099
1981-1982	2,410,517	2,662,056	2,202,851	2,615,517	46,539
1982-1983	2,589,503	2,843,449	2,373,724	2,796,448	47,001
1983-1984	2,776,813	3,033,279	2,552,544	2,985,795	47,484
1984-1985	2,973,114	3,232,220	2,739,948	3,184,230	47,990
1985-1986	3,178,573	3,440,442	2,936,094	3,391,923	48,519

*The following r values were achieved:
a) Revenues excluding revenue sharing and other contributions: r = .936;
b) Total revenues: r = .863;
c) Non-capital expenditures: r = .910
d) Total expenditures: r = .844

**Equal to difference between total revenues and total expenditures.

have a higher correlation coefficient (r) than do the equations for total revenues and total expenditures. This is because contributed revenues and capital expenditures are less closely associated with yearly population changes than are non-contributed revenues and non-capital expenditures. Non-contributed revenues are projected to continue to exceed non-capital expenditures; the difference is estimated to be about $185,000 in 1985.

Revenue-sharing funds received by Bay City in recent years are shown in Table IV-3. The entitlements have remained fairly constant, ranging from $162,000 to $185,000 since fiscal year 1973-1974. The procedure for distribution of revenue-sharing money is complex. Funds filter down to local governments as part of a multi-stage allocation process whereby funds are first allocated to states and then to county and local governments on the basis of relative changes in key indicators. Data required on each state and local government include population, per capita income, relative tax effort, and intergovernmental transfers.

The complexity of the allocation process and the reliance on relative measures makes invalid the a priori assumption that revenue-sharing funds will increase automatically if a community experiences growth. Since funds on all levels are allocated according to ratios, changes in population, personal income and tax revenue of other government units in the county, in all counties in the state, and in all states will influence the size of the grant received by a given local government. If, for example, Bay City experiences an increase in population, income, and tax revenue relative to other units of government in Matagorda County, and the County grows relative to other counties in Texas, and Texas grows relative to other states, then Bay City's relative share of total funds allocated should

Table IV-3

REVENUE-SHARING ENTITLEMENTS,
BAY CITY

Fiscal Year	Entitlement, Including Interest
1972-1973	$145,712
1973-1974	168,857
1974-1975	162,085
1975-1976	194,849
1976-1977	183,455
1977-1978	185,022
1978-1979	162,441*

*According to the Annual Financial Report dated March 31, 1979, certain aspects of noncompliance were identified in relation to Entitlement #10. Subsequently, only $92,303 of the $162,441 is noted as revenue received by the General Fund.

increase. However, it is also possible that the City's share might not increase or might in fact decrease if growth in the County or State is less than other areas in the State or nation.

In addition to general costs, projected government expenditures through fiscal year 1985-1986 would in part be used for those expanded services and facilities paid for from the General Fund which would be required to maintain present service ratios under the high growth scenario. These include the addition of 8 policemen and 2 patrol cars.

At least one additional policeman should be hired each year; one patrol car would be needed by 1982 and the second car would be necessary by 1985. Based on present costs to the city of these items, the salary of each patrolman would cost about $13,000 per year; a new patrol car would be an estimated $6,000.

Capital improvements for water and sewer system expansion were also identified in Section III. These include 3 million gallon storage tanks, and two wells of 1,000 gallons per minute (gpm) capacity. One tank and one well are needed immediately to replace disabled facilities in the central section of town. Then attention will be turned towards providing the remaining well and two storage tanks. A 1,000 gpm well would cost about $200,000; this estimate assumes a well depth of 1,100 feet and that a new motor and pump tank would be required. A million gallon storage tank would be about $225,000.

The city is also in Step I of a three-year construction program designed to expand its wastewater treatment facilities, as discussed in Section I. The estimated total budget for the three-phase program is $4,069,000, of which 75 percent will be contributed by an EPA grant.

As discussed previously, operations of the utility systems (water, sewer, and gas) is accounted for in the Utility Fund rather than in the General Fund. Capital expenditures for water and sewer construction are accounted for in the Water and Sewer Construction Fund; revenues for this fund are in the form of operating revenues (assessment payments, interest on investments, and Federal Revenue-Sharing Funds) and transfers from the Utility Fund. Debt service for water and sewer capital expansion is accounted for by the Water and Sewer Debt Service Fund. Receipts consist of transfers from the Utility and Construction Funds; disbursements consist of principal and interest payments for bonds and notes. With the exception of federal government contributions (e.g., EPA grant and revenue sharing), the source of monies for water and sewer capital expansion is primarily the users of the water and sewer systems through the Utility Fund.

There are presently one note and two bond issues outstanding, all of which have been used for water and sewer system expansion. The note for $134,000 will be payable on August 8, 1980. The 1949 bond issue, with an outstanding balance of $30,000, will be retired along with accrued interest on December 1, 1979. The 1966 bond issue, with an outstanding principal balance of $710,000, will mature serially through 1991. Additionally, a note for $60,000 was due on August 18, 1979. By the end of calendar year 1980, the city will thus be servicing only the 1966 bond issue, with average annual payments of $75,732.

Bay City Independent School District

As discussed in Section III, Bay City's school system is not expected to be negatively impacted by even the maximum population growth projected in the next five years. Even though no capacity problems are anticipated, the school district's revenues and expenditures are likely to rise as the population served by the district expands. Major sources of school revenues, for example, are ad valorem taxes, and state and federal revenues (Section I). Ad valorem tax revenues should increase as the district's tax base increases. State and federal revenues are allocated to districts based on complex formulas using factors such as number of pupils, relative wealth of the school district, expenditures, and tax effort. It is anticipated that revenues from both state and federal sources will be maintained at a level comparable to that presently received (about 45 percent) through 1985.

Total revenues and expenditures were projected for all years through 1985; the results are shown in Table IV-4. Least-squares regression techniques were used. Estimated population (as of January 1 of the school year), revenues, and expenditures for school years 1970-1971 through 1977-1978 were used as a base (Table I-25); population was the independent variable, and revenues and expenditures were the dependent variables.

The analysis indicates an increasing budgetary surplus associated with population and economic growth. School officials may decide to use such surpluses to increase fund reserves, to increase expenditures per pupil, to decrease taxes, or some combination thereof.

Table IV-4

PROJECTED REVENUES AND EXPENDITURES,
BAY CITY INDEPENDENT SCHOOL DISTRICT,
HIGH GROWTH POPULATION SCENARIO

School Year Ending	Estimated Population (January 1 of each year)	Total Revenues*	Total Expenditures*	Projected Surplus (Deficit)**
1980	20,887	$ 8,901,064	$ 8,352,724	$ 548,340
1981	21,878	9,492,527	8,844,582	647,945
1982	22,915	10,111,445	9,359,271	752,174
1983	24,002	10,760,204	9,898,776	861,428
1984	25,141	11,439,998	10,464,090	975,908
1985	26,333	12,151,425	11,055,709	1,095,716

*The following r values were achieved:
a) Total revenues: r = .893
b) Total expenditures: r = .883

**Equal to difference between total revenues and total expenditures.

Section V

CONCLUSIONS AND RECOMMENDATIONS

Current direct employment in energy-related facilities in the Bay City area is approximately 8,900. Of this, 6,900 (78%), is associated with the construction of two major facilities. One of these facilities, the Phillips Refinery, is scheduled for completion in 1980, and the construction employment associated with the other facility, the South Texas Nuclear Project, is projected to peak in 1983. Employment associated with other energy facilities, however, is expected to remain fairly stable, such that the total energy activity direct employment in 1985 in Bay City is projected to range between 3,675 to 3,925.

The estimated 1979 population of the city of Bay City is 20,403. Total population of Bay City which is estimated to be related either directly or indirectly to energy activities is approximately 13,000, or 64% of the 1979 estimated Bay City population. Most of the increase in population growth since 1975 can be attributed either directly or indirectly to energy-related activities. Specifically, this growth is largely the result of construction of the Phillips Refinery and the South Texas Nuclear Project. In projecting the growth and population resulting from energy activities in Bay City through 1985, three growth scenarios were postulated. The low-growth scenario is the worst case analysis. Population in this case is postulated to increase slowly until

1983, reach a peak of about 21,500 in that year, and then decline as the South Texas Nuclear Project (STNP) construction employment declines. Under this scenario, population would continue to decrease until 1986 (scheduled completion date for Unit 2) to a low of approximately 20,000. The high-growth scenario assumes that growth from 1979 through 1985 will continue at the same average annual compounded rate of growth as occurred from 1970 through 1979. Under this scenario, the population in Bay City in 1985 equals approximately 27,000.

In general, it appears that the rapid growth associated with Phillips and STNP projects will slack in between now and 1985. Energy-related employment by itself is unlikely to support additional growth. Some population increase beyond that implied in the low-growth scenario, however, may result from other factors. One is merely the momentum of past employment growth. For instance, STNP workers seem to be moving into Bay City from outlying areas further from the plant, as housing becomes available in the city. Another factor is that Bay City will probably continue to share in the residential impacts from industrial expansion at Brazosport. The third factor is the potential of the Bay City industrial district north of town. Thus, a medium-growth scenario appears to be the most reasonable. Completion of the STNP in 1983 (assuming no additional delays) will result in fairly substantial employment gaps to be filled, with the Union Carbide and Dow plants being the only replacement activities of a comparable size foreseeable at this time.

The existing and planned public facilities and services in Bay City were evaluated in terms of their capacity to accomodate the growth in population projected by 1985. For purposes of this analysis, the "high-growth" scenario was used to provide an indication of the maximum impact

that might be realized. The public services and facilities that were evaluated include housing, water supply, sanitary sewer system, solid waste, transportation, police protection, fire protection, schools, health care, and recreation.

The water supply and sanitary sewer system will be adequate to support the projected population in 1985, if present plans for expanding these facilities are implemented. These expansions are warranted under present conditions. The analysis of housing requirements indicates that the private housing market has responded to meet recent population growth by extensive single and multiple family unit construction. New housing construction will have to continue in order to absorb the projected population increase. Without additional police officers, fire fighters, and physicians, present levels of these services will not be maintained. Finally, the analysis indicates that the city presently suffers from the lack of developed park space within the city limits. This shortage will become more serious as population expands. The following is a brief summary of the anticipated adequacy of public facilities and services resulting from the projected growth in population.

Water System. With the proposed improvements to the water system consisting of a new 1,000 gpm well and a million gallon storage tank, in the central part of town, an additional 1,000 gpm well and million gallon storage facility on the north side of town, and a million gallon storage facility on the southern part of town, a water system should be adequate to handle the expected population increase. Based on present per capita use ratios, the projected 1985 population of 26,943 implies a maximum daily use during that period of approximately 5 mgd.

Sewer System. Projected 1985 population implies a required treatment capacity of approximately 2.6 mgd. This requirement is in excess of the present system's capacity but should be well within the anticipated capacity on completion of the proposed expansion program.

Solid Waste Disposal. If the estimated per capita solid waste of 5 pounds per day remains constant, the projected 1985 maximum population estimate will result in a 31% increase in solid waste generated. However, neither facilities nor land-fill in excess of that currently available should be required during the planning period.

Police Protection. With the maximum estimated increase in population, a total of 34 officers, or 8 additional positions, would be needed by 1985. Two more patrol cars would also be required; the first of these would be needed by 1982. With a continued trend in residential development and growth predominantly in the southern and southeastern sections of town, a present pattern of distribution of patrolmen should remain constant.

Fire Protection. In order to maintain the present ratio of 2.4 volunteer firement per 1,000 population, an increase of 17 volunteer firemen would be necessary to accomodate the maximum anticipated population growth by 1985. An additional paid dispatcher may also be required.

Education. Based on trends in the ratio of new students per 1,000 new residents, the average daily attendance projected through 1985 would increase the number of students by 256, or an average daily attendance of 3,972. This increase would raise the student/teacher ratio to 21.5, which is still well below the state average of 26.3 for the 1977-1978 school year. No severe capacity problems have been identified at present; Pierce School is becoming crowded, but this can be rectified by revising graded assignments, attendance boundaries, and more efficient use of the facilities.

Health Care. By 1985, the city will need to attract 8 more physicians in order to maintain the present physician-to-population ratio. With the planned addition of 50 hospital beds by 1985, the city's hospital facilities will exceed the national average ratio of hospital beds per population.

Recreation. Despite the improvements now underway for LeTulle Park, the city has recognized a need for additional recreational facilities. The present inadequacies will be more intensely felt with an expanded population. In order to alleviate these inadequacies, land acquisition, development, and maintenance, programs will be required.

Housing. Conservative estimates suggest that about 800 new units are presently under construction or are within the planning stages and should be available for occupancy between the present and 1982. A comparison of the anticipated housing units and the projected population indicates that a present 95-99% occupancy rate will continue throughout the planning period and the housing supply will remain tight. Recent trends in a reduction of available financing will be a constraint to the private housing market's response to the short supply. This, in turn, could dampen the city's population growth by limiting its ability to absorb new residents. Successful implementation of the Community Development Block Grant program will at least provide partial relief from the housing requirements.

Fiscal Analysis

The city of Bay City and the Bay City Independent School District will be affected by growth through increased tax revenues as a result of rising income, higher employment, and an expended tax base, and an increased

demand for public services due to the expanded population. An analysis of the anticipated revenues and expenditures that would be realized with the projected increase in population indicates that, although both operating costs and capital expenditures will increase over the planning period, revenues will also increase and slight general fund surpluses are projected for all years. These surpluses range from an estimated $45,700 in fiscal year 1979-1980 to $48,500 in fiscal year 1985-1986. The required capital improvements expenditures which have been identified include two additional patrol cars and 8 additional policemen, water and sewer system expansion, including three one-million gallon storage tanks and two additional wells, and additional water treatment facilities.

Projected revenues and expenditures for the Bay City Independent School District, based on the postulated population growth also indicates a positive fiscal outlook. With the anticipation that revenues from both state and federal sources will be maintained at a level comparable to that presently received through 1985, a steadily increasing surplus is projected through the planning period, extending from an estimated $548,000 in 1980 to slightly over $1,000,000 in 1985. These surpluses could be used to increase fund reserves, increase expenditures per pupil, to decrease taxes, or some combination thereof.

Recommendations

The previous section of this report discussed the growth-related problems that might be expected to occur in Bay City through the planning period. This section of the report will outline recommended responses to those problems.

Clearly, one goal of local government is to maintain a desirable quality of life through encouragement of sound economic development, provision of services and facilities and the maintenance of a congenial environment. However, the practical accomplishment of this goal can often cause conflicting objectives. The following recommendations do not attempt to resolve such conflicts, but are intended as well-considered starting points for local action.

Water, Sewer, Health Delivery Services and Community Development

Bay City has experienced rapid growth in recent years, and the governing bodies have responded to that growth in an expedient and reasonable manner. Thus, in the matters of water and sewer services, health care and community development, several programs and projects are currently well advanced. However, there is a two-fold management objective that should be identified in regard to these programs. First, these programs must be managed in such manner that they are executed successfully. Such management ensures that the intent of the programs is achieved, and the residents of Bay City receive full benefit from their tax monies. In addition, demonstration of local capacity to successfully manage such programs increases the potential of receiving subsequent funding from the agencies involved.

THUS, THE FIRST RECOMMENDATION OF THIS STUDY IS THAT EXISTING EFFORTS TO EXPAND FACILITIES AND SERVICES TO MEET PROJECTED FUTURE NEEDS BE MANAGED AGGRESSIVELY.

Housing

A second area of major concern identified in the previous section was that of housing. Unfortunately, housing shortages are not limited to Bay City, but are common throughout most of the country. In addition, the

problem is made more difficult by the complex nature of the housing industry. Housing supply is a function of both public and private action. Local governments can encourage production of housing, but can be directly involved in housing development only to a limited extent. On the other hand, if local government is not conscious of needs for housing, it can severely retard the ability of the private sector to develop housing. Thus, in order to maintain a desirable standard of housing in Bay City, it is essential that local governments both take consideration of the needs of the private sector in developing housing, and at the same time seek proper pathways of being directly involved in addressing the housing problem.

Clearly, the city of Bay City has taken a major step in such involvement through the HUD Community Development Block Grant rehabilitation program. This program provides much potential for preventing losses to the local housing stock. In addition, as part of the HUD Community Development Block Grant program, the City has developed a Housing Assistance Plan, which contains specific goals for housing development. By working closely with representatives from the HUD Area Office in San Antonio, it will be possible for the city to become directly involved in activities that can help ensure that its housing assistance goals can be met.

THE SECOND RECOMMENDATION OF THIS STUDY IS THAT THE CITY COUNCIL WORK WITH OTHER PERTINENT LOCAL GOVERNING BODIES TO (1) ESTABLISH AN ENVIRONMENT THAT STIMULATES THE PRODUCTION OF DESIRABLE HOUSING, AND (2) AGGRESSIVELY PURSUE ITS GOALS AS SET FORWARD IN THE HUD HOUSING ASSISTANCE PLAN.

Economic Development

Bay City, as well as much of the middle and upper Texas coast, has been fortunate in recent years that economic factors have combined to make the

area attractive for industrial growth and expansion. Thus, while many parts of the nation have suffered severe unemployment, this area has dealt with the much more positive problems of growth management. However, it is incorrect to assume that such growth will continue to occur, or that the current situation will automatically stimulate additional growth. Thus, a planned approach to continued economic development is essential.

While it is true that current economic growth will not automatically result in additional growth, there is a definite advantage in using success to generate additional success. The Bay City area currently has a large construction force resident in the area. Thus, there could be a cost-saving incentive in timing additional construction to take advantage of those workers as present jobs near completion. It is essential that the proper contacts be made with diverse industrial representatives early in order to begin the process of recruiting such industry for the area. The city should review the feasibility of the existing industrial park and marine access areas with these representatives and seek to provide the necessary infrastructure.

THE THIRD RECOMMENDATION OF THIS REPORT IS THAT THE CHAMBER OF COMMERCE AND THE CITY COUNCIL CONDUCT A DETAILED ANALYSIS OF WHAT THE AREA HAS TO OFFER INDUSTRY, AND DETERMINE WHAT KIND OF INDUSTRY IS MOST COMPATIBLE WITH EXISTING INDUSTRIES AND QUALITY OF LIFE. THIS INFORMATION CAN THEN BE USED TO WORK WITH THE TEXAS INDUSTRIAL COMMISSION AND PRIVATE INDUSTRY REPRESENTATIVES IN ORDER TO PROVIDE A SOUND INDUSTRIAL BASE FOR THE COMMUNITY.

Parks and Recreation

A major current and future deficiency identified in the other sections of this report focuses on parks and outdoor recreation. It is common

that such facilities and programs are provided by the local governing bodies, since the return on investment is usually not attractive to private developers. Thus, there is a clear and direct need for the City Council to take positive steps toward alleviating park and outdoor recreation deficiencies, and providing a basis for meeting future demands. It is particularly important the the city work with developers to reserve sufficient parks and open space within new and expanding subdivisions.* A variety of possibilities present themselves, from cooperating with the Bay City Independent School District and Matagorda County, to a rational step-wise planning, acquisition, development and maintenance program. In addition, funding is available through a number of state and federal agencies, but applications for such funds must be based on sound data and present themselves as part of an overall program and plan.

THE FOURTH RECOMMENDATION OF THIS STUDY IS THAT THE CITY COUNCIL INITIATE A COMPREHENSIVE AND LONG-RANGE PLAN FOR ACQUISITION, DEVELOPMENT AND MAINTENANCE OF PUBLIC PARK AND OUTDOOR RECREATION FACILITIES AND PROGRAMS.

Growth Management

It is clear that Bay City will continue to grow. It is also clear that certain steps must be taken now to ensure both that growth continues and that the reults of that growth are desirable. This study has made a number of recommendations to that end. However, just as growth is dynamic, so must the communities' response to growth be dynamic. It is impractical to perform the steps recommended in this study and assume that growth-related issues are thereby eliminated. The one remaining step is to establish a mentality of growth management through which the city's approach to growth is as dynamic and flexible as that growth itself.

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*See Appendix A, Review of Draft Subdivision Regulations

For example, the first recommendation in this report essentially said that current efforts to expand water, sewer, health care delivery and community development should be well managed to ensure their success. However, more than that is necessary if the community expects to maintain a balanced growth and a congenial relationship between expectations for economic development and quality of life. In addition to good management of existing programs, plans should be made for future expansions of parks and open space, solid waste disposal sites, water and sewer systems and public and administrative facilities and programs. In addition, growth management should not stop with long-range plans, but in some cases acquisition of land for expansion should be considered. Such acquisition would (1) give adequate warning to future land uses to avoid conflicts and (2) provide lead-time for the city to conduct the necessary permitting studies and preliminary engineering in order to have facilities on line at the time they are needed.

Consideration should also be given to the implications of gaining home-rule status. Annexation powers, in particular, can be a powerful growth management tool if properly exercised. But these actions must be rigorously supported by a current comprehensive plan, capital improvements program, zoning ordinance, and subdivision regulations.

THE FIFTH RECOMMENDATION OF THIS REPORT IS THAT THE CITY OF BAY CITY INCLUDE A CONSCIOUS GROWTH MANAGEMENT STRATEGY IN ITS LONG RANGE AND COMPREHENSIVE PLANNING.

APPENDIX A

A REVIEW OF THE BAY CITY SUBDIVISION ORDINANCE

This appendix presents a review of the Bay City Draft Subdivision Regulations. The review is directed at two issues we believe are relevant to evaluating the management of growth in Bay City:

1. Quality Development
2. Self-supporting Development

The first issue, Quality Development, can be fully addressed only through an integrated analysis of Bay City's zoning ordinance, capital improvements program and master plan as well as the subdivision ordinance. However, some conclusions can be drawn:

1) The draft subdivision ordinance does not adequately address the relationship of residential and commercial development in a subdivision. One of the usual complaints of homeowners is that land the developer indicated would remain undeveloped later becomes strip retail or apartments. Once proposals have been made to subdivide a new area, the city might wish to undertake more detailed master plan for an area to establish, and limit, retail and multi-family areas in advance.

2) The ordinance does not require developers to incorporate parks and other public use areas into subdivision plans. Particularly in periods of rapid growth, this may leave substantial areas of the city, collections of small subdivisions, with no public areas.

The issue of self-supporting development is partially dealt with by the ordinance. Developers are required to donate or pay for streets, curbs, gutters, street signs and street lights. However, the city is forced to incur additional costs as a result of new subdivisions which must initially be subsidized by existing residents. These costs include:

1. Costs of review and inspection of plans and construction
2. Parks
3. Schools
4. Fire and police stations and equipment
5. Traffic controls
6. Extension and widening of thoroughfares

If the city wished, it could recoupe much of this cost in subdivision fees and required dedications. Enabling the city to afford more careful review of subdivision plans could also result in better quality development, and in more effective placement of public areas.

One of the major obstacles which Bay City faces if it attempts to enforce quality, self-supporting development is that development will move outside the ETJ. Bay City would then face decisions about annexation of existing development with public services which do not meet its standards, or allowing new home rule areas to develop around it. If Bay City wishes to pursue a high-quality growth strategy, it must consider:

1. What constraints can it exercise over the formation of municipal utility districts (MUDs) and the standards of development they employ?

2. Is there sufficient demand for high quality development to make a strategy politically and economically acceptable to Bay City landowners and residents?

3. Would development of areas with lower standards adjacent to Bay City erase the benefits of a quality growth strategy?

If Bay City desires to fashion a growth strategy which will produce a certain level of design and public amenities, the legal tools exist. The constraints will be primarily political and secondarily economic.