BRAZORIA COUNTY COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

BOVAY ENGINEERS, INC./RPC, INC.

HOUSTON/AUSTIN

BRAZORIA COUNTY
COMPREHENSIVE PLAN

Coastal Energy Impact Program - 1979

Prepared by

Bovay Engineers, Inc./RPC, Inc.

January 1980

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

February 1, 1980

Dixie Brown, County Commissioner
E. E. Brewer, County Judge
Brazoria County Courthouse
Angleton, Texas 77515

Gentlemen:

Enclosed are 50 copies of the Brazoria County Comprehensive Plan, which has been prepared under the Coastal Energy Impact Program (CEIP). This report was developed to assist the County Commissioners, and other local officials, in planning for the population growth that will result from the additional energy-related development that is anticipated within Brazoria County.

Bovay Engineers, Inc. and RPC, Inc. have appreciated your assistance and that of other local officials and private individuals in providing much of the necessary data and information used in this report.

This study should be viewed as a general planning guide for the cities and the County. It is not intended to provide a definative analysis of the adequacy of specific facilities or services. Rather, it should alert local officials of the necessity to expand their facilities to accommodate forecasted growth. Detailed evaluation and engineering for specific services and facilities will need to be prepared prior to implementation of any of the general recommendations to verify and refine the estimated needs and recommended improvements.

We have appreciated the opportunity to be of service to Brazoria County and would be happy to clarify any items in this study in which you may have questions.

Sincerely,

J. Thomas Evans

J. Thomas Evans, P.E.
Bovay Engineers, Inc.

Andrew E. Reed

Andrew E. Reed, Vice President
RCP, Inc.

CONTENTS

LIST OF TABLES

LIST OF TABLES

LIST OF MAPS

SUMMARY

PURPOSE OF WORK

Congress passed the Coastal Energy Impact Program (CEIP) in 1976 to assist county and municipal governments in planning and execution of programs dealing with energy-related impacts resulting from new or expanding energy-related industrial locations in their areas. The CEIP provides grants for planning and replacement of recreational or environmental losses due to energy-related industrial activity. There is also a substantial amount of credit assistance for indirect loans and loan guarantees for public facilities.

This report, prepared by Bovay Engineers, Inc. and RPC, Inc., through the Coastal Energy Impact Program for Brazoria County will provide an orderly plan of action to deal with energy-related growth and to take advantage of the subsequent available funding. It is anticipated this planning program will lead to additional funding, from the CEIP or other federal programs, which will help to pay for public facilities and services deemed necessary as a result of new growth. Roads, civic arenas, recreational areas, and other similar projects may be eligible for such funds.

FINDINGS

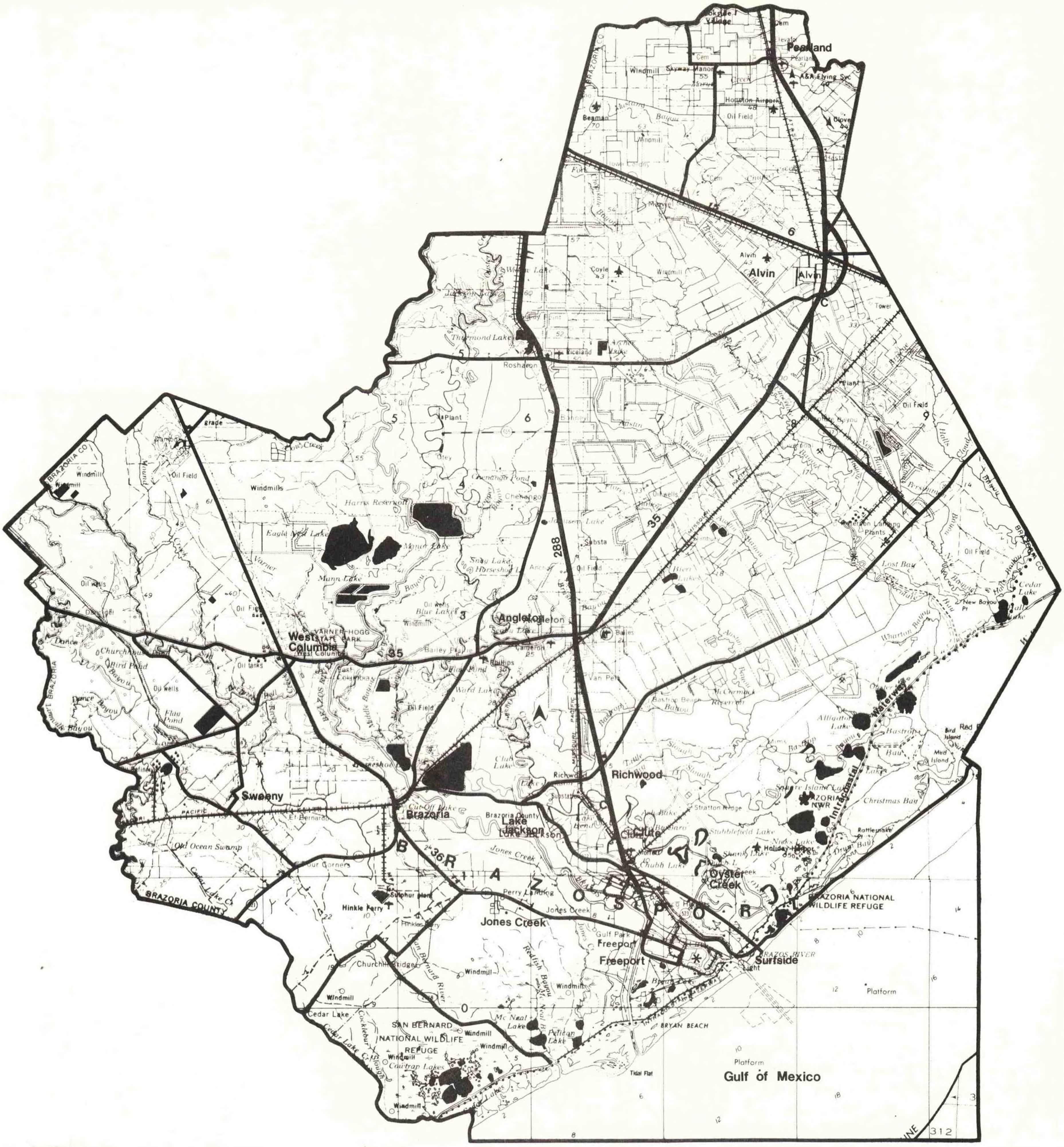
This report consists of three major chapters: I. Energy Impact and Short Range Planning, II. Long Range Planning, and III. Legal and Fiscal Analyses and Capital Improvements. Map 1, "Brazoria County," shows the location of the county's major cities, highways, and natural features. The following summarizes the contents and findings of each chapter.

CHAPTER I. ENERGY IMPACT AND SHORT RANGE PLAN

Brazoria County represents the entire spectrum of the petroleum and chemical industries. It has one of the highest concentrations of energy-related facilities of any area along the Texas coast and is the focus of one of the world's largest petroleum-related energy complexes. Five major petro-chemical complexes are located in the county, including Amoco, Dow, Dow Badishe, Monsanto, and Phillips.

Because of the well-established existing energy-related activities and facilities, it is anticipated that employment and population impacts in Brazoria County will continue to result from such facilities. The extent to which new or expanded energy activities and facilities will cause employment and population impacts through 1983 in Brazoria County is estimated in this chapter. Based on conversations with individuals involved in energy-related activities, expansions of existing facilities, proposed facilities, and employment figures are determined. The employment figures are then translated into population forecasts and distributed to the various communities in Brazoria County.

Texas Department of Water Resources (TDWR) figures, past energy-related employment data, and information obtained from interviews served as the basis for estimating the energy-related growth through 1983.



0 5 10 15 Statute Miles

0 5 10 15 20 25 Kilometers

BRAZORIA CO. COMPREHENSIVE PLAN
COASTAL ENERGY IMPACT PROGRAM - 1979

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 1

TDWR projections are conservative, particularly compared to recent local estimates. Thus, the projected energy-related employment figures are also conservative.

The analysis revealed that for almost all cities there would be a tapering of energy-related growth after 1979 - and in fact, that there may actually be a decline in energy-related employment resulting from the completion of the construction phases of the Phillips and Dow expansions.

Because of the conservative nature of the population estimates, the analysis of the effects of the energy-related population growth or existing public facilities and services is expected to be minimal. In fact, in no community did extra energy-related growth bring about a need for over one additional policeman and/or fireman. The amount of additional water demand and/or wastewater treatment requirements in all cases is small enough so as not to require significant expansion of these facilities beyond that required for "natural growth."

The fiscal analysis evaluates the consequences of increasing population on the amount of revenues and expenditures necessary for individual cities and Brazoria County itself. Based on past income and expenditure patterns, the analysis reveals that the growth could result in a potential surplus of revenues over expenditures for the county and the cities within the county with the possible exception of Richwood.

Finally, Chapter I provides a list of "Recommendations" for individual cities and the county that would allow expansion of public services and facilities to accommodate the growth projected through 1983. These recommendations range from "current facilities adequate" (Jones

Creek) to the addition of one (Richwood) to seven (Pearland) firemen and one (Surfside) to four policemen (Freeport and Alvin).

The county is recommended to add seven additional members to the sheriff's department. Additional water, sewer, and solid waste facilities are itemized in the Appendix.

CHAPTER II. LONG RANGE PLAN

This chapter extends the impact of growth another 15 years beyond the end of the five-year study period discussed in Chapter I. Population and land use is forecast through 1998. The analysis reveals a forecasted county population growth from 133,700 in 1978 to nearly 210,000 by 1998. Individual cities are projected to grow varying amounts ranging from about 1,500 people for West Columbia and Sweeny to nearly 30,000 for the eight community Brazosport area. The most rapidly growing communities in the next 20 years are expected to be Pearland with about 13,000 growth, and Lake Jackson with about 12,000 new residents.

The factors that will determine the location of housing, commercial, and industrial development to serve this projected population growth have been examined. These factors include flood plain designations, highways and rail lines, port facilities, and environmental features such as marshland and wildlife refuges.

Housing was also examined for both individual communities and the total county. Housing conditions and vacancy rates have been evaluated for each community and projected housing needs were calculated based on projected population growth. It was discovered that there are virtually no vacant rental units in the entire Brazosport area and few throughout

the rest of the county. The same "tight" market applies to single family units as well, suggesting that new housing construction is absolutely essential for even a minimal amount of population growth. Over 26,000 additional housing units will be required in Brazoria County over the next 20 years to accommodate the projected population growth of about 75,000.

Public service and facility requirements are also forecasted through 1998, based on the forecasted population increases and maintenance of the existing service levels within each community. All cities will need to expand their police and fire protection personnel. In northern Brazoria County, Alvin and Pearland will need to expand both their water supply systems, and their sewage treatment facilities. In the Brazosport area, the water supply systems, in general, should be adequate, while the sewage treatment facilities will require expansion. Sweeny and West Columbia should have adequate water supply and wastewater treatment capacity, with the exception of West Columbia's need to expand its water supply system. All school districts will also likely need to expand their facilities by 1998 to support the increased school enrollment.

For county government, the major needs for additional public services and facilities by 1998 have been identified to include enlarging the sheriff's department by about 40 personnel, continued improvements of county highways, and possible county involvement in development of recreation and storm drainage facilities.

The final section of Chapter II examines natural growth trends and options. The "Natural Trends" alternative is basically a <u>forecast</u> of development trends. This alternative assumes no coordinated effort to

change the future location or amount of development likely to occur in Brazoria County. It suggests continued rapid development in northern Brazoria County representing a greater amount of growth spillover from Houston. The "Natural Trends" alternative suggests an intensification of development along the new Hwy. 288 corridor. It also suggests an in-filling of development in the Brazosport area and a moderate amount of growth in the West Columbia-Sweeny area.

A number of other alternatives have been developed and categorized as "Growth Options." These alternatives represent exaggerations and amplifications of some of the tendencies of the "Natural Trends." A more rapid growth in northeast Brazoria County including the development of a Pearland/Alvin/Friendswood complex is one of the options. Another option would be to develop Angleton as a processing and/or storage center tied to this city's central rail and highway facilities. The accelerated growth of the Brazosport area is another option which could be realized by the further deepening of the Port of Freeport and/or other major industrial developments. Methods to manage future development to implement the "Growth Options" are also discussed as well as the potential central role of the county in accomplishing coordinated development.

CHAPTER III. LEGAL AND FISCAL ANALYSES AND CAPITAL IMPROVEMENTS

Supplying the long range community and county needs described in Chapter II will require certain legal tools and financial resources. Chapter III examines the legal powers vested in the counties - and specifically those exercised by Brazoria County. Subdivision regulations, fire and police protection, recreation, flood control, solid waste disposal,

and health regulations have all been evaluated.

A general "Fiscal Analysis" was also undertaken. It reveals that revenues for the county should continue to exceed expenditures between now and 1998. It suggests as population increases, the potential amount of surplus could also increase. A cursory analysis of borrowing power and debt service reveals a favorable financial position for the county.

Finally, a listing of the needed capital improvements from Chapter II is shown. Included is an estimated date for construction, a preliminary cost estimate, the responsible level of government, and future source(s) for the specific improvements. While this capital improvements list is far from all-encompassing, it does provide a starting point for community and county long range (10-year) planning.

There are grants and loans available through both the federal and state governments to aid the county and communities in providing needed facilities and services. For example, the Coastal Energy Impact Program, the Farmers Home Administration, and the Land and Water Conservation Fund offer federal programs for which Brazoria County of the cities within it may be eligible. Such programs may be helpful in facilitating both planning and development. These programs are discussed in Chapter III.

CHAPTER I

CHAPTER I. ENERGY IMPACT AND SHORT RANGE PLAN

METHODOLOGY

The methodology for Chapter I of the Brazoria County Comprehensive Plan consists of the following six tasks:

1. Identification and description of energy facilities new or expanded since July 1, 1976, or projected to be started before October 1, 1983.

2. Inventory and evaluation of both currently available public facilities and services and key private sector facilities.

3. Determination of total energy activity impacts.

4. Establishment of the magnitude of energy activity impacts on current community conditions.

5. Summarization of socio-economic impacts.

6. Identification of impacts requiring government expenditures.

The methodology employed in producing the inventory of new or expanded energy facilities consists of the analysis of recent trends in federal Outer Continental Shelf (OCS) exploration and production within a service range of the Brazoria County area. The extent to which OCS activity since 1976 and projected through 1983 will stimulate, or has stimulated, demand

for onshore service facilities was determined. In addition, a review is made of a variety of secondary sources identified eligible energy acitivties which have located or expanded in Brazoria County within the planning period. These secondary sources were substantiated by interviews with local officials and knowledgeable individuals in the county. An inventory of eligible new or expanded energy facilities and activities was compiled based on these sources and, where identifiable, estimates of construction and operation employment determined. Also, various population projections for the area were analyzed to determine short and long-term trends in both population and employment, focusing on employment in the energy sectors. Based on these data, a range of projected population in the county was produced and the increment attributable to employment within new or expanded energy activities was estimated. These populations were disaggregated, based on estimates of the distribution of employment among major urban nodes within the county.

The methodology for compiling the inventory of existing public facilities and services within the county consists of a review of published sources, as well as interviews with the representatives of both county governments and major urban areas. Data on the types of facilities and services provided, their present capacity, and plans for future expansion of the capacity of public facilities and services were tabulated for the major urban nodes and the county as a whole. Housing and land use were also inventoried on a county-wide basis.

The next task consists of comparing the projected population for the major urban areas to the existing and planned future capacities of the

public facilities and services. The approach utilized distribution of the facility or service capacity over the exisiting population to derive a per capita service ratio. The projected new population was applied to that ratio, determining the adequacy of any existing reserve capacity, to absorb the new population. The determination of adequacy of the existing facility or service and the amount of reserve capacity available was partially based on interviews with local public officials.

BASELINE ANALYSIS

BRAZORIA COUNTY ENERGY FACILITIES

Introduction

Section 308(c) of the Coastal Zone Management Act (CZMA) of 1972[1], as amended, 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 types of energy activities and facilities covered by these Coastal Energy Impact Program (CEIP) grants. These are listed in Table I-1.

Brazoria County has one of the highest concentrations of energy-related facilities of any area along the Texas coast. It is the focus of one of the world's largest petroleum-related energy complexes, embracing development and production of oil and gas (both onshore and offshore), transportation and handling of foreign crude, petroleum storage, processing and refining of oil and gas, and manufacturing of diverse petrochemicals. Thus, the county represents the entire spectrum

Table I-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 geopressured gas
8. Facilities/activities associated with transportation, conversion, treatment, transfer, or storage of liquefied natural gas
9. Drilling rigs, platforms, subsea completions, subsea production system
10. Construction yards for platforms and exploration rigs
11. Pipe coating yards
12. Bases supporting platforms and pipeline installations
13. Crew and supply bases (offshore activity)
14. Marine pipelines 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).

of the petroleum and chemical industries, from exploration through manufacture and distribution of finished products.

The purpose of this section is to investigate employment and population impacts in Brazoria County, resulting from new or expanded energy activities and facilities. (See Map 2.) New or expanded activities or facilities consist of those occurring since July, 1976 (when the CEIP provisions of the CZMA took effect) or those which are expected to begin by October of 1983. The latter date establishes the other half of the boundary for the planning time frame.

Following the comparison between existing public facilities and services and their capacity, and the required capacity with the addition of new energy-related population, the magnitude of the infrastructural impacts was estimated. This task identified the type and amount of additional public facility or service capacity required to meet the new population demands while yet maintaining established standards of adequacy. This identified information was summarized in tabular form to allow comparison of the existing adequacy of the public facilities and services with the additional capacity required to meet future population both inclusive and exclusive of energy-related growth.

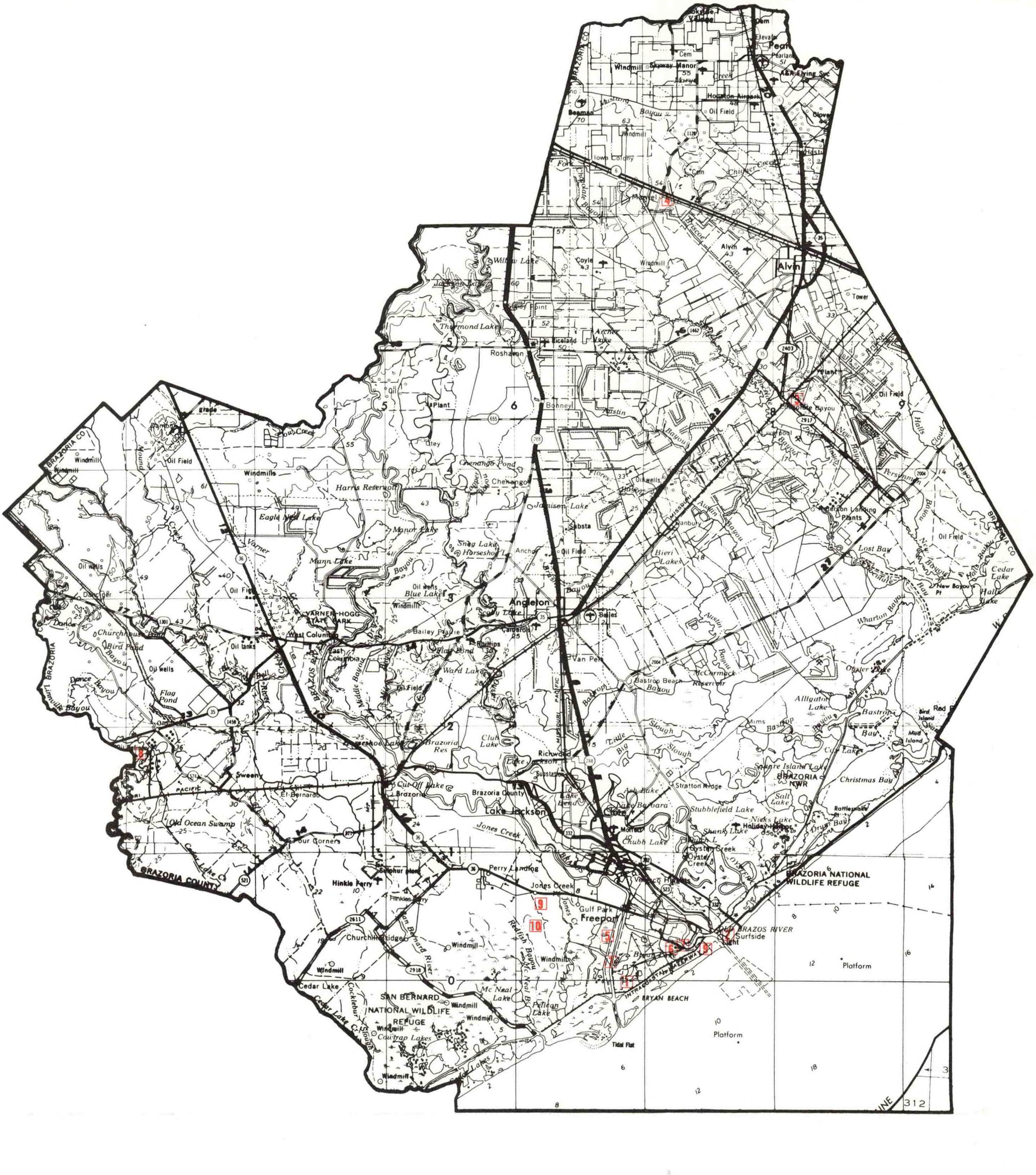
The impacts requiring government expenditures were identified by analyzing the annual audit reports for the urban areas, school districts, and the county over a five-year period, determining trends in public facility and service expenditures and revenues. Revenues and expenditures were projected from 1979 through 1983, based on actual revenues and expenditures and the population for fiscal years 1974-1978. The independent variable of this analysis was population, and the dependent variables

were revenues and expenditures. Two types of calculations were performed, that for total population anticipated by 1983, and for population in 1983 exclusive of energy facilities. These figures provide a comparison between the projected revenues and expenditures from which the costs of the energy-related growth can be ascertained. Additional future expenditures were further analyzed in terms of the specific additional facilities and services required to meet the new population demands. Thus, increased expenditures as a result of serving new populations were isolated, as well as the capital costs associated with such growth.

This section develops numerical projections of such impacts; however, due to the continual state of flux of energy policy and development, it is virtually impossible to develop forecasts that are valid for more specific use than setting a general context of potential impacts. These results, as with almost all projections, should be used with considerable qualification.

Such a cautionary statement is particularly appropriate for Brazoria County, since it is different from areas primarily impacted by only one activity or facility. In Brazoria County, workers can shift employment among various components of the petroleum and chemical industries. Thus, it is very difficult to separate specific activities from overall economic development in the county.

One particular anomaly is that the CEIP definition of energy-related activities and facilities (Table I-1) omits the petrochemical industry, which is the most important industry in the county. The county has five major petrochemical complexes: Amoco, Dow, Dow Badische, Monsanto, and Phillips. Nevertheless, the definition excludes chemical



LEGEND

1 Bryan Mound - DOE Strategic Petroleum Reserve
2 Dow Crude Oil processing plant
3 Geothermal-Geopressured Energy Development DOE, UT and General Crude Oil Company test well
4 Groce Corporation planned reprocessing plant
5 Houston Natural Gas coal slurry pipeline
6 Irish Pipe Coating Company
7 Offshore petroleum exploration and development
8 Phillips Refinery
9 Seaway Pipeline
10 Texas Deepwater Port Authority

0 5 10 15 Statute Miles
0 5 10 15 20 25 Kilometers

BRAZORIA CO. COMPREHENSIVE PLAN
COASTAL ENERGY IMPACT PROGRAM - 1979

Existing and Proposed Energy Facilities

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 2

industries which use refined derivatives of petroleum merely as feedstocks to produce non-energy-related products. Thus, later stages of petroleum-product processing are split off from CEIP attention, despite the fact that they co-exist within the county (and sometimes within the same site complex) with earlier processing stages.

Even without counting these industries, however, Brazoria County has, and is projected to have, numerous energy-related facilities which fit the CEIP definition, as shown in Table I-2. These include (1) a major refinery near Sweeny; (2) a new crude oil processing plant at Oyster Creek; (3) several gas processing plants; (4) several dock and storage terminal facilities related to offloading of imported oil, including a projected offshore deep-water port and a federal strategic petroleum reserve storage site; (5) an extensive pipeline system, including a new pipeline to deliver imported oil from Freeport to Oklahoma; and (6) numerous facilities having either a direct or supplementary role in exploration of offshore oil and gas. In addition, the county is the site of test drilling for development of geothermal-geopressured energy along the Texas coast. It is also a possible terminal site for a coal slurry pipeline delivering coal from Western United States coal fields. The major new or expanded energy-related facilities are subsequently described in greater detail.

A factor which may affect overall energy growth trends in the county is the use of secondary and tertiary recovery agents in drilling oil wells, both onshore and offshore. Both types of recovery agents increase the reservoir pressure sothat more oil may be recovered. Secondary recovery agents include water and gas. Tertiary recovery

Table I-2

New or Proposed Energy Facilities in
Brazoria County that Coincide
with CEIP Criteria

Facility	Criterion Number (From Table I-1)
Major Refinery	5
Crude Oil Processing Plant	4
Gas Processing Plants	4
Dock and Storage Terminal Facilities Related to Offloading Imported Oil	17
Projected Deepwater Port and Federal Strategic Petroleum Reserve Storage Site	17
Extensive Pipeline System	8, 11, 14
Numerous Offshore Exploration Facilities	9, 10, 12, 13, 15, 16, 17

agents include steam and carbon dioxide.

There are two projects of note which will be constructed within Brazoria County in the near future. While they are not energy-related facilities per se, they may cause an increase in energy-related activity. The Brazos River Harbor Navigation District is planning to construct a slip with equipment for unloading and loading barges and tankers on Quintana Island at the junction of the Freeport Channel and the Gulf Intracoastal Waterway (GIWW). Assuming that project construction remains on schedule, operation of the facility will begin in early 1981. Besides offering direct navigation access to the approach channel and the GIWW, the slip will be in close proximity to a major pipeline network and to industries in the project vicinity. In addition, funding has been approved, but not yet allocated, for enlargement, realignment, and future maintenance of the existing Freeport Harbor Federal Navigation Project, including the main channels and turning basins, in Brazoria County. The project will result in more efficient operation of oceangoing vessels which utilize the facilities adjacent to the waterway. Although the project was authorized to be deepened to 45 feet in the River and Harbor Act of 1970, plan formulation studies conducted for preconstruction planning have determined that the most appropriate depth for the main channels and basins is 50 feet.

Methodology

The methodology for estimation of energy-related employment and population impacts, summarized in Table I-3, consists of two main tasks.

Table I-3

Summary of Methodology Used for Energy Impact Analysis

Task	Objectives
Investigate published population data.	Select appropriate set of population projections for county. Distribute county population projections among cities. Identify existing relationships between population, employment, and energy-related employment.
Consult with individuals in the area who are closely involved with major energy-related facilities.	Gather data on recent (since 1976) or anticipated (to 1983) changes in employment levels.
Analyze and integrate information from preceding tasks.	Quantity expected population changes that might be induced by energy facilities and activities.

The first is the investigation of published population data. The objectives of this investigation are to (1) select an appropriate set of population projections for the county, (2) distribute these population projections among the individual cities, and (3) identify existing relationships between population, employment, and energy-related employment. The other task is the consultation with individuals in the area who are closely involved with the major energy-related facilities, to gather data on recent (since 1976) or anticpated (to 1983) changes in employment levels. Information from these two tasks was then analyzed and integrated to quantify expected population changes which might be induced by energy facilities and activities.

Several sources of county population forecasts were examined to obtain population projections for five-year intervals between 1980 and 2000. Two of the major sources were the Texas Department of Water Resources (TDWR) and University of Texas (UT) Population Research Center. The most recent updated estimates for the two agree closely; and the TDWR estimates were adopted for use in this study because projections to 2000 were readily available.

These projections are only available on a county-wide basis, yet the CEIP study requires that projects be developed for each of several individual cities. Consequently, it was necessary to use linear regression techniques, using county population as the independent variable and city population as the dependent variable. Time series of varying lengths were available for the various cities, based on official censuses between 1900 and 1970, and on U.S. Census Bureau estimates for

1973 and 1975. For cities with too few data points, rough estimates of future population were made based on recent growth rates. Interpopulation was used for interval years not covered by U.S. Census Bureau data on TDWR projections.

Another objective of the first task was to obtain ratios between total employment and total population, and between energy-related employment and total employment. For this purpose, statewide employment data for 1975, available from the Texas Employment Commission, was matched with the 1975 U.S. Census Bureau population estimate to obtain the first ratio. The second ratio was then obtained by breaking down county-level Bureau of Census employment data[2] by Standard Industrial Classification (SIC) codes, to separate energy-related employment.

The next task was a series of telephone interviews with individuals involved in energy-related activities. An inventory of new or expanded (July 1976 - October 1983) related facilities in Brazoria County was conducted, concentrating on employment levels among the specific companies. These companies and individual contacts were identified through information derived from local newspaper articles, various publications, state permitting files, and additional information elicited during the interviews. While the inventory was not necessarily exhaustive of all new or expanded facilities, it did cover the major ones in terms of employment changes.

The resulting employment figures are useful in identifying the general scope and location of energy-related employment fluctuations. However, for planning purposes, it is necessary to allocate the residential impacts of this employment both spatially and chronologically. Empirical information on residential distribution of employees was not available for more

than one of the energy-related projects, so the allocation was made by use of a gravity model.[3] Certain assumptions were made for each project, concerning (1) the ratio of new-resident to local-hire and outside-commuting employees and (2) the shape of the temporary employment curve associated with the construction phase of the project. The result was a series of calculations which estimates the number and location of new-resident, energy-related employees, distributed over the 1976-1983 period.

These estimates were then combined with the population projections obtained from the first task, to obtain estimates of population increases induced by CEIP-eligible energy activities. This analysis was to quantify the deviations of actual or expected conditions (based on the interviews and gravity model from normal-case growth conditions in which the ratios between (1) population, (2) total employment, and (3) energy-related employment (determined from published sources) held constant between 1976 and 1983. Assumption of these ratios holding constant implies a certain amount of energy-induced population growth. This growth was subtracted from the succeeding population projections to obtain a series of "without-energy" population estimates. "With energy" populations estimates were then obtained by adding in the population growth induced by the identified energy-related projects. Such growth was calculated by taking the employment estimates produced by the gravity model, and multiplying them by the employment/population ratio.

Although the CEIP timeframe is the 1976-1983 period, the analysis was extended backwards to 1974. The purpose of this extension was to allow the matching of demographic and fiscal data over a period of five years preceding the present. The methodology was adjusted slightly to

accommodate this need.

Results

Projections

Population estimates and projections for Brazoria County and 13 of its cities are given in Table I-4. County and city figures for 1975 come from U.S. Census Bureau estimates; for 1974, from an interpolation of the 1970 census figure and the 1975 estimate. County figures for 1976-1983 are based on the 1975 census estimate and the 1980 and 1985 TDWR projections, and associated interpolations. Continuity between the U.S. Census Bureau and TDWR figures is assured by the closeness between their respective 1975 county estimates. The U.S. Census Bureau showed a figure of 124,380; TDWR, a figure of 122,800.

City figures for 1976-1983 for all cities except Jones Creek and Surfside are derived from the county-city regression analysis, using the 1980 and 1985 TDWR county estimates. Table I-5 lists the regression equations used in the analysis. City figures for interval years are interpolated to reflect constant annual growth rates; otherwise, some cities would show temporary population dips in some of the interval years.

Three cautionary statements are appropriate at this point. First, these initial projections assume no deviations, based on actual energy-related activity, from normal anticipated growth. Adjustments must be made, based on the interview information. Second, projections based on the census estimates and TDWR projections are considerably lower than recent local estimates. The Brazosport Chamber of Commerce, for example, estimated a population for that area of 66,138 in early 1979; the 1979 projection based

Table I-4

Population Estimates and Projections, 1974-1983

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Adjusted for Energy Impacts 1983
Alvin	13,112	13,561	13,747	13,936	14,127	14,321	14,517	14,878	15,249	15,628	15,470
Angleton	10,292	10,589	10,954	11,331	11,723	12,127	12,545	12,862	13,187	13,520	13,386
Brazoria	1,814	1,890	1,928	1,966	2,006	2,046	2,087	2,131	2,176	2,222	2,227
Clute	6,720	6,959	7,138	7,322	7,511	7,704	7,903	8,076	8,252	8,432	8,444
Freeport	11,518	11,724	12,261	12,822	13,409	14,022	14,664	14,993	15,330	15,674	15,914
Jones Creek	1,716	1,805	1,823	1,842	1,861	1,881	1,900	1,910	1,920	1,929	1,934
Lake Jackson	14,642	15,363	15,876	16,406	16,954	17,520	18,105	18,612	19,134	19,670	19,516
Oyster Creek	941	976	1,004	1,033	1,062	1,093	1,124	1,154	1,185	1,217	1,239
Pearland	9,173	9,734	10,221	10,732	11,268	11,831	12,432	12,973	13,548	14,148	13,798
Richwood	1,613	1,679	1,721	1,765	1,809	1,855	1,902	1,949	1,997	2,047	2,028
Surfside	1,460	1,620	1,781	1,957	2,152	2,365	2,600	2,858	3,142	3,453	3,304
Sweeny	3,037	3,025	3,137	3,253	3,373	3,498	3,627	3,691	3,757	3,824	3,853
West Columbia	3,233	3,330	3,417	3,507	3,598	3,692	3,789	3,850	3,912	3,976	3,993
Unincorporated											
County Totals	120,033	124,380	127,412	130,519	133,701	136,961	140,300	143,637	147,054	150,552	149,822

Note: Projections for Jones Creek and Surfside are based on recent growth rates, rather than on linear regression techniques.

Source: 1Texas Department of Water Resources, Population Projections (computer print-out), December, 1978.
U.S. Bureau of the Census, Current Population Reports.

Table I-5

Results of Linear Regression

(rounded to six decimal points)

City	r	a	b
Alvin	.984404	- 704.405750	.108497
Angleton	.995348	- 811.016356	.095194
Brazoria	.979145	247.997529	.013106
Clute	.974375	1669.810645	.051556
Freeport	.943963	859.039391	.098398
Lake Jackson	.985706	- 3397.657778	.153261
Oyster Creek	.996828	- 155.433937	.009122
Pearland	.994655	-11678.249040	.171782
Richwood	.999110	- 83.481133	.014149
Sweeny	.809890	951.110701	.019074
West Columbia	.966265	1255.308757	.018058

Regression Equation: $Y = a + bX$, where Y = city population, X = county population

on Table I-2 is only about 50,000. The chief sources of inaccuracy, if any, are probably the newer communities of Jones Creek, Oyster Creek, Richwood, and Surfside, whose growth patterns have yet to be fully established. Third, the estimate of exisiting county population may be conservative because of the recent rapid growth in unincorporated and rural areas which are difficult to monitor.

The ratio between state population and employment in 1976 was 2.4. If this ratio held constant over the years, a population increase of 2.4 persons would be induced by each new-resident employee, whether energy-related or non-energy-related. It must be noted that the ratio between state population and employment from 1970 to 1977 has varied, and has been declining since 1971. It has changed by .3 from 1971 to 1977, i.e. from 2.6 to 2.3. However, the average ratio over that period has been 2.4. It can be assumed that the ratio will not change appreciably, although it may vary. Meanwhile, the ratio between energy-related employment and total employment in Brazoria County in 1976 (Table I-6) was about .1005. If this ratio held constant, about one-tenth of the total direct employment growth (and hence, total direct population growth) would be attributable to new-resident, energy-related employees.

The first ratio is much more likely to remain at nearly the same level than is the second. The philosophy behind the CEIP is that local jurisdictions may experience unique impacts due to coastal energy activities. The presumption that these impacts are exceptional suggests that they will be distributed unevenly, rather than following smooth, historical trends. Supplementary analysis, based on an identification of actual energy-related

Table I-6

Energy-Related Employment in Brazoria County, 1976

SIC Code		Employment
1311	Operation of, production from oi/gas field properties	70
1321	Production of liquid hydrocarbons from oil/gas field gases	58
1381	Drilling and other oil and gas field services	500
1629	Heavy construction	472[a]
2911	Petroleum refining and associated activities	1,750
3533	Manufacturing of oil field machinery and equipment	60
3731	Shipbuilding and repairing, including tanker repair	10[b]
4453	Lighterage	53
4463	Marine cargo handling	112[c]
4911	Electric services-generation, transmission, distribution	185
4922-25	Natural gas transmission/distribution; liquified petroleum gas production/distribution	60
5171	Petroleum bulk stations and terminals	53
		3,383
	TOTAL EMPLOYMENT	33,660

[a] Figure is estimated at 20 percent of SIC Code 162 total; the remainder is assumed to be petrochemical and other indu strial construction.

[b] Figure is estimated at 20 percent of SIC Code 373 total; the remainder is assumed to be related to fishing boats.

[c] Figure is estimated at 80 percent of SIC Code 446, since a high percentage of total cargo by weight along the Texas coast is energy-related.

Source: County Business Patterns, Texas (U.S. Department of Commerce, Bureau of Census, 1976).

activities, is therefore required.

Interviews

The search identified numerous energy facilities and activities within Brazoria County. A brief description, with employment estimates, is given for each. An analysis of their composite effects follows.

Inventory of Energy Facilities

Bryan Mound

This facility is one component of the U. S. Department of Energy's (DOE) Strategic Petroleum Reserve program. That program involves storage of oil in underground salt domes for possible emergency needs in the event that foreign oil deliveries are temporarily interrupted. The site is located just south of Freeport.

Construction at the site began in March of 1977. While construction has yet to be fully completed, storage of oil has been underway since January of 1979. As of March 17, 1979, the facility held 31.1 million barrels (MMBBLs). It is designed to hold 60 MMBBLs, and further expansion by 1985 will increase its capacity to 180 MMBBLs.

Recently,there have been difficulties in finding enough oil to purchase for storage purposes. Another problem has been the disposal of displaced brine from the salt formations. Underground disposal wells have proven insufficient, requiring the laying of a brine dispersal pipeline extending 12.5 miles out into the Gulf. These issues have introduced some uncertainty into the operation, but have not yet led to

a major revamping of storage plans.

The senior site representative for DOE estimates that the first year of construction (to about March, 1978) averaged 100-150 workers. Since then, the average for the last year has been about 300-350. After September, 1979, when the major portion of the construction is due to be completed, construction employment will recede to about 150, lasting through 1985. Operating employment, on the other hand, is about 50. This figure will be reduced to about 25 in another two years.

New resident-employment was allocated, in terms of residence, by use of the gravity model. Freeport, the nearest large city to the project, received 43.1 percent of the employees allocated to the 13 cities; Lake Jackson, 17.6 percent; Clute, 10.6 percent; Angleton, 8.5 percent; Alvin, 5.3 percent; and the remaining cities, 14.9 percent.

Dow Crude Oil Processing Plant

This plant is located at the Oyster Creek site on the Brazos channel, across from Freeport. Scheduled for completion in early 1980, it will have a capacity of 180 thousand barrels per day (MBD). Dow has already negotiated an oil supply contract, beginning in January of 1980, with PEMEX, the Mexican national oil company.

Construction on the plant began in January of 1976, with a construction employment level of about 100-200. Since then, construction employment has greatly increased to a present peak of 850. Operating employment is expected to be about 300.

Again, using the gravity model, Freeport received the major share of

new resident employees distributed among the 13 cities at 46.2 percent. Lake Jackson receives 15.1 percent, Clute, 13.7 percent; Oyster Creek, 7.7 percent; Angleton, 5.6 percent; and the remaining cities, 11.7 percent.

Geothermal-Geopressured Energy Development

Chocolate Bayou, near Liverpool, is the drilling site for a test well to study the potential of geothermal-geopressured energy development along the Texas coast. The well is the result of a cooperative effort by the U.S. Department of Energy, the University of Texas (UT) Bureau of Economic Geology, the UT Center for Energy Studies, and General Crude Oil Company of Houston. General Crude was awarded the drilling contract.

Geothermal-geopressured energy development in Brazoria County cannot really be expected to have significant employment impacts through October of 1983. Drilling of the test well is a minor activity, representing only a small fraction of normal oil and gas well drilling within the county. Only about 25 people are involved in the test drilling, counting several shifts.

Commercial development, meanwhile, will probably not commence for several years. Preliminary studies done by RPC, Inc., under a contract with the General Land Office of Texas, indicate that the economic feasibility of a geothermal-geopressured plant may be a marginal investment, given current energy prices. Consequently, development of this resource is not considered a significant energy activity for purposes of initial CEIP planning.

Groce Corporation

This company is planning a treatment plant for reprocessing of waste oil and grease in Manvel. Presently, the Texas Department of Water Resources (TDWR) water quality permit for the facility is being challenged by the North Brazorial Environmental Protection Association, the Friendswood City Council, and local drainage district commissioners.[4]

If the permit is granted, it is expected that plant construction might begin as early as September of 1979. The plant is a small one; the construction phase, which would last about a year, would only require about 20 people. Eventual operating employment, including various supportive personnel, would be about 25-35.

Houston Natural Gas Coal Slurry Pipeline

Houston Natural Gas (HNG) is one of two Texas companies attempting to construct a coal slurry pipeline to transport coal from Western states to users along the Texas coast. The HNG pipeline would originate near Walsenburg, Colorado, and terminate at an as yet undetermined site along the Texas coast, possibly Freeport.

HNG presently has a case pending before the state water courts of Colorado, seeking to obtain underground water to mix with the pulverized coal for transport out of the state. If this effort is successful, the major legal or political obstacle delaying the project will have been circumvented. The Texas Legislature granted coal slurry pipelines the right of eminent domain in 1977. Oklahoma has already granted similar rights, and the pipeline would cross only a small corner of New Mexico

without causing any serious right-of-way problems.

The HNG representative in Houston indicates that completion of the pipeline is still targeted for the fall of 1983, with construction beginning about 18 months prior to that date. In terms of employment impacts, pipeline construction within the terminal county would be relatively insignificant and of very brief duration. However, the dewatering and barge loading facilities would create permanent employment for about 50 operational personnel. Also, if Freeport were chosen as the terminal site, the pipeline might stimulate additional coal-related facilities in Brazoria County beyond 1983.

It should be emphasized, however, that the project is contingent upon the securing of adequate water supplies. This issue remains a very controversial topic in Colorado and other western states. Disposal of the contaminated water in Brazoria County could pose a significant ecological problem. It is by no means certain that Brazoria County will be chosen as the dewatering site.

Irish Pipe Coating Company

Pipe coating yards are specifically included as energy facilities under the CEIP regulations (Table I-1, Item 11). This company, which has its main headquarters in Shreveport, is located at Brazos Harbor near Freeport. The yard has been in operation since November of 1978.

The plant superintendent at Irish Pipe Coating stated that the yard presently employs 14 people. The potential for future expansion is uncertain, due to fluctuations in the availability of pipe coating contracts. It is not even entirely certain that the yard will remain at the Freeport site;

however, the site is well situated for transport of pipe by rail, barge, or ship.

Offshore Petroleum Exploration and Development

Responding to increasing fuel imports, the U.S. Department of Interior has significantly expanded its offshore leasing program. Compared to earlier leases, which were concentrated off the Louisiana coast, the Texas federal Outer Continental Shelf (OCS) is now reaping a larger share of the activity. Four sales in the Texas Gulf of Mexico have occurred since July of 1976; two more are planned for 1979, plus one each in 1980 and 1981.

Brazoria County does not have any major drilling rig and platform construction yards, as is the case with the Brownsville, Corpus Christi, and Beaumont-Orange areas. However, it does have numerous companies located in Freeport which provide various support services connected with off-shore activity. Collectively, offshore service companies in the county employ about 500 workers. Representative companies are shown in Table I-7.

Although the interview respondents were optimistic about future offshore expansion, recent leasing and drilling figures indicate that the level of offshore activity may have stabilized. Table I-8 shows drilling activity since 1970. A significant increase occurred in 1974, in concurrence with the expanded leasing program. Since then, activity has remained near the same level.

The U. S. Department of Interior leased 109 tracts in the Freeport vincinity in 1975, compared to only 102 from between 1975 to early 1979. Total drilling has remained near the 1974 level mainly because of development well drilling. Exploration, which accounted for 96.4 percent of wells drilled in 1974, declined to 56.9 percent of those drilled in 1978. Leases

Table I-7

Sample OCS-Related Companies in Brazoria County

Marine Services

Jone E. Graham & Sons
Brazosport Marine Service
Seasmaster, Inc.
Offshore Logistics
Val Cap Marine Services

Oil Field Services

Muchowich's Offshore Oil Services
VIT Offshore Oil Service
Magcobar
Delta Mud and Chemical
B. J. Hughes

Miscellaneous Services

Petroleum Helicopters
Evergreen Helicopters
Oceaneering International
Ocean-Tec

Contracting/Fabricating

Chromelloy-Gulfco Division
Murphy's Lease and Welding Service

Table I-8

Offshore Drilling Activity, Freeport Vicinity*

Year	Total Wells Drilled	Total Footage Drilled
1970	52	498,636
1971	44	466,931
1972	39	406,450
1973	58	521,768
1974	140	1,127,724
1975	133	1,132,870
1976	127	989,529
1977	141	1,274,258
1978	160	1,319,848

* The Freeport vicinity for purposes of this CEIP study is defined as the Brazos, Galveston, and High Island offshore areas, both state and federal, including all additions and extensions.

Source: Petroleum Information Company, Petroleum Information's Yearbook, 1970-1972, and Petroleum Information's Resume, 1973-1978.

on the 1974 tracts, except for those shown to have producible deposits, will expire during 1979; only 35 new tracts are offered in replacement. Platform service activity will probably compensate for any decreased drilling activity, but significant increases in total activity do not seem likely.

Phillips Refinery

This facility, located near Sweeny, is the largest of Phillips' five U.S. refineries. It is now undergoing expansion to accommodate a shift to processing of heavy crudes. World reserves of heavy crudes are expected to last about three times as long as the lighter, sweet 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 to 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 late 1983.

Construction employment has 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 contractor, employing about 2,200 workers at the site. Other construction workers raise this total to 2,400.

The public relations and training coordinator at Phillips indicates that the permanent employees are scattered within a 50-mile radius. This encompasses parts of Matagorda and Wharton Counties, however, there are very few employees who reside in Harris County. The large temporary influx of construction workers, on the other hand, has primarily affected the communities of Sweeny, West Columbia, and Brazoria. While some workers commute from as far away as Houston (60-mile radius), many are concentrated in trailer parks within Brazoria County and the surrounding area.

Brown and Root reported that a survey had been done in connection with a traffic study, on the residential distribution of its refinery construction employees. Results of this survey were requested, reportedly sent, but never received. In lieu of this data omission, the gravity model was again employed. Because the project is located in the northwest portion of Brazoria County, about as close to cities outside the county (e.g., Bay City, Wharton) as it is to the Brazosport, Angleton, and Alvin areas, these outside cities were included in the model. Lake Jackson received 12.6 percent of the total; Sweeny, 12.5 percent; Angleton, 9.5 percent; West Columbia, 8.6 percent; Freeport, 7.1 percent; Alvin, 5.9 percent; Clute, 5.5 percent; the rest of Brazoria County, about 2.6 percent; and outside cities, 35.7 percent.

Seaway Pipeline

Brazoria County is the site of terminal facilities for a pipeline extending from the Brazos Harbor channel to Cushing, Oklahoma. This connective pipeline allows delivery of imported oil to refineries and other energy-related facilities in the Texas Panhandle, Oklahoma, and midwestern United States. Present throughput capacity is

360 thousand barrels per day (MBD); ultimately, this figure may increase to 500 MBD.

Within Brazoria County, Seaway Pipeline has two terminal dock facilities at Brazos Harbor, connected by two 30-inch pipelines to terminal storage facilities at Jones Creek, seven miles away. These storage facilities consist of two tanks with a total capacity of 3.2 million barrels (MMBBLs). From these tanks, a single 30-inch pipeline leads north toward Oklahoma. Other energy-related facilities within the county are connected to the Seaway system via their own pipelines.

Construction on the pipelines and other facilities began in 1975. Construction of the Brazoria County components was fairly complete by October of 1976, when the terminals went into operation. The company now employs operating personnel within the county.

Plans to expand the storage facility will require about 100 construction personnel, beginning in June of 1979. This activity will involve the addition of two smaller tanks, increasing the storage capacity by about 1.0 MMBLs to a total of 4.2 MMBBLs. Beyond that, no further expansion is anticipated through the fall of 1983.

Texas Deepwater Port Authority

This facility comprises a planned offshore mooring system for offloading of supertanker oil cargo. The offshore system would be connected by pipeline to an onshore storage terminal. The mooring system would be located 26 miles offshore from Freeport, with the terminal five miles inland just west of Freeport. The complete system would have a throughput capacity of 2.5 million barrels per day

(MMBD), or 4.4 MMBD after a possible Phase II expansion.

The project is sponsored by the Texas Deepwater Port Authority (TDPA), a financially self-supporting public body created by the Texas Deepwater Port Authority Act of 1977. The proposal for a public port arose after the abandonment of an identical private project by a consortium known as SEADOCK. Although the Texas Legislature appropriated $500,000 in 1977 and $2,265,000 more in 1979 to support the TDPA's initial activities, these loans (along with construction bonds) will eventually be retired by revenue derived from TDPA user charges.

The future of the port is uncertain, but TDPA is making a strong effort to make it a reality. Governor Clements signed the supplemental appropriations bill on March 20, 1979, and TDPA has federal licensing to construct the facility. The problem is that in order to proceed with bond sales and initial engineering studies, TDPA must obtain use agreements from private companies to ensure a total of 1.4 billion barrels per day throughout for the port. Thus, TDPA could be assured that revenue would be available to repay the bonds. As of January 1980, TDPA was exploring alternatives for financing the facility, as well as considering the possibility of building the facility in increments to reduce the initial costs. Any change in plans, however, including the method of financing, must be approved at the federal and state levels.

Table I-9 gives labor force estimates for construction and operation of a deepwater port. The environmental report for the original SEADOCK project stated that fabrication would occur in major yards located elsewhere along the Texas or Louisiana coasts, and it further assumed that the offshore installation would result in very little reloca-

Table I-9

Labor Force Estimates for Offshore Deepwater Ports

Construction	Year 1	2	3	4	5	6+
I. Marine Facilities						
A. Onshore fabrication and support[1]						
1. Platforms	120	600	700	280	-	-
2. SPM systems	20	30	30	30	30	-
3. Offshore pipelines	-	75	75	75	75	-
4. Onshore pipelines	60	70	-	-	-	-
5. Warehouse and dock	-	25	-	-	-	-
B. Offshore installation[2]						
1. Platforms and SPM systems	-	100	220	200	-	-
2. Offshore pipelines	-	370	595	370	350	-
II. Onshore Facilities						
A. Onshore pipelines[3]	-	300	-	-	-	-
B. Warehouse and dock[3]	-	50	-	-	-	-
C. Terminal Facility[3]	16	330	240	100	150[4]	-
Operation						
I. Marine Facilities	-	-	-	-	-	162[5]
II. Offshore Facilities	-	-	-	-	-	138[6]

Assumptions

1. No employment/new residents result in Brazoria County.
2. Very few new resident workers result in the Brazosport area. RPC assumes 5%.
3. Most of workers would live in Brazosport. RPC assumes 95%.
4. Construction of onshore facilities ends. SEADOCK Environmental Reports assume 100 of terminal construction employees become permanent residents of Brazosport.
5. SEADOCK Environmental Report assumes 50% of employees locate in Brazosport.
6. SEADOCK Environmental Report assumes 80% of employees locate in Brazosport.

Source: SEADOCK, Inc. Environmental Report, Vol. I

tion of workers within the Brazosport area.[4] Also, it assumed that some of the offshore operation employees, who would commute only once a week, would maintain their existing residence in surrounding counties.[5] In terms of permanent relocation, SEADOCK estimated that about 100 of the onshore terminal construction workers, and about 200 of the port operation workers, would choose to relocate to Brazosport.

Application of the gravity model to project construction yields an allocation of 53.3 percent to Freeport; 15.0 percent to Lake Jackson; 8.5 percent to Clute; 5.8 percent to Angleton; and 17.4 percent to the remainder of the county. It must be noted that there are limitations to the gravity model. The gravity model does not account for the fact that there may be factors other than distance and population involved in allocation of employees to specific cities. The use of the gravity model, then, may overstate the employment allocated to Freeport, for instance, and understate population that might be distributed to Lake Jackson or Clute. Consistent with expectations in the SEADOCK report, the number of employees distributed was based on the assumption that only the construction of onshore facilities would significantly affect Brazoria County.

Composite Energy Employment Impacts

Tables IA-1 through IA-14 in Appendix I adjust the preceding population projections to account for the major identified energy facilities. The fifth column in each table represents the combined energy-related employment growth allocated to the individual city by the gravity model. Table I-10 is a composite of the fifth column data for cities in Brazoria County. The last two columns represent the "without energy" and "with energy" population figures.

Table I-10

Estimated Energy-Related Employment Growth
for Cities in Brazoria County, 1975-1983,
with Base Year 1974 = 0

City	Number New Energy-Related Employees								
	1975	1976	1977	1978	1979	1980	1981	1982	1983
Alvin	19	27	29	45	74	52	43	40	30
Angleton	12	28	43	110	193	119	97	85	79
Brazoria	3	5	7	23	52	30	21	18	17
Clute	10	18	49	117	167	97	100	86	77
Freeport	9	31	108	325	417	301	416	327	274
Jones Creek	4	4	8	14	14	10	17	13	11
Lake Jackson	30	52	89	202	335	196	186	162	147
Oyster Creek	2	3	18	37	30	20	26	23	21
Pearland	24	44	48	56	55	51	58	54	62
Richwood	2	4	8	14	13	9	14	12	10
Surfside	7	14	20	28	26	22	27	24	22
Sweeny	0	4	6	68	208	98	49	46	45
West Columbia	4	8	11	55	151	79	43	41	39
Total	126	242	444	1,094	1,735	1,084	1,097	931	834
Brazoria County	182	309	543	1,364	2,403	1,359	1,233	1,074	974

Source: Tables I-A1 through I-A14

The common pattern for almost all cities is a tapering of energy-related employment growth after 1979; in fact, energy-related employment actually declines in almost all cases. This trend reflects the completion of the construction phases of the Phillips and Dow expansions, which are responsible for the largest amounts of temporary energy-related employment growth. There is another brief surge in Freeport in 1981, associated with the second year of the expected Texas Deepwater Port construction. Whether this diminishing of energy-related construction employment will be cushioned by other new construction opportunities is uncertain; the sector is very volatile. However, the inventory of energy facilities failed to uncover any comparable projects planned through 1983.

INVENTORY OF EXISTING PUBLIC FACILITIES AND SERVICES

Although some public services and facilities in Brazoria County are provided on a county-wide basis, most are normally provided by individual communities to their residents. For example, transportation and recreation facilities are examined on a county-wide basis, while fire, police, water, sewage, and educational services are examined on a community or school district basis.

The communities examined in this study are: Alvin, Angleton, Brazoria, Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Pearland, Richwood, Surfside, Sweeny, and West Columbia. Of these listed cities, eight are considered part of the Brazosport area. Brazosport consists of Brazoria, Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Quintana, Richwood, and Surfside. Quintana (population 47)

was not included in this study since it has no public facilities and provides no services to its residents. The public facilities discussion will not address Brazosport as a single urban area, since there is a wide range in the level of public facilities and services provided by the individual communities.

Fire and Police Protection

All of the fire departments examined in Brazoria County depend on volunteers to meet the fire protection need of their respective communities. Only three departments have paid members in addition to volunteers: Freeport has seven, Pearland has two and Lake Jackson has one. The number of firefighters in individual communities ranges from a low of 10 in Richwood to a high of 47 in Alvin. Operating budgets in 1978 for fire departments receiving funds from their communities ranged from $1,800 in Richwood to $159,000 in Freeport. The cities of Jones Creek, Oyster Creek and Surfside supplied no operating funds to their respective fire departments in 1978. These fire departments relied on their own fund raising efforts to meet their operating costs.

Police protection in Brazoria County is provided by police departments in individual cities and by the Brazoria County Sheriff's Department. The Sheriff's Department provides police protection to the unincorporated areas of Brazoria County, and to those cities that do not have their own police departments, such as Quintana.

The number of police personnel in each department varies from a low of two in Surfside to a high of 32 in Alvin. The Brazoria County Sheriff's Department has 82 officers. Police department operating budgets in 1978 in Brazoria County varied with the size of the department.

Surfside had the lowest scheduled expenditure and Alvin the highest, with annual budgets of $20,000 and $663,000 respectively. The Brazoria County Sheriff's Department had a budget of $1,143,600 in 1978. Fire and police personnel and budgets for Brazoria County are summarized in Table IA-15 in Appendix I.

Water Service

Water service in Brazoria County is normally provided by individual cities to their residents. Where no water service is available from a city, residents normally rely on individual wells to supply their water needs. This is the case in both Jones Creek and Oyster Creek. Oyster Creek, however, is currently planning to construct a public water supply and distribution system. The current plan calls for a storage capacity of 350,000 gallons of water. Surfside has no public water system, but relies instead on a commercial water service. Table IA-16 in Appendix I shows the water demands and capacities of cities in Brazoria County.

The capacities of the water systems examined are generally adequate to handle the demand placed upon them. While some system capacities, notably Clute and Sweeny, are inadequate to handle some peak demands, completion of planned facilities should alleviate these problems. Clute is planning a new well with a daily capacity of 576,000 gallons; Sweeny is currently constructing both underground and overhead storage facilities that will have a total capacity of 1,175,000 gallons.

Sewage and Wastewater Treatment

Sewage and wastewater treatment facilities in Brazoria County, like water service, are normally provided by individual cities

to their residents. Where no sewage or wastewater treatment facilities exist, as in the cases of Jones Creek, Oyster Creek, Surfside, and much of the unincorporated area of Brazoria County, residents rely on the use of septic tanks. Plans are being considered for construction of sewage systems and treatment facilities in Jones Creek and Oyster Creek. Current plans for the Oyster Creek facility call for a treatment plant with a capacity of 500,000 gallons per day. Data regarding the planned Jones Creek facility are not currently available. Appended Table IA-17 illustrates sewage and wastewater flows and capacities for cities in Brazoria County.

Three of the cities with sewage treatment facilities, Brazoria, Lake Jackson and Pearland, do not have permitted capacities that are adequate to treat either average or peak flows. A fourth city, Richwood, has a permitted capacity adequate for average flows, but not for peak flows. Expansion plans in Brazoria and Lake Jackson should alleviate deficiencies in those communities. Pearland and Richwood, however, have not indicated any current plans to expand their capacities.

Solid Waste Disposal

Public solid waste collection services are provided by all but four of the Brazoria County cities examined in this study. Those cities that do not provide public solid waste collection services, Jones Creek, Oyster Creek, Richwood, and Surfside, utilized commercial collection services. Collection data from these services are not available. Table IA-18 (Appendix I) shows solid waste disposal volumes for cities with public collection services.

Recreation and Open Spaces

The U. S. Fish and Wildlife Service operates two wildlife refuges in Brazoria County. The Brazoria National Wildlife Refuge near Freeport encompasses 9,978 acres. This refuge protects, among other animals, geese, ducks, Texas red wolves, and alligators. The San Bernard National Wildlife Refuge encompasses 19,000 acres in both Brazoria and Matagorda Counties. This refuge also protects, in addition to those animals listed above, wading and shore birds. Both refuges are open to public use.

There are currently three state parks operated by the Texas Parks and Wildlife Department in Brazoria County. The Bryan Beach State Park, near Freeport, encompasses 554 acres. It is currently undeveloped but is open to camping, picnicking, fishing and swimming. The Varner-Hogg Plantation is a 66-acre park situated on Varner Creek near West Columbia. It was formerly the home of James Stephen Hogg, the first native-born governor of Texas, and is classified as a historic park. The Velasco State Park is located on the Gulf Coast and is defined as the area between low tide and high tide on the Brazoria County portion of the Texas Gulf coastline. It is considered a scenic park and has no developed facilities.

A number of small community parks are operated by individual cities in Brazoria County. Acreage figures for most of these, however, are uncertain or unavailable. Among the special recreational events occurring in Brazoria county is the Brazoria County Fair, which occurs every October at Angleton.

Educational Facilities

Brazoria County contains eight Independent School Districts (ISD's) and two colleges. All of the Independent School Districts teach grades Kindergarten through 12th, with the exception of Damon ISD, which teaches only through the 8th grade. The Damon ISD had the smallest K-8 enrollment in school year 1978-1979 with 145 students. Brazosport ISD had the highest, with 7,965 students. High school enrollments (Grades 9-12) ranged from a low of 172 in the Danbury ISD to a high of 3,337 in the Brazosport ISD. Total enrollments in Brazoria County ISD's in the 1978-1979 school year were 35,944 students with 25,557 in grades K-8 and 10,387 in grades 9-12. Table IA-19 (Appendix I) shows enrollments and capacities for Brazoria County Independent School District. Total assessed valuation for the Brazoria County school districts was $2,826,981,000. Total outstanding principal on bonded indebtedness was $56,601,000. Table IA-20 (Appendix I) illustrates selected financial data for Brazoria County Independent School Districts.

Enrollment in Alvin Community College was 3,025 students in the fall term of the 1978-1979 school year. Brazosport College reported a total enrollment of 4,500 students for the same period.

Transportation Facilities

There are no Interstate of U.S. numbered highways in Brazoria County. The highway transportation needs are met primarily by state highways and farm-to-market roads. (See map no. 4 for major highways)

The major state highways in the county are State Routes 6, 35, 36, 288, and 332. State Highway 6 traverses the northern portion of

Brazoria County in an east-west direction, passing through Alvin. Traffic flow along this road varies from 5,910 to 9,570 vehicles per day. Highway 35 is a north-south road in the northern portion of Brazoria County, where it passes through Pearland, Alvin and Angleton. At Angleton, the road becomes an east-west highway passing through West Columbia into Matagorda County. Traffic volume on this road varies from 4,570 to 18,930 vehicles per day.

State Highway 36 runs northwest-southeast, passing through Damon, West Columbia, Brazoria, and Jones Creek, and terminating in Freeport. Volume along this route varies from 2,560 to 8,430 vehicles per day. State Highway 288 is the major north-south route traversing Brazoria County. It connects Houston with Angleton and the Brazosport area, terminating in Freeport. It is a heavily traveled road, especially in the Brazosport area, with traffic volume ranging from 6,780 to 22,570 vehicles per day. State Highway 332 runs through the Brazosport area from Brazoria to Surfside, and daily vehicle counts on this road number from 6,370 to 19,680.

Rail service into Brazoria County is provided by two railroads: the Missouri Pacific and the Santa Fe. The Missouri Pacific Railroad operates freight yards in Angleton, Freeport and Sweeny, while the Santa Fe railroad operates one freight yard in Alvin.

There are currently six airports in Brazoria County open to public use. These are all small airports, with use confined to general aviation and business type aircraft. Only two of the airports have paved runways: Brazoria County (at Lake Jackson) and Pearland.

Scheduled commuter air service is provided by Metro Airways from the Brazoria County Airport at Lake Jackson to Houston Intercontinental Airport. There are currently seven flights from Lake Jackson to Houston and six flights from Houston to Lake Jackson, operating daily Monday through Friday. Service is less frequent on the weekends. This facility, actually owned by Dow, will be replaced in 1980 by a new county airport located between Angleton and Lake Jackson west of the proposed Hwy. 288 alignment.

Health Services

Brazoria County currently supports four general hospitals and 11 licensed nursing homes. The hospitals, located in Alvin, Angleton, Freeport, and Sweeny, have a total licensed capacity of 390 beds. Current actual accommodation numbers 294 beds. Table IA-21 (Appendix I) illustrates bed capacities for the Brazoria County hospitals.

Health care personnel in Brazoria County include 71 physicians, 41 dentists, 685 nurses and 79 pharmacists. The Texas Department of Health's Bureau of State Health Planning and Resource Development indicates that there are no current critical shortages of either physicians or dentists.

IMPACT ANALYSIS

After establishing current demands on and usage of public services and facilities in Brazoria County, an impact analysis was conducted to determine what, if any, impacts would occur as a result of

projected energy-related population increases. The impacts were determined by comparing the 1983 projected demands on services and facilities of two different population groups: one which included energy-related population, and one which did not. The non energy-related population can be considered "natural" growth; therefore, the energy-related impacts come from the difference between the two population groups.

Examination of the data shows only minimal impacts from energy-related population. While a number of services and facilities show deficiencies in 1983, the addition of an energy-related population will have little or no discernable effects on the levels of these services. Appendix tables IA-22 through IA-35 show existing and projected levels of public services and facilities for Brazoria County and selected cities.

CITIES

Alvin

The city of Alvin's current level of facilities and services is adequate to meet current demands. Projections indicate deficiencies in both police and fire protection by 1983. Projections of energy-related population indicate an additional deficiency in police protection of one police officer, and an additional ton of solid waste generated per day.

Jones Creek

Examination of public services and facilities in the city of Jones Creek indicates adequate current and projected fire and police protection. No deficiencies are expected to occur due to an increase of

energy-related population. The city does not currently provide water service or sewage treatment, and solid waste is contracted through a commercial service. A sewage system and treatment facility are planned, but no data is currently available.

Lake Jackson

Public services and facilities in the city of Lake Jackson are adequate to meet current demands. Projected 1983 demands indicate deficiencies in both fire and police protection. Energy-related projections indicate no additional deficiencies arising, but do show an additional ton of solid waste being generated.

Oyster Creek

The only public services currently provided by the city of Oyster Creek are fire and police protection, with a water system soon to be completed. Solid waste collection is provided by a commercial service, and sewage service, although planned, is nonexistent. Fire and police protection are currently adequate. Projections indicate a 1983 deficiency in the fire department, although police protection will remain adequate. Energy-related projections indicate a further deficiency of one firefighter, while protection again remains adequate.

Pearland

The city of Pearland's public services and facilities are basically adequate to meet current demands, with the exception of the sewage treatment facilities which are currently inadequate. The city, however, has not indicated any plans for expansion of this facility. Projections

indicate deficiencies in 1983 in police and fire protection and severe deficiencies in sewage treatment facilities. Energy-related projections indicate a further deficiency in sewage treatment facilities of 53,000 gallons per day and an additional generation of one ton of solid waste.

Richmond

All of the public facilities and services in the city of Richwood, except sewage treatment, are adequate to meet current demands. The city has indicated no current improvement plans for its sewage treatment facility. Solid waste collection is provided by a commercial service. Projections indicate 1983 deficiencies in fire protection and sewage treatment capacity. Energy-related projections indicate a further deficiency of 2,000 gallons per day in sewage treatment capacity.

Surfside

The city of Surfside provides only fire and police protection to its residents. These services are currently adequate. Projections, however, suggest deficiencies in both services in 1983, but energy-related projections do not indicate further deficiencies.

Sweeny

Public services and facilities in the city of Sweeny are currently adequate to meet demand. Projections indicate 1983 deficiencies in fire and police protection. Energy-related projections indicate further deficiencies of one firefighter and 50,000 gallons per day in sewage treatment capacity.

West Columbia

The city of West Columbia's public services and facilities are adequate to meet present demands. Projections indicate 1983 deficiencies in both fire and police protection. Energy-related projections indicate a further deficiency of one firefighter and the generation of an additional ton of solid waste.

Angleton

Public services and facilities in the city of Angleton are currently adequate to meet the demands placed upon them. Projections indicate deficiencies in police and fire protection by 1983. Energy-related population projections indicate no additional deficiencies in services or facilities.

Brazoria

Examination of current levels of services and facilities in the city of Brazoria shows they are adequate to meet current demands. Projections indicate deficiencies in 1983 in police and fire protection. Projection of energy-related population indicates an additional deficiency of 11,000 gallons per day in sewage treatment facilities.

Clute

The city of Clute's publ ervices and facilities are currently adequate to meet dema ds with the exception of water service, which is inadequate to meet peak demands. A planned expansion of this facility, however, should correct this situation. Projections indicate a 1983 deficiency in police and fire protection. Energy-related projections

indicate an additional deficiency of one police officer over non-energy-related projections.

Freeport

Public facilities and services in the city of Freeport adequately meet current demands. Examination of projected 1983 demands indicates deficiencies in fire and police protection and in sewage treatment capacity. Energy-related projections indicate an additional deficiency of one firefighter, one police officer, and 77,000 gallons per day sewage treatment capacity. An additional two tons of solid waste will also be generated.

BRAZORIA COUNTY

The current levels of public services and facilities provided by Brazoria County are adequate to meet current demands. Projections indicate a 1983 deficiency of 7 in police protection, although application of energy-related projections indicates no further deficiencies. There will exist, on a county-wide basis, sufficient open and recreational space, through the 1985 planning period, including a 29,000 acre reserve capacity. Health care facilities are also currently adequate, with the number of physicians averaging just over 1 for every 2000 people. This will change only slightly, when the energy-related population is considered, to just short of 1 for every 2000 people.

Preliminary investigation and analysis indicate a general sufficiency of most county-provided or county-available services through the short range planning period. However, individual communities have

varying degrees of service commitments which cannot be applied on a county-wide basis.

Recreation/open space facilities in Brazoria County are of two general types: 1) Active - User Oriented, and 2) Passive - Environmentally Oriented.

1. Active - User Oriented. The active - user oriented facilities include the developing Bryan Beach State Park, and the Varner Hogg Plantation are located on a total of about 610 acres of land. Using the commonly accepted recreation standard of 10 acres of parklands per 1000 population would suggest a need for 1200 acres to serve the 1978 population of 120,000 plus an extra 300 acres to serve the 30,000 population growth forecasted by 1983.

   The apparent shortage of parkland when applying the 10 acres/1000 population standard should not be taken literally for Brazoria County, however. First, the 610 acreage figure does not include golf courses and a large number of small city and private recreation facilities. It does not include larger city parks such as Lake Jackson's T. J. Dunbar Park or larger private recreation facilities such as Dow's "Lake Jackson Farm." Second, Brazoria County's 30 miles of Gulf beaches is perhaps its most important recreation asset. Most of the beach front is commonly used for recreation despite

the fact that the majority of it is not officially designated as park or public open space. Assuming an average beach width of 300 feet as "recreational land" reveals a total of an additional 1100 acres of active recreation area for Brazoria County.

Adding the 610 acres of formal major parks with 1100 acres of beach front results in a total "active" recreation acreage of slightly over 1700 acres. This acreage would be adequate to meet the recreation needs according to the 10 acre/1000 population standard for the forecasted 170,000 Brazoria County residents in 1983.

2. Passive - Environmentally Oriented. This type of open space is considered to include the two major wildlife refuges in Brazoria County. The total of about 29,000 acres, most marshland, is important for environmental reasons, but is not particularly related to the needs of a growing population. Therefore, for the purposes of the study, additional "Passive-Environmentally Oriented" recreational lands are not quantified. However, it will be important to examine the impacts of major energy facilities on these established refuges, and to determine ways of minimizing any potential conflicts.

SCHOOL DISTRICTS

The number of additional school children expected to enroll in local schools in Brazoria County will be directly related to the anticipated population growth. It is assumed that most of the new residents will come from outside of Brazoria County. The ratio of total Texas population to total Texas public school enrollment was used as the ratio of school children to total population growth that can be expected in Brazoria County.

The latest available enrollment figures for the state of Texas are for 1976 and show 2,979,775 students statewide for a Texas population of 12,613,000. This amounts to 1 student per 4.2 population.

To estimate changes in Brazoria County school district's enrollment, the projected population growth for the individual cities within the school districts has been totaled. This total population growth was then divided by 4.2 to yield an estimate of the additional school children to be expected within each major school district. (Smaller rural school districts were not included in the forecasts since there are no major cities within their jurisdictions on which to base projected enrollment increases).

Table IA-19 Appendix I shows the present enrollments and physical capacity as well as projected new enrollment. It also shows the surplus or deficiency of the existing facilities to accommodate the extra students through 1983.

An average classroom size of 25 students has been assumed to develop an estimate of the total additional number of classrooms that may be needed and these figures are also shown on Table IA-19.

It is cautioned, that these estimates are only a "rough" indication of the adequacy of the present school systems to accommodate the anticipated growth. Changing average family sizes, changing population composition within individual communities, and changes in instructional techniques could significantly alter these forecasts for the individual school districts.

FISCAL ANALYSIS

One consequence of an increase in population is a change in the amount of revenues available to and the amount of expenditures necessary by a governmental entity to provide for the people within its jurisdiction. As the number of residences increases, the tax base broadens, for example, and revenues increase. At the same time, more people must be provided with facilities and services, at an increased cost to the government.

This section presents an analysis of the fiscal effects that new or expanded energy facilities may have on Brazoria County, selected communities within Brazoria County and selected school districts within the county. The purpose of this analysis is to determine the net costs, if any, each governmental entity can be expected to experience as a result of new demands for public facilities and services associated with a growth in population.

METHODOLOGY

The theory behind the analysis is "business as usual." It is

assumed that the previous patterns and relationship between population, revenues, and expenditures will continue through the next 5 years. In order to make the projections, least squares regression analysis was used. This analysis establishes the curves which best fit the past relationships between population and revenues, and population and expenditures; and then, given the future population, determines future revenues and expenditures which will lie along the same curve.

The projections for 1979-1983 were based on a five year period, 1974-1978, which is adequate to establish past trends. The best available data for those years was used as a basis for the analysis. To establish past trends in revenues, population figures from 1974 to 1978 and overall revenues generated by each governmental body were noted separately. That is, it was primarily the major revenues generated by the governmental body in question that were looked at. To establish past trends in expenditures, the same process was used. Population figures from 1974 to 1978 and expenditures, primarily operating expenditures, were compared.

To estimate similar revenues and expenditures for 1979 to 1983 population projections derived from Section B, Baseline Analysis, of this chapter, based on Texas Department of Water Resources figures, were utilized. Two sets of analyses were performed: one for total population including population generated by energy facilities, and one for population excluding that generated by energy facilities. Comparing the two is a further way to identify the fiscal impacts of the increased population due to energy facilities.

The rate of inflation was not considered in the analysis. However, both revenues and expenditures would be similarly affected by

the inflation rate, so the relationship between the two should remain the same.

In addition to the analysis of general revenues and expenditures, specific expenses are noted, where appropriate. These expenses are based on analysis performed in Section B. Estimated costs of specific items identified to be insufficient between 1979 and 1983 are noted. The costs are based on present costs for the same items. This gives an indication of how some of the expenditures should be made.

It must be noted that there are many circumstances which may cause actual population, revenues, or expenditures to differ from projections when the time comes. For instance, the energy facility may not locate within the county after all. Thus, it is not the actual numbers which are important, but, rather, the basic trends established. For instance, can the city, county, or school district anticipate a surplus or deficit as the population increases? In addition, it must be remembered that even the trends are based on the assumption that past relationships between revenues and expenditures will extend into the future.

The County and Cities

The analyses of the cities and county, in specific, are based on data obtained from the audit reports of each individual city and county. Where there is no analysis of a city that has been discussed in preceding sections, it is because data was not available or because records are insufficient to perform an analysis. The major funds are considered for each city and town, for both revenues and expenditures.

There are many sources of revenues. Typical revenue sources for a General Fund include taxes (primarily property and sales),

licenses and permits, and fines and forfeits. The percentage of the revenues generated by each varies among localities. Property tax usually generates more revenue than any other single source. Thus, new commercial or industrial property may account for possible growth in revenues not relating to population growth. Other funds, such as water and sewer, are mainly self-supporting through such sources as sales and connection fees.

Expenditures basically cover two types: those for the general services and operation of city functions, and those for specific items. General services include both government administration and costs incurred due to demands from various land uses and housing. Stress on the storm drainage and transportation systems are examples of the latter. Specific items include employment of personnel, such as policemen and firemen, acquisition of new equipment, and expansion of existing facilities.

Revenue sharing funds received from the federal government are listed in a separate table since these funds are not generated by the cities and county themselves, but are additional funds which may, or may not, be allocated in the future to help defray expenses. The procedure for distribution of revenue sharing funds is a complex one. Funds are allocated to each state according to a specific formula. Then, within each state, funds are allocated according to another formula. Required data about units of local government for the purpose of allocating the revenue sharing funds include population, per capita income, adjusted taxes and intergovernmental transfers.

School Districts

The population figures shown for the school districts correspond to those for the cities, or the sums of the populations of those cities within the district. The assumption was made that population within the entire district, comprised primarily of the major towns within the district, will fluctuate in a similar manner and that the difference in population would not be significant in performing the analyses.

Data gathered for 1974-1978 was obtained from the Texas Education Agency. Revenues shown are those excluding major bond issues. In addition, the percentage of the revenues received from federal and state government is noted. State and federal revenues are allocated to the school districts according to complex formulas utilizing such factors as number of pupils, relative wealth of the school district, expenditures, and tax effort. The remaining revenues are primarily from ad valorem taxes. It is anticipated that revenues from both the state and federal governments will continue to comprise a comparable percentage of school district revenues from 1979-1983. Thus, the percentage of school district revenues from state and federal sources serves as an indicator of the percentage of revenues generated through local taxes.

SUMMARY OF RESULTS

This section presents a fiscal analysis of Brazoria County and selected towns and school districts within the county up to the year 1983. The fiscal analysis was based on anticipated energy-related population growth. The differences between the revenues and expenditures

for the years 1979 through 1983 were explored as well as the differences between the fiscal outlook anticipated for the projected population excluding the energy-related population.

The analysis was based on the assumption that business would continue "as usual". That is, previous patterns and relationships between populations, revenues, and expenditures will continue through the next 5 years.

In order to support the increased population, facilities and services must be increased. For the cities, these costs will be primarily for general government services and increased police protection and sewage treatment. The county will need to provide more general governmental services and additional sheriff deputies. Increased costs to school districts would be in the form of additional classrooms, teachers, and supplies.

The general outlook for the county is promising. The county as a whole should operate at a surplus through 1983. As the population increases, the surplus should increase under the present tax structure. This pattern should hold whether or not the consultant's population projections are exact.

In addition, all of the governmental entities, with the exception of Richwood, should operate at a surplus; and the larger the population the lower the costs to support each citizen. This surplus may be used to pay for capital expenditures not budgeted or to increase the service level per person. Also, the jurisdiction could decrease taxes. Of the cities analyzed, Alvin, Angleton, Brazoria, Clute, Pearland, Sweeny and West Columbia, all follow this pattern.

The school districts analyzed will also follow this pattern. The school districts are Alvin Independent School District, Angleton I.S.D., Columbia-Brazoria I.S.D., Brazosport I.S.D., Pearland I.S.D. and Sweeny I.S.D.

According to the fiscal analysis, the city of Richwood may be operating at a deficit, and this deficit could increase with the population. Several major options are open to the city to help alleviate this deficit. The city could decrease spending, increase taxes, or increase its tax base. In addition, service ratios can be lowered.

The value of this analysis, whether the specific population projections will hold true, or not, is that it will enable the county, city and school districts to plan ahead for the pressures which will be placed on public facilities and services and general operation resulting from increased population.

This section describes the public facilities and services which will be required as the population increases based on the Baseline Analysis of the report. This indicates the areas in which county and selected governmental bodies within it should plan ahead. This fiscal analysis will also serve as a basis in developing a Comprehensive Plan for Brazoria County.

DETAILED DISCUSSION

Brazoria County

Brazoria County's major budgets include the General Fund, the Road and Bridge Fund, the Jury Fund, the Salary Fund and the

Permanent Improvement Fund. Disbursements from the General Fund are divided into the following categories: general administration, judicial, legal, elections, financial administration, public facilities, public safety, environmental protection, health and welfare, culture and recreation, conservation, employee benefits and others. Specific expenditures within these categories are for such items as the commissioners' court, county judge, county clerk, county courts, district courts, law library, district attorney, county auditor, treasurer, tax assessor, courthouse and associated buildings, county jail, fire protection, constables, sheriff, law enforcement, health unit, county library, historical commission and agricultural extension. Expenditures for the Road and Bridge Fund, Jury Fund, Salary Fund and Permanent Improvement Fund are self-explanatory.

Projected total revenues and disbursements for these funds combined are noted in Appendix I in Tables IB-1 and IB-2 for 1979-1983. Table IB-1 illustrates revenues and disbursements for the population including the energy related population. An anticipated surplus could develop during the period 1979-1983 ranging from $2,360,533 to $2,952,558 as the population increases from 141,027 to 149,822. Without the energy population (Table IB-2) a surplus could develop and range from $1,972,267 to $2,795,246. Revenue sharing funds have provided additional revenue in the past (Table IB-3). If the revenue sharing program continues the county could have even more money available to it.

County expenditures for 1979 - 1983 would include an increase in governmental expenditures. In addition, the salary of another deputy would also be included, according to the analysis in Section IB Baseline Analysis of this report. This salary is estimated to be $13,300 per year.

Cities

Alvin

The city of Alvin revenues and expenditures , with and without energy population, 1979-1983 are shown in appended Tables IB-4 and IB-5. The revenues were based on 1974-1978 figures for the major revenue sources, i.e., taxes, licenses and permits, charges for service, fines and forfeits, and miscellaneous. Expenditures were based on disbursements for 1974-1978 in the categories of general government, public safety, highways and streets, sanitation, and culture and recreation. Revenue sharing funds for 1974-1978 are listed separately in Table IB-6.

It is anticipated that revenues, excluding revenue sharing, will continue to exceed expenditures for 1979-1983, whether or not the energy-related population is included. Furthermore, a surplus could develop ranging from $752,768 in 1979 to $1,193,720 in 1983 with the energy-related population included, and from $681,431 in 1979 and $1,155,841 in 1983 with the energy-related population excluded. Thus, as the population increases the city should be realizing greater benefits from its expenditures if business continues "as usual".

According to the analysis performed in Section 1B, Baseline Analysis of this report, included in the anticipated expenditures will be that for salaries of four policemen, or approximately $16,000 per year per policeman. If the energy population is not included, there will be a need for three additional policemen.

Angleton

The city of Angleton is expected to increase in population between 1979 and 1983, with or without the energy-related population

expansion. Appendix I tables IB-7 and IB-8 illustrate this, along with the associated revenues and expenditures. The projected revenues and expenditures are based on those for the city's two major funds, i.e. the General Fund and the Water and Sewer Utility Fund for 1974-1978. Revenues and expenditures for the General Fund include total revenues and total expenditures. For the Water and Sewer Utility Fund, only operating revenues and expenses are included. The revenues and expenditures will increase with the anticipated revenues increasing at a more rapid rate, resulting in a potential increase in the surplus between 1979 and 1983. That is, with the estimated population including the energy population, the surplus could increase from $287,295 in 1979 to $349,209 in 1983 if business as usual continues.

In addition to the revenues listed, it is likely that the city will continue to receive revenue sharing funds from the federal government. The revenue sharing allocation for 1974 to 1978 is shown in Table IB-9.

Included in the expenditures for the city of Angleton would be salaries of approximately $10,000 per year for each of three policemen, with the energy population included. Without the energy population, the expenditures will be the same.

Brazoria

The major funds for the city of Brazoria are the General Fund, the Water and the Sewer Fund and the Water and Gas Meter Deposit Fund. Projections of the revenues and expenditures for these funds combined for 1979-1983 are shown in Tables IB-10 and IB-11 for the city

with, and without, the energy-related population, respectively. For the General Fund and the Water and Gas Meter Deposit Fund total revenues and expenditures are included. Operating receipts and expenditures only are used for the Water, Sewer and Gas Revenue Fund. As in the past, it is anticipated that revenues will continue to exceed expenditures through 1983. The surplus could continue to increase as the population increases. It is estimated that in 1979, revenues could exceed expenditures by $202,702 and in 1983 revenues could exceed expenditures by $235,139 for the total population including the energy-related population if present trends continue. Revenue Sharing Funds, 1974-1978 are listed in Table IB-12. They have ranged from $5,773 in 1976 to $16,530 in 1978. It is anticipated that the city will continue to receive Revenue Sharing Funds. (See Appendix I for Tables).

The city of Brazoria will have to provide one additional policeman, at a cost of about $11,000, and a new sewage treatment plant. The cost of the latter is not included in the expenditures identified above. A new sewage treatment plant is under construction at the present time with a capacity of 750,000 gallons per day. Upon its completion within the next year, it will replace the present sewage treatment plant. Brazoria has received a grant from the Environmental Protection Agency covering three-fourths of the cost of the plant, the remainder to be covered by the city. The estimated annual payment over a 20 year period i.e. principal, interest, construction and operation, is $232,687.50. User fees should provide funds to offset this new cost. The same additional services and facilities would be necessary for the population without the energy population.

Clute

The major funds of the city of Clute are the General Fund and the Water and Sewer Fund. Revenues and expenditures indicated for 1979-1983 in Tables IB-13 and IB-14 cover total revenues and total expenditures for these funds. For all years, revenues are expected to exceed expenditures. For example, in 1983, revenues are expected to be $3,646,969 and expenditures to be $3,209,902 with a potential surplus of $437,067. For the same year, without the energy-related population, there could be an anticipated $401,540 surplus. In the city of Clute the expected general pattern is that revenues will continue to exceed expenditures; and the surplus could increase with the population increases. Revenue sharing funds are shown in Table IB-15. In the past five years these funds have ranged from $268,704 in 1974 to $516,160 in 1978. (See Appendix I for Tables).

There would be a need for three additional policemen by 1983 for the city of Clute if the energy population is included. Cost to the city would be approximately $10,000 per policeman. Without the energy population two additional policemen would be necessary.

Freeport

The revenues and expenditures estimated for the city of Freeport from 1979 to 1983 are shown in Appendix I, Tables IB-16 and IB-17. They are based on General Fund total revenues and expenditures and the Water and Sewer Utility Fund operating revenues and expenditures from 1974-1978. Table IB-16 shows revenues and expenditures for the estimated total population including the energy population, and Table IB-17 shows

them for the population excluding the energy population. In addition, Table IB-18 shows the federal revenue sharing allocations for 1974-1978, which serve to illustrate the range of revenue sharing funds available in the past. The allocation has ranged from $159,507 in 1976 to $181,679 in 1974.

The projections in Tables IB-16 and IB-17 indicate that as the population in the city increases, the surplus, i.e., the difference between revenues and expenditures, could increase. This is anticipated for projections of the total population including the energy population and for those excluding the energy population. In 1979, for the former, a potential surplus is estimated at $732,565 and in 1983 it is estimated to be $1,007,019. For the latter, the potential surplus is anticipated to increase from $492,210 to $849,022. Thus, as the population increases, the per person cost of government operations, i.e., providing facilities and services, decreases. Included in the expenditures with energy population would be the cost of the salaries of four policemen, at approximately $16,000 per year per policeman. Without the energy population, three additional policemen would be needed. In addition, a capital cost not included in the expenditures would be for expanded sewage treatment plant facilities to support the increased population. Preliminary cost estimates for secondary sewage treatment plant would be 1.2 to 1.5 million dollars. At present the city has applied for a Step I grant for a primary clarifier. A Step I grant could cover the proposed facility's plans and related elements. Cost of a new treatment plant is not included in the estimates in Tables IB-16 and IB-17.

Lake Jackson

The revenues and expenditures projected for Lake Jackson in Tables IB-19 and IB-20 in Appendix I for the with and without energy-related population are based on figures obtained from the Lake Jackson budgets. Audit reports for the city were not available. Because a budget records the amount of revenues and expenditures anticipated for a given fiscal year and not the actual revenues and expenditures, as does an audit, the figures for Lake Jackson, 1979-1983, are not based on actual past revenues and expenditures. Rather, they represent a continuation of the trends in revenues and expenditures which were anticipated prior to the fiscal years 1974 to 1978.

Revenues were based on the sum of the budgeted revenues of the two major funds, i.e., the General Fund and the Utility Fund, minus the revenue sharing allocations, as shown in Table IB-21. The expenditures were derived based on the sum of the two funds. Results of the analysis show that as the population increases the per resident city operating costs will decrease. Included in the expenditures anticipated by 1983 are the salaries of three additional patrolmen, at a total of approximately $36,000.

Pearland

The two major funds for the city of Pearland are the General Fund and the Water and Sewer Fund. Projected revenues and expenditures for these two funds for 1979-1983 are shown in Tables IB-22 and IB-23, Appendix I. Operating revenues and expenditures for the General Fund and revenues and expenditures for the Water and Sewer Fund are included. The tables show the projected population with, and without,

the energy-related population, respectively. In 1983, it is expected that the energy-related population will be 13,798 with associated revenues, excluding revenue sharing, of $4,158,789 and expenditures of $3,925,076. This is a potential surplus of $233,693. The estimated total population, excluding the energy population for 1983 is projected to be 13,649, with projected revenues at $14,054,321 and projected expenditures at $13,827.537, a potential surplus of $226,784. It can be seen that the greater the population, the greater the opportunity for a surplus. Thus, with anticipated energy-related population there could be a greater surplus than without it, and the general financial situation of the government could be better if business as usual continues. Revenue sharing funds, 1974-1978, are illustrated in Table IB-24. Between 1974 and 1978, the revenue sharing allocation ranged from $74,387 to $102,979. These figures illustrate anticipated revenues allocated by the federal government from 1979-1983.

Expenditures in 1983 for the city should include salaries for six policemen, at approximately $10,000 per policeman. Excluding the energy-related population, the same expenditures would be necessary.

Richwood

The major funds of the city of Richwood are the General Fund and the Water and Sewer Fund. Estimated total revenues and expenditures for these two funds for 1979-1983 are shown in Appendix I, Tables IB-25 and IB-26 for estimated total population including energy related population and estimated total population excluding energy population, respectively. The tables show that with, or without, energy related facilities there could be a deficit. Since 1974,

revenues and expenditures have fluctuated. In 1974 and 1977, revenues exceeded expenditures, but in 1975, 1976 and 1978, the opposite was the situation. If business as usual continues, the greater the population, the larger the potential deficit. Thus, for the population including the energy population, a greater deficit could be realized than for the population excluding the energy population. In 1983, for the former, there could be an anticipated deficit of $29,237 and for the latter, one of $27,198.

The city also receives revenue sharing funds, which are not included in the revenues listed. Revenue sharing funds for 1974-1978 are shown in Table IB-27. Even with comparable revenue sharing funds for 1979-1983, the deficit could continue. For example, if $11,875 were received in revenue sharing funds in 1979 for the population excluding the energy population, there could still be a deficit of $663 unless other funds are raised.

Included in the capital expenditures are improved sewage treatment facilities. The estimated cost of a new secondary sewage treatment plant is 1.2 to 1.5 million dollars. The city currently has no plans to build a new sewage treatment plant. Annual amortization costs i.e. construction, operation, principal and interest would be in addition to those listed in Tables IB-25 and IB-26.

Sweeny

Tables IB-28 through IB-30 in Appendix I illustrate financial data for the city of Sweeny. The major funds for the city are the General Fund, the Water Department, and the Gas Department. Projected

total revenues and expenditures for the General Fund and operating funds for the other two funds are shown in Tables IB-28 and I -29 and revenue sharing allocations for 1974-1978 are listed in Table IB-30. The city should experience a surplus from 1979 to 1983 with, or without, the projected energy population. The projected surplus in 1983 for revenues of $924,826 and expenditures of $742,641 is $182,185 with the energy population included. For 1983 without the energy population there is a projected $166,935 surplus, i.e. the difference between $864,290 in revenues and $697,355 in expenditures. This projection assumes a business as usual situation in addition, it is likely that Sweeny will receive revenue sharing funds from the federal government, as it did 1974-1978. (Table IB-30)

A new sewage treatment plant, or expansion of the present plant would be included in the expenditures in 1983, with or without the energy population. Estimated cost would be 1.2 to 1.5 million dollars. In addition to this capital cost, there will be the cost of maintenance and operation, neither of which are included in Tables IB-28 and IB-29. One additional policeman would be included in the projected expenditures at roughly $9,000 per year. This is required for the general population both inclusive and exclusive of the energy-related population.

West Columbia

The city of West Columbia has as its primary funds a General Fund, and a Water and Sewer Fund. It is the total revenues and expenditures for these funds that are projected in Tables IB-31 and IB-32, Appendix I. Table IB-31 shows figures for the total population including the energy population. For the years 1979-1983, revenues should exceed

expenditures, with the greatest surplus in 1979, at $172,239. This projection results from the continuation of the business as usual assumption. It is also in this year that population is anticipated to be the highest. The population will fluctuate between 1979 and 1983, resulting in a corresponding fluctuation of the surplus. The pattern anticipated would be similar if the energy population were excluded.

Revenue sharing allocations for West Columbia for 1974-1978 are shown in Table IB-33. If these funds continue, even more revenues will be available than as illustrated in Tables IB-31 and IB-32.

Included in the costs to the city by 1983 would be the salary of one policeman, when the energy population is included. Excluding the energy population, one policeman would still be needed at an estimated $12,000 per policeman.

School Districts

Alvin Independent School District

The Alvin Independent School District consists primarily of the City of Alvin. Revenues and expenditures for the school district from 1974 to 1978 are appended in Table IB-34. Tables IB-35 and IB-36 illustrate projected revenues and expenditures for 1979 to 1983 for the estimated population including and excluding energy population, respectively. These tables illustrate that as the population of the school district increases, so does the projected surplus if business continues as usual. That is, the revenues could exceed the expenditures by an increasing amount. For example, the projected surplus for 1979 is $1,134,835 and for 1983 it is $2,612,424, a potential difference of $1,477,589.

The population is expected to increase: from 14,376 to 15,470 or by approximately 1100.

It is also anticipated that the percent of revenues from the state government will remain approximately as it has in the past, about 25 percent, and that the percent of revenues from the federal government will also be about the same, roughly one percent (Table IB-34). Thus, the school district will have to continue to provide roughly 74 percent of the revenues.

Angleton Independent School District

The Angleton Independent School District is comprised primarily of the city of Angleton. Its revenues and expenditures for 1974 to 1978 are illustrated in Table IB-37, Appendix I. As the population of the school district increases, the revenues accrued by the school district could increase at a more rapid pace than its expenditures. This could result in a larger surplus if business as usual continues. Tables IB-38 and IB-39 show revenues and expenditures for the school district using the estimated total population both including and excluding the energy population, respectively. In 1983, with the estimated energy population excluded, the projected surplus could be $685,173. With the energy population included, the projected surplus could be $748,372. Thus, with the energy population, the school district could be in a better financial position than without it. It is anticipated that the district will continue to provide approximately 62 percent of the revenues (Table IB-37).

Brazosport Independent School District

There are eight communities in the Brazosport Independent School District. They are Freeport, Clute, Lake Jackson, Oyster Creek,

Quintana, Surfside, Richwood, and Jones Creek. The revenues and expenditures of this school district are shown in Table IB-40 for the years 1974 to 1978. Revenues exceeded expenditures during those years, and it is expected that this trend will continue. In addition, it is possible that the surplus will increase with the population under the business as usual assumption. Table IB-41, illustrates the total population and related expenditures and revenues for 1979-1983. The 1979 population projected surplus figures are 48,053, and $1,688,545 respectively. In 1983, with a population of 52,379, the projected surplus is $2,584,578. The percent of revenues from the state government (approximately 30 percent) and the percent of revenues from the federal government (1 percent) is expected to remain constant through 1983 (Table IB-42). (See Appendix I).

Columbia-Brazoria Independent School District

The Columbia-Brazoria Independent School District is comprised of West Columbia and Brazoria and the immediate environs. The revenues and expenditures, as well as the percent of revenues from the state and federal governments for 1974 to 1978 are shown in Table IB-43. Approximately 36 percent of the revenues during those years were from the state government and approximately four percent were from the federal government. It is anticipated that the percentage of state and federal revenues will remain the same in the future. (See Appendix I).

The population within the school district is expected to increase between 1979 and 1983. Estimates of the population increase including that of the energy facility population are illustrated in Table IB-44. Table IB-45 shows a population increase excluding that anticipated through energy oriented facilities. The greater the

population, the larger the projected surplus, and the more efficiently the dollars could be used (per student costs). Thus, in 1981, for example, the projected surplus could be $39,221, with a population of 5,888, i.e. excluding the energy population. In the same year, including the energy population of 6,014, the surplus could be $90,205.

Pearland Independent School District

The Pearland Independent School District encompasses Pearland and its environs. Tables IB-46 through IB-48 in Appendix I illustrate revenues and expenditures for 1974-1978, revenues and expenditures for 1979-1983 for the population including that induced by energy facilities, and 1979-1983 revenues and expenditures for the population excluding the energy-related population. In addition, the percent of revenues from the state and federal governments are also shown in Table IB-46. It is anticipated that the percentage of revenues received by the federal and state governments will remain fairly constant. Thus, local taxes should continue to comprise 48 percent of the revenues. As the population increases, the revenues and expenditures are expected to increase. At the same time, under the business as usual assumption the surplus could increase. This is true for the population both with and without the projected energy oriented population. In addition, the financial position with energy oriented population would be better than if the energy oriented population were excluded. Thus, for 1983, the projected surplus with the energy oriented population is $2,477,496 and without the energy oriented population it could be $2,393,588.

Sweeny Independent School District

The Sweeny Independent School District is comprised of Sweeny and the immediate vicinity. The population projected by 1983, with and without the population relating to energy facilities, and the associated revenues and expenditures, are illustrated in Tables IB-49 and IB-50. These tables show that, as population increases, the revenues and expenditures will also increase. The surplus, for example, anticipated in 1983 with a projected total population of 3,853, is $1,412,934. The surplus in 1983 without the energy population is $1,145,668. Throughout 1983, the percent of revenues from state and federal governments, combined, should be roughly 18 percent, as it was during 1974-1978 (Table IB-51, Appendix I).

RECOMMENDATIONS

CITIES

The following listing is a comprehensive tabulation of the public services and facilities analyzed in the Brazoria County communities. It delineates the current conditions of each community, as well as future anticipated situations due to energy-related population.

Adequate current general conditions prevail in the Brazoria County communities, with a few documented exceptions of inadequate water or sewer capacities. However, the majority of cities will require additional fire and police department members, plus increased solid waste collection capacity to provide acceptable service to their jurisdiction by 1983.

Alvin

- Add four members to fire department by 1983.
- Add four members to police department by 1983.
- Increase solid waste collection capacity five tons per day by 1983.

Angleton

- Add five members to fire department by 1983.
- Add three members to police department by 1983.
- Increase solid waste collection capacity three tons by 1983.

Brazoria

- Add three members to fire department by 1983.
- Add one member to police department by 1983.
- Increase solid waste collection capacity one ton per day by 1983.

Clute

- Facilities adequate (planned water facility of .75 million gallons per day will correct a current deficiency).
- Add three members to fire department by 1983.
- Add three members to police department by 1983.
- Increase sewage treatment capacity by a minimum of 136,000 gallons per day to accommodate 1983 projection.
- Increase solid waste collection capacity two tons per day by 1983.

Freeport

- Add four members to fire department by 1983.
- Add four members to police department by 1983.
- Increase sewage treatment capacity 162,000 gallons per day by 1983.
- Increase solid waste collection capacity four tons per day by 1983.

Jones Creek

- Current facilities adequate.

Lake Jackson

- Add five members to fire department by 1983.
- Add three members to police department by 1983.
- Increase solid waste collection capacity seven tons per day by 1983.

Oyster Creek

- Add two members to fire department by 1983.

Pearland

- Add seven members to fire department by 1983.
- Add six members to police department by 1983.
- Correct deficiency in sewage treatment capacity. Increase capacity by a minimum of 2 million gallons per day to accommodate 1983 projections.
- Increase solid waste collection capacity 14 tons per day by 1983.

Richwood

- Add one member to fire department by 1983.
- Correct current deficiency in sewage treatment capacity. Increase capacity by a minimum of 12,000 gallons per day to accommodate 1983 projections.

Surfside

- Add 13 members to fire department by 1983.
- Add six members to police department by 1983.

Sweeny

- Current facilities adequate (present plans for expansion of sewage treatment facility to .8 million gallons per day).
- Add three members to fire department by 1983.
- Add one member to police department by 1983.
- Increase solid waste collection capacity one ton per day by 1983.

West Columbia

- Add three members to fire department by 1983.
- Add one member to police department by 1983.
- Increase solid waste collection capacity two tons per day by 1983.

BRAZORIA COUNTY

Individual recommendations for Brazoria County through 1985 are limited. The county provides limited police protection for unincorporated areas, maintenance of county roads, maintenance of state parks and recreational areas under contract with the State, etc. The county will need to execute the following to retain adequate conditions of county services:

- Add 7 members to the county sheriff's department.

The county should also encourage cities within its boundaries to draw up individual master plans, that would include: 1) inventory of community facilities to determine existing and future individual needs anticipating maximum growth, 2) methods to resolve anticipated deficiencies in waste treatment, water supply, etc. and 3) establishment of an updating schedule for the plan.

References

1. 16. U.S.C. 1456A(c)(1976), as amended by Publ L. 95-372, sec.503(a), 92 Stat. 692 (1978).

2. U.S. Department of Commerce, Bureau of Census, County Business Patterns, Texas, 1976.

3. RPC, Inc., Texas Coastal Management Program, Social and Economic Component User's Manual, Austin, September 1979, pp. 104-109.

4. Alvin Sun, April 5, 1979

5. Seadock, Environmental Report: "The onshore fabrication will be done in existing fabrication yards, probably in Houston, Beaumont, Port Arthur, or Lake Charles." (p. 3.1-27) "The offshore installation force will spend extended periods of time away from shore. Workers involved in laying of marine pipelines will be provided temporary quarters in the lay barge. Workers involved in platform and SPM construction will bunk aboard ship until construction of the quarters platform is complete...Because of the temporary quartering and the seasonal nature of the work, very few offshore workers are expected to relocate in the Brazosport area." (p. 3.1-28)

6. Ibid., p 3.1-17.

CHAPTER II

CHAPTER II - LONG RANGE PLAN

The preceding chapter inventoried existing conditions and the impact of energy activity on Brazoria County for the next 5 years. This chapter extends this analysis another 15 years and evaluates three major factors of the county's growth: land use, housing, and public services and facilities. These factors were inventoried and estimates were provided of future requirements of each to accommodate the projected population growth. The final part of this chapter examines the "natural trends" of development in the county and outlines the "growth options" which are exaggerated and amplified versions of the natural county-wide trends.

The basis for the forecasts and requirements is the short range population forecasts for the county and individual cities reported in Chapter I. This section extends the estimates to 1988 and 1998, i.e. ten and twenty year intervals. Geometric interpolation was used to obtain the 1988 and 1998 population projections, based on 1980 and 1985, 1990 and 2000 Texas Department of Water Resources projections. City population (Table II-1) was derived from county/city regression analysis, using the county estimates obtained from the TDWR projections.

Table II-1

POPULATION ESTIMATES AND PROJECTIONS, 1983, 1988, 1998

	1978	1983	1988	1998
Alvin	14,127	15,470	17,631	22,061
Angleton	11,723	13,386	15,276	19,163
Brazoria	2,006	2,227	2,463	2,998
Clute	7,511	8,444	9,383	11,488
Freeport	13,409	15,914	17,488	21,506
Jones Creek	1,861	1,934	2,005	2,187
Lake Jackson	16,954	19,516	22,503	28,761
Oyster Creek	1,062	1,239	1,386	1,759
Pearland	11,268	13,798	17,352	24,367
Richwood	1,809	2,028	2,308	2,885
Surfside	2,152	3,304	3,903	4,803
Sweeny	3,373	3,853	4,175	4,953
W. Columbia	3,598	3,993	4,307	5,044
Unincorporated and Other	42,848	44,716	48,804	57,854
County	133,701	149,822	168,997	209,829

SOURCE: Consultants estimates based on Texas Department of Water Resources, Population Projections (computer print-out), December, 1978.

LAND USE

The following section discusses the land use of Brazoria County. This section is divided into existing land use, determinants of future land use and the required land needed for development in the future.

EXISTING LAND USE

The existing land use is illustrated on Map 3[1]. Due to the extensive area covered and the nature of this study, detailed land use is not considered, but instead, more general categories are used to define the county's development pattern. Some specific uses are illustrated to show the large amount of land utilized or their importance in determining future land development. These include the wildlife refuges, major industry, prison farms, ports, and colleges. Most of the county's land, however, is forest, agriculture, and marshland.

Forest Land

Forested land is primarily located in the western half of the county where hardwoods and pine trees are predominant. Forest land makes up about 15% of the county land area.

Agriculture

Agriculture is located primarily on the northern and eastern half of the county. Cropland and pastureland make up about 60% of the land in

---

1. The source of the majority of the "Existing Land Use" information is the Houston Galveston Area Council's map titled "Land Use, 1975".

Brazoria County. Major crops are rice and cotton.

Marshland

This area stretches along the coast of Brazoria County, just behind its beaches, and extends inland for about four miles. It comprises about 20% of the county. This area is often considered environmentally sensitive due to its estuarine nature and the unique biota associated with such environments. In addition, the area is important to various birds and mammals, and to any marine organisms which may use the area for reproductive purposes.

Beach

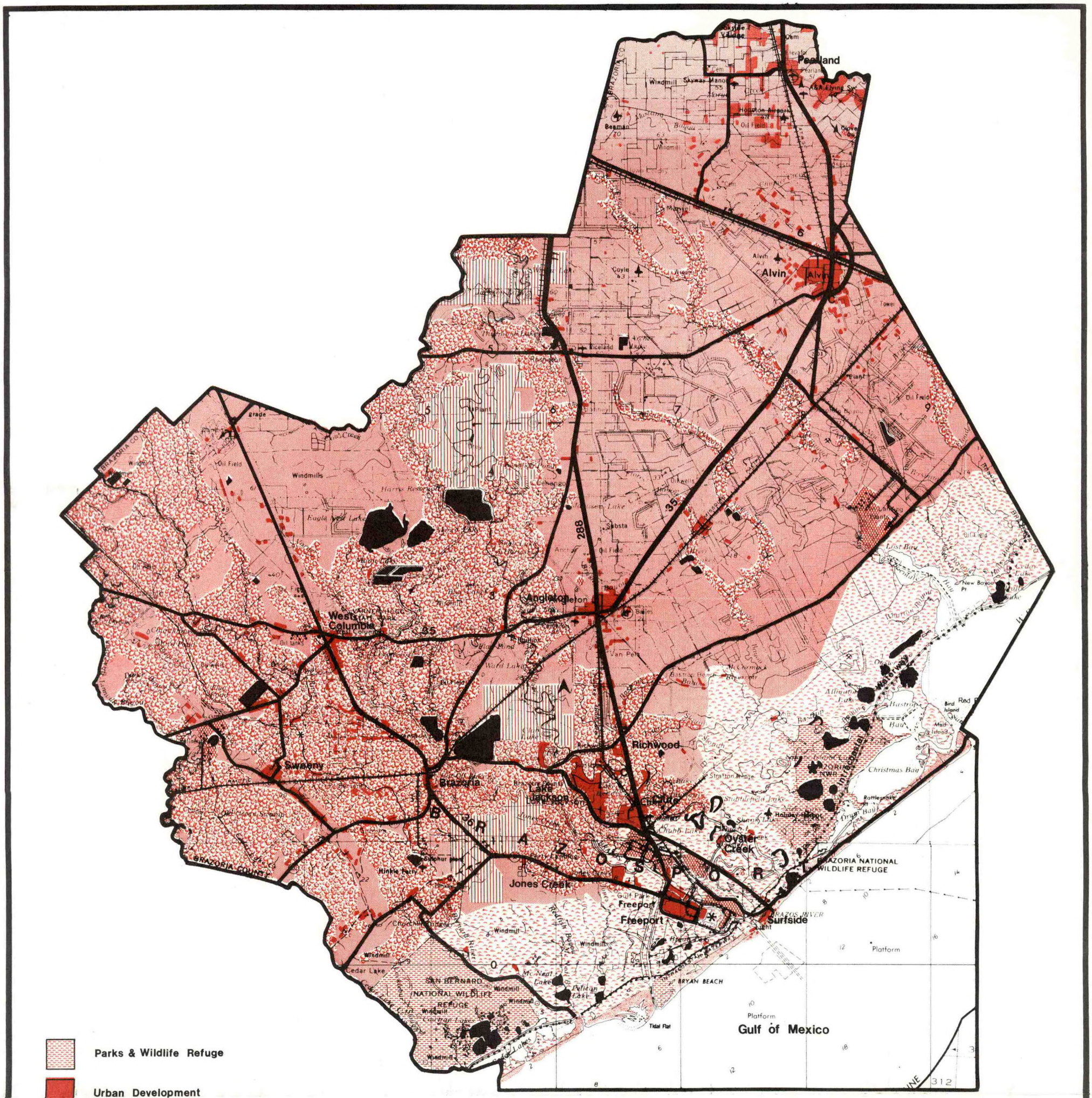
Brazoria County's eastern boundary is the Gulf of Mexico and extensive recreational activities such as surfing, swimming, surf fishing, and camping take place along it.

Lakes and Reservoirs

There are three major bodies of water located inland in Brazoria County. They are Eagle Nest Lake, Harris Reservoir, and Brazoria Reservoir.

Residential/Commercial (Urbanized)

There are four major urban concentrations in Brazoria County. They are defined by 1.) Alvin/Pearland/North Brazoria County, 2.) Angleton, 3.) Brazosport area, including Lake Jackson, Jones Creek, Richwood, Clute, Brazoria, Surfside, Oyster Creek and Freeport and 4.) West Columbia/Sweeny. All these cities include residential, commercial, and other uses that typi-



BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Existing Land Use

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 3

cally make up a community.

Industry

There are three major industrial concentrations in Brazoria County. One is located at the northeast corner of the intersection of Chocolate Bayou and Highway 2004. Amoco operates a refining facility here. The site is adjacent to Chocolate Bayou Port which can accommodate barge traffic from the Intracoastal Waterway. Another industrial concentration is located in and near Freeport. It is almost entirely owned by Dow Chemical Co. with frontage along the Brazos River. The final site is near the county's western boundary in an area known as Old Ocean. It is operated by Phillips Petroleum.

Parks and Wildlife Refuges

The San Bernard National Wildlife Refuge and the Brazoria National Wildlife Refuge are located on 29,000 acres of Brazoria County's coastal plain. The only other significantly sized recreational areas are Bryan Beach State Park, south of Freeport, and Varner-Hogg State Park, near West Columbia, located on a total of about 610 acres.

Prison Farms

Four state prison farms are located within Brazoria County. They are Darrington, Ramsey, Clemens, and Retrieve State Prisons. Located on a total of about 39,000 acres, these prison farms make up about four percent of the county's land area.

Ports

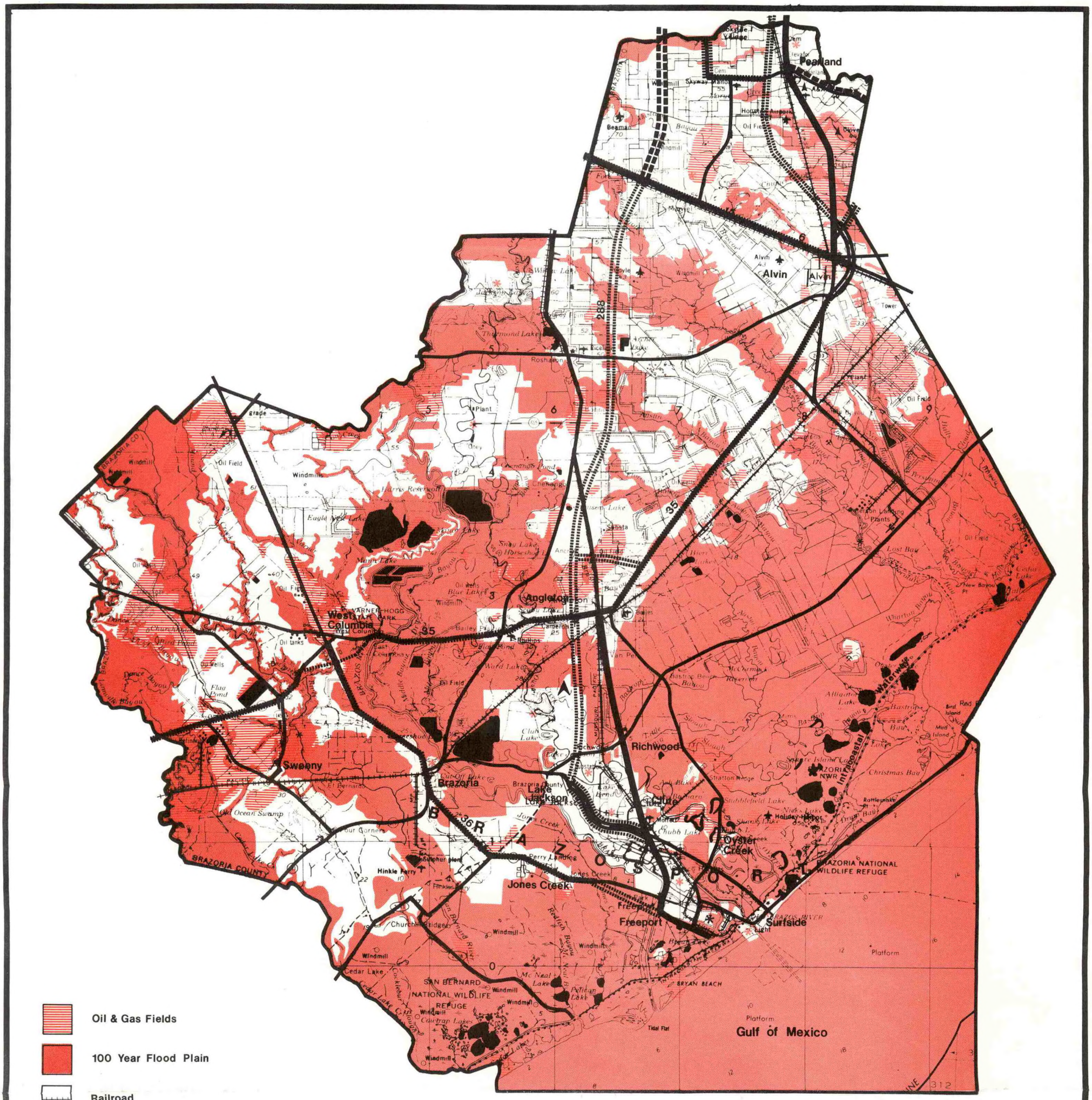
This category covers both water and airports. The only major deep water port in the county is the Port of Freeport. There are also two barge ports located inland with access to the Intracoastal Waterway. Port Sweeny is located along FM 2004. The only airport designated on the Texas Airport System Plan is Brazoria County Airport near Lake Jackson which will open in Spring 1980. It is classified as a "General Transport" with scheduled air passenger service. There are also a number of small, private airports open to the public. They include Redwing, Pearland, Southside, Clover, Alvin, Coyle, Bailes, and Holiday Harbor.

Colleges

There are two junior colleges in Brazoria County. Alvin Junior College is located in Alvin, and Brazosport College is located in Lake Jackson.

LAND USE DETERMINANTS

Urban patterns are determined to a large extent by natural, cultural and economic factors. Such factors include accessibility (highways, rail, etc.), major recreational facilities, and ports (air and water). Development limitations for some types of urban development include areas which are flood-prone, or contain wetlands or dense producing mineral resources, have poor highway access, are exposed to high levels of aircraft noise, have been designated as wildlife refuges, or are adjacent to heavy industrial development. These factors, which tend to either foster or inhibit development, are described below in more detail. Map 4, "Land Use Determinants" illustrates these factors for the county.



BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Land Use Determinants

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 4

Flood Plain

Federal Flood Insurance Administration (FIA) regulations will substantially limit urban development on defined flood-prone lands. The 100-year flood plain corresponds to the Flood Hazard Boundary Maps - Zone A prepared for the FIA. Because the incorporated areas and the state prison farms are not subject to county flood controls, the flood plain for these areas is not shown on the above described map.

Flood Control Projects

These projects allow construction to take place in areas that would otherwise not be feasible due to river or coastal flooding. An extensive series of flood control projects is administered by the Velasco Drainage District and has allowed new development to occur relatively secure from hurricane flooding in the Brazosport area.

Mineral Resources

Oil and gas production is an important factor in Brazoria County's economy and there are a number of active fields as shown on Map 4[1]. The active fields tend to be an obstacle to urban development because of the large numbers of wells, storage tanks, and pipelines scattered throughout the fields.

Transportation

The quality of access to various transportation modes is one of the

1. The locations of the oil and gas fields are based on the map titled "Oil Fields, Gas Fields, and Pipelines" in the report titled Regional Environmental Analysis of the Houston-Galveston Region published by the Texas Parks and Wildlife Department 1975.

major determinants of land use and value. Existing and proposed highways, rails, seaports, and airports will play a central role in shaping the direction of future growth in Brazoria County

Highways

Various types of development have different types of street access requirements. As an example, commercial projects require visibility and direct access by a large volume of traffic. Consequently commercial development will generally outbid other potential users for frontage on highways and major streets, particularly at intersections. These same access features, with the associated noise, traffic congestion, and high land costs tend to discourage single family residential development from locating on major thoroughfares. The following briefly describes the existing and planned major highway improvements in Brazoria County and is shown on Map 4. The major source of this information is the State Department of Highways and Public Transportation's "20 Year Project Development and Control Plan 1978-1998".

State Highway 288. This generally two-lane highway is the major link between the Brazosport area and Houston. Highway 288 transverses the county in a north-south direction and connects most of the County's largest cities, including (from south to north) Freeport, Clute, Lake Jackson, Richwood, and Angleton. A new route location for 288 is now being developed generally parallel to the existing highway. The portion from the northern county line south to Highway 6 will be completed by 1982. Later segments will extend southward and west of Angleton by 1984 and finally to Highway 332 on the west side of Lake Jackson by 1986. Route 288 will be developed as a

four lane divided highway but will not be limited access, thereby permitting development and full access immediately adjacent to the highway.

State Highway 35. This highway is four lanes from the northern county line to Alvin, and then generally two lanes as it transverses northeast to southwest across the County connecting Pearland, Alvin, Angleton, and West Columbia. State Highway plans indicate this highway will be widened to a minimum four-lane status through the entire county. A four-lane divided highway bypass has already been developed as one segment of this upgraded Highway 35 to the east of Alvin. A new four-lane section west of present Highway 35 to the east of Alvin. A new four-lane section west of present Highway 6 (north of Alvin) is planned in conjunction with the highway widening project.

State Highway 6. This generally two-lane highway runs east-west across the northern one-quarter of the County. It is now four lanes wide from Alvin to the Galveston County line. However, state highway plans indicate it will be improved to four lanes along its entire length over the long range (20 years or more). This highway connects Alvin with the Texas City - Galveston area to the east and with the Richmond - Sugarland area on the extreme west side of the Houston area. The first link to be improved will be between Alvin and new Highway 288.

State Highway 36. This two-lane highway runs generally northwest to southeast through the western one-third of the County connecting West Columbia, Brazoria, Jones Creek, and Freeport. The state highway plan indicates that the link between West Columbia and Freeport will be widened to four lanes within 20 years, though it is not proposed to similarly widen this highway to

the north of West Columbia.

Highway 35, Angleton Bypass. A four-lane divided by-pass is planned around the north side of Angleton where it will intersect with proposed Highway 288.

Highway 36, (288 Connection), Freeport. This proposed four-lane divided bypass will extend from just east of Jones Creek to existing Highway 288 on the southwest side of Freeport.

FM 2611 Extension. This new two-lane highway, to be completed by 1982, will connect with Highway 36 north of Jones Creek and Highway 332 in Lake Jackson. This road will cross the Brazos River, providing a much needed alternative link between Lake Jackson and the cities of Brazoria and Jones Creek.

Highway 332. The portion between existing Highway 288 and the point at which the proposed 288 intersects northwest of Lake Jackson is planned to be widened to a six-lane divided highway by the state.

FM 528. The small segment of 528 north of Alvin within the county is shown to be expanded to a four-lane divided highway by 1988.

FM 518. This highway in the uppermost portion of the county travels both north - south and east - west. The north - south portion is planned to be widened to a four-lane divided highway by the state. The east - west

segment is planned to be widened to four-lanes in two locations within the county. One portion is between Pearland and the Galveston County line, and the other starts at its western boundary to the intersection with proposed Highway 288.

Rail.

With passenger rail service having been discontinued, rail's role in Brazoria County is concentrated on transporting freight. Rail routes will continue to play an important role in determining locations for new industry.

Airports.

Brazoria County has many general aviation airports. One, Brazoria County Airport near Angleton will open shortly and provide service that the others do not. It will have scheduled public passenger service to Clear Lake City and Houston provided by Metro Airlines. It will replace the present Dow Airport in Lake Jackson and will attract a significant amount of corporate aircraft activity. The smaller private airports are used primarily for business operations and pleasure or recreational use. Land immediately under the runway approaches is generally unsuitable for residential and other noise sensitive uses. Airport, therefore, play both a positive and negative role in shaping the development pattern.

Water Ports and Navigable Waterways.

Like rail service, these facilities tend to attract industrial development and commodity transfer or storage facilities. The Port of Freeport, a deepwater port, (now 36' deep) accomodates the international import and

export of cargo and petroleum products, thus being a major source of employment and center for the economic development of the Brazosport area. Scheduled improvements include deepening of the channel to 45 feet deep. Port Sweeny and Chocolate Bayou Port are located inland and are connected to the Intracoastal Waterway via the San Bernard River and Chocolate Bayou respectively.

Another potential port facility which would have a significant impact is the Texas Deepwater Port proposed for 26 miles off the Freeport Coast with an oil storage terminal located just west of Freeport. This facility is described in more detail in Chapter I.

Environmental Features.

The following elements are usually a deterrent to development because of high construction costs and development controls usually associated with them. A brief description of the major environmentally sensitive features in Brazoria County follows:

Beach

This land is dedicated for recreational use by the state and is therefore accessible only to limited types of development, though hurricane flooding presents a danger which new development must address.

Marshland

This land is normally environmentally sensitive and costly to develop because of poor soil conditions and drainage.

Forest

This type of land can either be a positive or negative feature depending on the potential type of development. For residential development, it would generally be considered a positive feature. The Lake Jackson area with its many trees has provided an amenity that has attracted a large amount of housing to this location. Forest land, on the other hand, would usually prove to be a negative factor for industrial or commercial development due to the extra clearing costs that would be involved.

Lakes and Reservoirs

These are positive features for residential development since they provide water and recreational amenities for the surrounding area. Because of such desirable characteristics, adjoining properties can attract development that might otherwise occur elsewhere.

Wildlife Refuges

These areas are generally confined to wildlife conservation and set aside for wildlife and are therefore protected from development.

Other Factors:

Industrial.

This type of development usually concentrates at sites with required locational features such as rail, port, pipeline, and highway access. Industrial development in Brazoria County is predominantly in the petrochemical industries. These centers create jobs and in turn

promote population and residential growth.

Prison Farms.

The four prison farms in the county, because of their large size and central locations, tend to limit other development options on the large tracts of land.

FUTURE LAND USE REQUIREMENTS

To determine the additional land development needed to accomodate the forecasted population, the following procedure has been followed: (See Table II-2 for figures.)

1. Population growth of each city for the years 1978 and 1998 has been estimated (see beginning of this chapter for discussion of population growth).

2. An average existing density of urban development in Brazoria County has been estimated by totalling the acreages of urban uses (which are considered to include "residential", "commercial", and "educational") and dividing this total figure by the total county population. Using 1970 land use and population figures from the "Houston-Galveston Regional Transportation Study, Population and Land Use 1970-1990, Technical Report", reveal a total of about 15,700 acres of urban uses accommodating a total population of about 108,000 people.

3. New urban development (1978-1998) has been forecasted to occur at the slightly higher density of 8 people/acre. While this slightly higher

density figure would be difficult to statistically document, it is judged reasonable since land values are increasing, housing costs are rising rapidly, and a trend to smaller lot size and to multifamily housing (including townhomes and condominiums) is expected to continue and thereby force slightly higher development density.

4. The population growth for each city between 1978 and 1998 was then divided by 8 people/acre to yield a rough approximation of the amount of new urbanized land development that would be required to accommodate the projected population growth. An additional 12,700 acres is anticipated to be required to accommodate the projected Brazoria County population growth through 1998. This will nearly double the 15,700 acres total urban development which existed in 1970 in Brazoria County. Acreage figures for each major city and the county are shown on Figure II-2.

5. Industrial and Open Space land requirements are extremely difficult to forecast because of the wide range of types and densities that may be needed. Many of these facilities discussed in Chapter I serve a regional - even national - market, therefore are not tied solely to local circumstances.

On the other hand the industrial and other employment opportunities outside of Brazoria County in the nearby Houston area and Galveston County will have a significant impact on growth in the northern part of Brazoria County. Only the approximate locations (not size) of existing and future industrial and recreational facilities are shown on Map 8. (The short range (5 year) impact of these facilities on Brazoria County and cities within the county is detailed in Chapter I).

TABLE II-2

POPULATION PROJECTIONS & LAND REQUIREMENTS

CITIES	POPULATION 1978	POPULATION 1998	1998 1978	NEW URBANIZATION AT 8 PEOPLE/AC[1]
Alvin	14,127	22,061	7,934	992 Acres
Angleton	11,723	19,163	7,440	930
Brazoria[2]	2,006	2,998	992	124
Clute[2]	7,511	11,488	3,977	497
Freeport[2]	13,409	21,506	8,097	1012
Jones Creek[2]	1,861	2,187	326	41
L. Jackson[2]	16,954	28,761	11,807	1476
Oyster Creek[2]	1,062	1,759	697	87
Pearland	11,268	24,367	13,099	1637
Richwood[2]	1,809	2,885	1,796	224
Surfside[2]	2,152	4,803	2,651	331
Sweeny	3,373	4,953	1,580	198
W. Columbia	3,598	5,044	1,446	181
Unincorporated	42,848	56,309	38,226	4778
County	133,701	209,829	101,613	12,701 Acres

Footnote 1. For the purposes of this study, "urbanization" has been defined to include only residential, commercial, and educational facilities. (Because of their unique nature, open space and industrial land uses & projections are considered separately.) An average of 8 persons per new developed acre is assumed. See text for explanation.

2. Communities considered to be within "Brazosport area".

HOUSING

Housing is one of the first community sectors to be impacted by increases in population. Often, it is the growth limitation factor to an influx of people into a new area. This study provides a general source of information concerning existing and projected housing demand, supplies, and conditions. This information can be used by Brazoria County communities as a basis for further investigation and decision concerning the role of housing in county development.

The background and inventory information for this study was retrieved from a number of sources. Complete data for determining housing conditions, particularly toward the end of a census decade, is difficult to accurately compile. Reliance has been placed upon such data sources as Housing Characteristics for States, Cities and Counties of the U. S. Census of Housing for 1960 and 1970, community comprehensive plans, and the H-GAC report Housing Conditions and Needs in the H-GAC Region (1976). The last source also incorporated local housing studies, community plans and responses to questionnaires distributed throughout the region by H-GAC. This source was heavily depended upon because its data represented the most recent compilation and analysis of applicable information.

Census tract housing data was utilized when no individual city data was available. In these cases, the named community was the major population concentration within the tract.

HOUSING CONDITIONS

Housing conditions in the county were grouped by U.S. Census into 3 general categories - "substandard", "deteriorating", and "standard

or better". "Substandard" units were defined as those lacking some or all plumbing facilities, and "deteriorating" as those in less severe states of condition. The category of "deteriorating" was assigned on the basis of 1970 census data, the lack of some or all kitchen facilities as recorded in the 1970 "Housing Characteristics." or the indication of repair conditions in the H-GAC report.

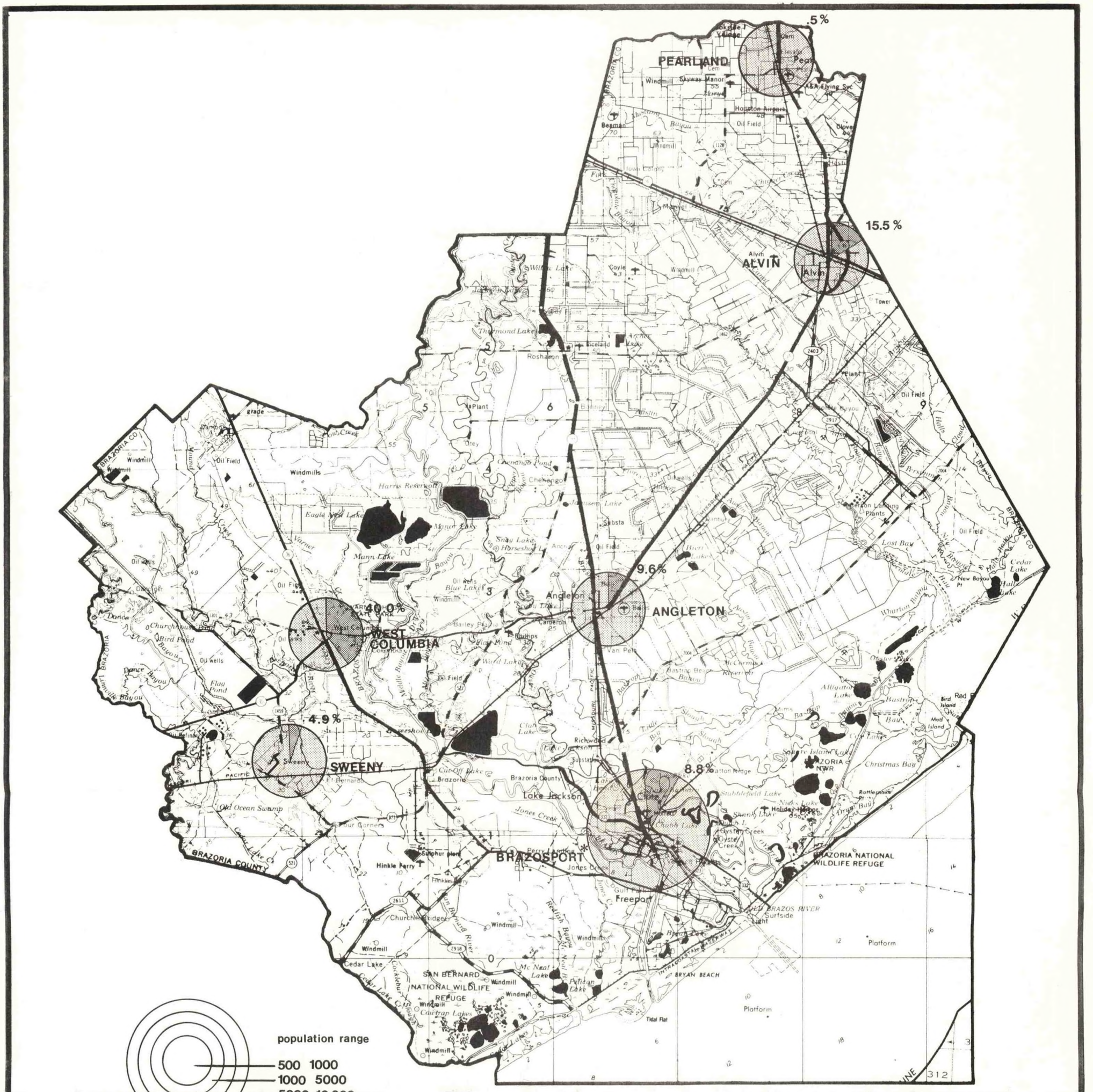
Cities

Housing conditions in the county's 13 major cities have a wide range of quantitative and qualitative values. The largest concentration of housing units occurs in the area designated as Brazosport, including the cities of Brazoria, Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Richwood and Surfside.

Numerically, Freeport has the greatest number of both substandard (209) and deteriorating (525) housing units. On a percentage basis, Pearland has the best housing stock, with only 5% of its units classified as substandard/deteriorating, while West Columbia has the least favorable conditions, with over 40% of its housing categorized substandard/deteriorating. Other communities with a low percentage of non-standard housing are Pearland (0.5%), Oyster Creek (0.6%) and Jones Creek (1.4%), while those with the largest percentage of substandard or deteriorating units are Brazoria (18%) and West Columbia (40%). (See Table II-3 and Map 5). The Richwood figure of 22% substandard or deteriorating units overstates the amount of poor quality housing within the Richwood city limits since census tract data was used as the source and a number of rural housing units are included.

Brazoria County

The county totals for housing statistics include both incorporated



population range

- 500 1000
- 1000 5000
- 5000 10,000
- 10,000 15,000

* **BRAZOSPORT INCLUDES THE CITIES OF CLUTE, FREEPORT, JONES CREEK, LAKE JACKSON, OYSTER CREEK, RICHWOOD SURFSIDE and BRAZORIA.**

4.9%

- standard housing
- percent nonstandard units

0 5 10 15 Statute Miles

0 5 10 15 20 25 Kilometers

BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Housing Conditions

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 5

TABLE II-3

HOUSING CONDITIONS OF OCCUPIED UNITS

IN BRAZORIA COUNTY

AND SELECTED COMMUNITIES

	TOTAL UNITS				OWNER OCCUPIED				RENTER OCCUPIED			
	No.	Sub-standard	Deteri-orating	Percent Sub. or Det.	No.	Sub-standard	Deteri-orating	Percent Sub. or Det.	No.	Sub-standard	Deteri-orating	Percent Sub. or Det.
Alvin[2]	3437	123	409	15.5%	2139	34	212	11.5%	1298	82	197	21.5%
Angleton[2]	3047	140	151	9.6	1965	64	244	15.6	1082	65	207	25.1
Brazoria[1]	549	55	44	18.0	390	39	31	17.9	119	12	10	18.4
Clute[2]	1854	66	0	3.6	1175	27	0	2.3	679	33	0	4.9
Freeport[2]	4156	209	525	17.7	2150	63	148	8.6	2006	76	377	22.6
Jones Creek[1]	426	3	3	1.4	309	2	2	1.3	90	1	1	2.2
Lake Jackson[2]	5461	0	171	3.1	3462	0	93	2.7	1999	0	78	3.9
Oyster Creek[3]	177	1	0	0.6	60	0	0	0	32	1	0	3.1
Pearland[2]	3038	16	0	0.5	2446	11	0	.5	592	5	0	.8
Richwood[1]	443	96		21.7	347	83		23.9	57	13		22.8
Surfside[3]	400	60		15.0	116	30		25.8	118	30		25.4
Sweeny[2]	1040	51	0	4.9	770	42	0	5.4	270	9	0	3.3
W. Columbia[2]	1209	99	386	40.1	798	66	224	36.3	411	33	162	47.4
Rem. of County	9459	631	2430	32.3	7443	498	164	8.9	2373	232	448	2.9
Brazoria[1] County	34,696	1,502	4,162	16.3	23,570	917	2,680	15.2	11,126	585	1487	18.6
State of[1] Texas	3,829,502	291,383	216,765	13.2								

1. Housing Characteristics for States, Cities and Counties; U.S. Census of Housing, 1970;
2. Housing Characteristics and Needs in the H-GAC Region, Houston-Galveston Area Council.
3. 1970 U.S. Census of Population, census tract data rather than individual city data.

and unincorporated areas. The totals also include those updates submitted by those cities responding to the H-GAC questionnaire in 1976. The county contained 34,696 dwelling units in 1976, and the statistics at this time indicated that 1502 were substandard and 4162 deteriorating.

In the county, owner occupied units accounted for 23,570 units, 917 of which were substandard and 2580 deteriorating. Renter-occupied units numbered 11,126 units, and included 585 which were substandard and 1487 which were deteriorating. This compares favorably with the State of Texas 1970 census housing characteristics statistics, indicating 13.2% of the State's dwellings as substandard/deteriorating, as compared to 16.3% in Brazoria County.

HOUSING VACANCY RATE

Another important factor of an area's ability to handle an influx of people is the housing vacancy rate. Sources of data on vacancy rates in Brazoria County are limited.

Cities

Chamber of Commerce sources in 1979 have indicated that housing vacancy levels have fallen off sharply in recent years. As recently as 1976, vacancies ranged between 3.3% and 8% in Brazoria County communities. The Brazosport area now has absolutely no rental vacancies according to a November 1979 survey of the Chamber of Commerce. Their shortage of apartment units is further illustrated by an average waiting list of 6 names per rental project. This is a significant drop from the 900 vacancies tabulated for the Brazosport area in 1976. Single family availability was also considered extremely tight, due to high mortgage rates which are beyond local influence.

The city of Alvin also currently has no apartment vacancies. Chamber of Commerce sources indicate only 20 houses for rent, but claimed they are listed at a price well above the average rent for some in the area, and therefore not subject to immediate rental. The assumption prevails that other communities with low vacancy rates have had them filled within the last four years.

The city of Pearland had only ten vancancies in 1976, but Chamber of Commerce sources revealed virtually none at all at the present time, and those which are available are filled immediately. The same tight housing situation exists in Angleton, Sweeny, and West Columbia, where no rental and few owner vacancies exist. Oyster Creek is adapting to the current situation by becoming a center for mobile home parks in the Brazosport area.

Brazoria County

The county's overall vacancy rate was approximately 4% in 1976 This included 1591 vacancies county-wide for both rental and single-family homes. Table II-4 illustrates the historic community and housing vacancy data for comparison and reference purposes.

Currently, though, the county has a severe housing shortage problem, with very few units available anywhere in the county. This situation exists in all parts of the county, not just in one particular area.

HOUSING PROJECTIONS

To calculate the number of additional housing units needed in the individual communities and the county, the following methodology

TABLE II-4

HISTORIC VACANCY RATES IN BRAZORIA

COUNTY AND SELECTED COMMUNITIES
1976

City	Total Units	Overall Vacancy Rate		Vacancy Rate of Available Units by Type OWNER RATE		RENTAL RATE		Total Available Vacancies
		EST. NO.	%	EST.NO.	%	EST.NO.	%	
Alvin[2]	3437	170	4.9	81	3.4	88	6.8	169
Angleton[2]	3047	157	5.0	39	2.0	119	11.0	158
Brazoria[1]	549	30	5.4	4	.8	19	3.6	23
Clute[2]	1854	116	6.3	31	2.6	88	12.7	119
Freeport[2]	4156	345	8.0	38	1.8	304	15.2	342
Jones Creek[1]	426	27	6.3	8	1.8	3	.7	11
L. Jackson[2]	5461	0	0	0	0	0	0	0
Oyster Creek[3]	177	6	3.3	2	1.1	4	2.3	6
Pearland[2]	3038	12	.3	10	.4	0	0	10
Richwood[1]	443	26	5.8	7	1.9	2	3.2	9
Surfside[3]	400	148	37	28	7.2	120	30.2	148
Sweeny[2]	1040	6	.6	6	.8	0	0	6
W. Columbia[2]	1209	14	1.2	10	1.3	4	1.0	14
Brazoria County	34,696	1591	4	448*	1.9	1143*	10.2	1,591
State of Texas	3,829,502	21,096	.5		1.9		11.2	

1. Housing Characteristics for States, Cities, and Counties, U.S. Census of Housing 1970.
2. Housing Conditions and Needs in the H-GAC Region; Houston-Galveston Area Council, 1976.
3. U.S. Census of Population 1970; Census tract data rather than for individual cities.

was used. The projected population growth for each area (See Table II-1) was divided by 2.9 (the average number of people/ household in Texas) to produce an estimate of the number of housing units needed to accommodate this growth.

Since there is literally no available vacant housing in Brazoria County, no attempt to calculate the population absorption ability of the existing housing stock has been made.

Table II-5 "Projected Housing Needs in Brazoria County and Selected Communities", and Map 6 summarizes the estimated housing needs for the next 20 years. Since the Brazosport area functions more or less as a single real estate market, the eight communities in this area have been combined to reveal an areawide housing requirements figure of over 10,000 additional housing units. The next largest housing requirement is for northern Brazoria County in which Pearland is projected to require over 4,500 additional housing units.

For Brazoria County as a whole, the current population of 133,700 has been projected to increase by another 101,600 to a total of nearly 210,00 by 1998. With essentially no vacancies at present a total of an additional 35,000 housing units will be required in the next 20 years to accommodate the projected Brazoria County growth.

Consideration should be given to the factors which affect housing supply. Physical, political and legal constraints such as flood plain areas, zoning, and subdivision regulations should be evaluated to determine ways in which they may tend to restrict housing supply. Government obstacles to increased housing supply should be carefully examined to assure that their costs do not exceed their benefits. For example, the FIA regulations have been blamed by some local officials, to have had a

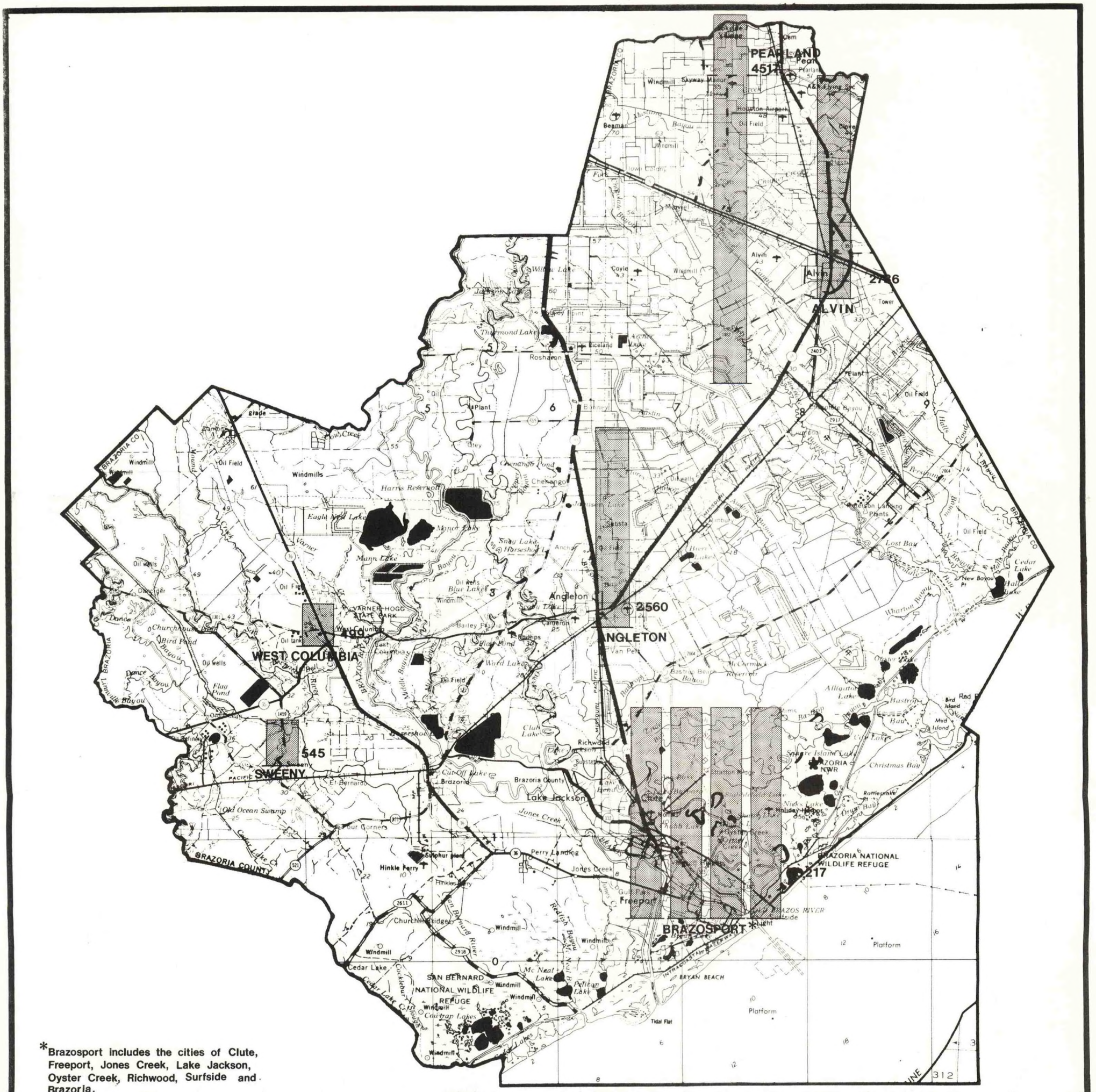
TABLE II-5

PROJECTED HOUSING NEEDS IN

BRAZORIA COUNTY AND SELECTED COMMUNITIES

City	Base Population 1978	Population 1998	Population Change 1978-1998	Reguired New Units
Alvin	14,127	22,061	7934	2,736
Angleton	11,723	19,163	7440	2,566
Brazosport*	46,755	76,387	29,632	10,217
Pearland	11,286	24,367	13,099	4,517
Sweeny	3,373	4,953	1,580	545
W. Columbia	3,598	5,044	1,448	499
Remainder of County	42,839	57,854	15,015	5,177
Total Brazoria County	133,701	209,829	76,128	26,251

* Consisting of the cities of Brazoria, Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Richwood and Surfside.



*Brazosport includes the cities of Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Richwood, Surfside and Brazoria.

319 required new units by 1998

0 5 10 15 Statute Miles

0 5 10 15 20 25 Kilometers

BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Forecasted Housing Requirements

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 6

severe impact on new housing in the region during the last few years. However as the maps have been updated and regulations clarified to local builders, construction activity has somewhat recovered. Nevertheless, some individuals have estimated the regulations as having caused a 3-year lag in residential construction.

The greatest obstacle to new housing construction in Brazoria County, however, may be beyond local control. High mortgage rates and state usury laws have had a definite dampening effect on housing construction according to many individuals familiar with the local housing market. Whether such high interest rates and state usury laws will continue to have such impacts on the Brazoria housing market is difficult to forecast. President Carter's 90-day lifting of state usury laws is an example of a governmental action that would be difficult to forecast. Map 6 illustrates by means of a bar graph the forecast amount of new housing by area or community in the county.

PUBLIC SERVICES AND FACILITIES

Public services and facilities in Brazoria County are provided on both a municipal and county-wide basis. A discussion of the impact of increased population by 1998 on those facilities follows. Map 7 illustrates the adequacy of inadequacy of existing public services and facilities through the year 1998. The major facilities and services (police and fire protection, water and sewage treatment) provided on a municipal basis, have been organized in this report according to urban centers within the county. County-wide facilities and services and school districts have been treated

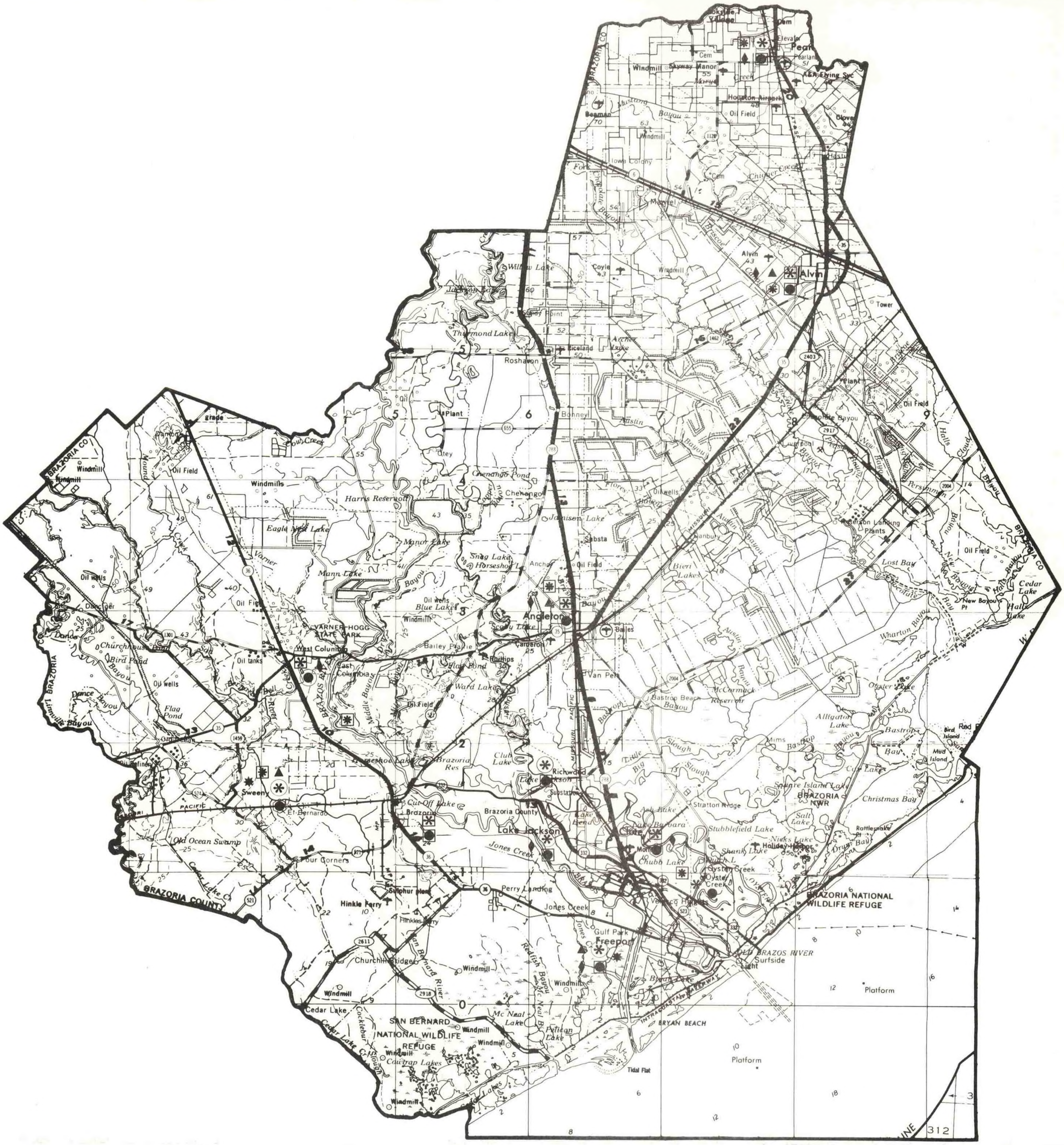
separately. Appendix II-A includes a table for each community, outlining in detail the projected facility and service needs through 1998.

In order to determine the additional facilities and services which will be required to each community in 1998, the existing ratios between the services and facilities and the population were calculated. In the case of the water supply facilities and wastewater treatment, the maximum daily use per person was calculated. It was then assumed that the existing use ratio will continue. This ratio was applied to the projected population to derive the total anticipated use for a given facility in 1998. This total use was then matched against the existing capacity, and, where plans for expansion were known, against the planned capacity.

Requirements for additional police and fire protection personnel were calculated first determining the existing personnel/population ratio. (Firemen are assumed to be volunteer unless otherwise states.) The existing ratio was assumed to be adequate and desirable,[1] and was then applied to the 1998 projected population to determine additional personnel required by 1998. In some cases, the existing personnel/population ratio appears to be unusually high or unusually low, compared to county-wide average or State Board of Insurance Standards. This may result in extremely high or low projected need, and as is noted in the text, these projections should serve only as a general indication of adequacy of the services. It should be cautioned that the projected needs do not reflect the possibility that a community's standards of adequacy may change as a community grows.

---

1. This assumption is based on an inventory and evaluation of existing public facilities and services in Brazoria County conducted as part of this study. See Chapter I of this report.



LEGEND

✱ Water Supply System	▲ Hospital	◯ Existing Capacity Sufficient 1998
● Wastewater System	♦ Solid Waste	□ Deficient Capacity 1998
✱ School District	✱ Industrial Waste Disposal	⬡ Sufficient Capacity 1998 with Planned Expansion

0 5 10 15 Statute Miles

0 5 10 15 20 25 Kilometers

N

BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Public Facilities and Services

BOVAY ENGINEERS, INC./RPC, INC.

HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 7

ALVIN/PEARLAND/FRIENDSWOOD

Alvin

In Alvin, both police and fire protection services will need to be increased during the planning period. Twenty-six additional volunteer firemen and 19 additional policemen will be required by 1998 to maintain the present service ratios of 3.3 firemen/1000 population and 2.3 policemen/ 1000 people. (Appendix IIA-1).

In addition, the water and sewer systems will need to be expanded. The population of 22,061 will require an estimated total capacity of 4.7 mgd. The present system's capacity is 4,320,000 gallons per day, which will mean that there will be approximately 0.36 mgd required to service the anticipated population. The present wastewater treatment facility would also be inadequate. There would be an additional 1.3 million gallons per day needing treatment to support the total population expected in 1998.

Pearland

Existing police and fire protection as well as sewer treatment in Pearland would be inadequate to meet additional demand anticipated in 1998. The number of volunteer firemen and policemen must be increased. Thirty-eight additional volunteer firemen including two paid firemen and 33 additional policemen would be needed to support the anticipated population of 24,367. (Appendix IIA-2)

Present water and wastewater systems would also be insufficient to support the increased population. Total water capacity needed to support the expected population is 4,970,868 mgd. Present capacity is 5,000,000 gallons. This suggests that the present capacity will be adequate through most of the 20 year study period. The present wastewater treatment facilities however, would be inadequate by 1998. The total capacity by that year would be 8.7 mgd. With a present capacity of 3,000,000 an additional 5.7 mgd would be required to service the new population.

ANGLETON

The public facilities and services in the city of Angleton which would be affected include police protection, fire protection, water supply and wastewater supply. (Appendix IIA-3)

The present number of police and fire protection personnel would be insufficient to provide adequate protection to the projected 1998 population of 19,163. The police force would have to be increased by 14 patrolmen, to a total of 36. The total number of volunteer fire-fighters required to maintain the present 3.4 firefighters/1000 population would be 65. This would mean that 25 additional firemen would be needed.

The water supply system of the city will also be inadequate to meet the anticipated demand by 1998. Its present capacity of 2,000,000 gallons would have to be expanded by roughly 1.2 mgd to service the projected population of 19,163. The sewage treatment capacity, however, would remain adequate through 1998. The present 4 mgd

System would accommodate the projected population, with a potential reserve capacity of 0.6 mgd.

BRAZOSPORT

Brazosport encompasses the following communities: Brazoria, Clute, Freeport, Jones Creek, Lake Jackson, Oyster Creek, Richwood, and Surfside. The facilities and services of each community will be impacted by the anticipated growth in population for the year 1998.

Brazoria

The city of Brazoria will need to expand its services and facilities to accommodate the anticipated demand of 2,998 people in 1998. In order to maintain the present personnel/population ratio, the fire protection personnel should number 51 by that year, necessitating and increase of 16 volunteer firemen. In actuality, this estimate may be high, as the city already has 35 volunteer firemen. The police department would require a total of 12, an increase of four over its present eight personnel. Brazoria's present police/population ratio of 3.9/1,000 population is higher than the county average of 2.4 police/1,000 population. (Appendix IIA-4).

The water supply system, with a present capacity of 619,000 gallons will need to be increased by approximately 50,000 gallons to accommodate the projected population. The sewage treatment facilities should also be expanded by that year to treat an additional 40,000 gpd.

Clute

The city of Clute presently employs 26 policemen. To accommodate the projected population of 11,488, 13 additional policemen would be needed. The number of firemen required to meet the demand would total

49 or an addition of 16 volunteer firemen by that year. (Appendix IIA-5).

The demand placed on the water supply system by 11,488 people would exceed that which could be handled by the proposed facility. The city would need to supply at least an additional 130,000 gpd of water. The wastewater treatment capacity will also be inadequate to support the projected population. There will be approximately 2.9 mgd needed, leaving a deficit capacity of .9 mgd.

Freeport

The projected population for the city of Freeport in 1998 is 21,506. To adequately service this population, 19 additional firemen (including 4 paid firemen) and 15 additional policemen will be required to maintain the present service ratios. That is, a total of 56 firemen (volunteer and paid) and 43 policemen will be needed. (Appendix IIA-6).

The present water supply system, with a capacity of 4,000,000 gallons, will be adequate through the planning period. The potential reserve capacity would be an estimated 0.37 mgd. The wastewater system, however, would not be adequate. The present capacity is 1,700,000 gallons. To service the new population by 1998 approximately 2,500,000 gallons of additional capacity would be required. Thus, the wastewater treatment facitlity should be expanded by at least 0.8 mgd.

Jones Creek

Jones Creek provides police and fire protection to its residents. However, it has no water system or wastewater treatment system at present. In order to maintain the present 8 firemen/1000 population and 1.6 policemen/1000 population, Jones Creek will need a total of 17 volunteer firemen and 4 policemen by 1998. This will mean an additional 3 volunteer firemen and 1 policeman would be needed. (Appendix IIA-7).

While, at present, there is no water supply or sewage treatment system , a new sewage treatment plant is planned, with a capacity of 0.5 mgd. There is, however, insufficient data to determine whether or not the planned sewage treatment plant will meet the demand in 1998.

Lake Jackson

The city of Lake Jackson will need to increase its police and fire protection to accommodate the projected 1998 population of 28,761. The police force would have to be augmented by 18 patrolmen, for a total of 46, and the fire department by 28, for a total of 69 volunteer and paid firemen to provide adequate protection. (Appendix IIA-8).

The water supply will be adequate to support the 1998 population, with a potential reserve capacity of 1.7 mgd. The wastewater treatment facility, however, will be deficient to treat the projected peak demand.

Oyster Creek

The projected population for Oyster Creek for 1998 is 1,759. To maintain the existing ratio between personnel and population in the fire and police departments, there would be a total of 29 volunteer firemen and 5 policemen needed. Because of the unusually high existing ratio between firemen and population, the estimated number of volunteer firemen may be high. That is, 10 additional volunteer firemen and 2 additional policemen will be required. (Appendix IIA-9).

The city is presently constructing a 350,000 gallon water supply system of its own, but does not have a wastewater treatment system. However, there is a 500,000 gallon wastewater treatment system in the planning stages. Present data is insufficient to determine whether

this will accommodate the projected needs of the 1998 population of 1,759.

Richwood

The population projection for Richwood for 1998 is 2,885. In order to provide adequate police and fire protection, by retaining the present service ratios, 6 additional volunteer firemen, for a total of 16 firemen, and 3 additional policemen, for a total of 8 policemen, would be needed. (Appendix IIA-10).

The water supply system will be adequate through the planning period. The present system has a capacity of 1,059,000 gallons. With an anticipated peak use of 208,000 gallons per day, there would be approximately 850,000 gallons reserve. The wastewater treatment facility, however, will not be adequate to support the expected population of 2,885. There will be a need to expand treatment capacity an additonal 58,000 gallons to meet the projected 156,000 total gallons per day demand.

Surfside

Projected population of Surfside in 1998 is 4,803. Surfside will have to increase personnel in both its fire and police departments to maintain the present service/population ratio for firemen and a county average ratio for policemen. An additional 31 volunteer firemen and 10 policemen will be needed to provide adequate protection. That will mean that there will be a total of 56 volunteer firemen and 12 patrolmen. (Appendix IIA-11). The estimated number of volunteer firemen required may be high due to an existing unusually high service/population ratio.

There are presently no city water and wastewater treatment facilities. There are also no plans for the construction of such facilities in the future.

WEST BRAZORIA COUNTY

The two cities included in the West Brazoria County area are Sweeny and West Columbia. They will both experience impact on their facilities and services due to population growth.

Sweeny

The projected population for Sweeny for 1998 is 4,953. The fire and police departments will both have to increase their personnel to maintain the present level of service. The fire department will have to be increased by a total of 13 volunteer firefighters, and the police department by 4 policemen. The new total will include 43 volunteer firemen and 13 policemen. (Appendix IIA-12).

The water system should be adequate in 1998. The present water supply system has just been increased to a total of 1,155,000 gallons capacity. The present wastewater treatment facilities would be inadequate to support the projected population. There are present plans for the expansion of the wastewater treatment system by an additional 800,000 gallons/day.

West Columbia

There is an anticipated 1998 population of 5,044 for West Columbia. To maintain the present personnel/population ratio, approximately 13 additional volunteer firemen and 4 additional police would be required, bringing the number of personnel up to 50 and 14 personnel in each department, respectively. (Appendix IIA-13).

The present wastewater treatment facility would be adequate to the year 1998, with a potential reserve capacity of 2.0 mgd. The water supply system, however, would not be adequate. There would be at least an

additional 40,000 gpd of capacity required.

SCHOOL DISTRICTS

In calculating the additional enrollment for each school district in Brazoria County between 1978 and 1998 and the projected surpluses and deficiencies in both the general capacity of the school system and the number of classrooms, the same procedure was used as in Chapter I. That is, the total population growth expected for each major city in a given school district was divided by 4.2 which is the ratio of the Texas population to the number of students statewide.

This resulted in a projected estimate of the increase in the enrollment of each school district between 1978 and 1998. The new enrollment was then divided by 25, (the average classroom size assumed because of its use for some federal programs) to develop an estimate of the total additional number of classrooms that may be needed.

The results of these calculations are shown in Table II-6. By the year 1998, it is projected that each of the school districts in the major pipulation areas--Alvin Independent School District, Angleton ISD, Brazosport ISD, Pearland ISD, Sweeny ISD and Columbia-Brazoria Independent School District-- will witness a substantial increase in enrollment. Brozosport ISD will experience the most growth, with an increase in enrollment of 6,817, while Sweeny will experience the least at 376. At the same time, the Alvin Independent School District will be the only school district studied to have sufficient capacity to accommodate the anticipated enrollment increase. The Brazosport ISD will have

TABLE II-6

BRAZORIA COUNTY
INDEPENDENT SCHOOL DISTRICTS

	ENROLLMENT AND CAPACITY 1978-1979		PROJECTIONS		
SCHOOL DISTRICT	TOTAL ENROLLMENT	PHYSICAL CAPACITY	1978-1998 ADDITIONAL SCHOOL ENROLLMENT	1998 STUDENT SURPLUS (+) OR DEFICIENCY (-)	1998 CLASSROOM SURPLUS (+) OR DEFICIENCY (-)
Alvin	8,452	11,400	1,889	+1059	+42
Angleton	4,966	5,000	1,772	-1738	-70
Brazosport	11,302	12,700	6,817	-5419	-217
Damon	145	380	--	--	--
Danbury	567	600	--	--	--
Pearland	5,186	5,450	3,119	-2855	-114
Sweeny	1,989	2,350	376	- 15	- 1
Columbia-Brazoria	3,337	3,100	580	-817	- 33

Source: Texas Education Agency for 1978-79 Enrollment and Capacity .
Consultants Estimates Projections.

to expand the greatest amount, by an estimated 217 classrooms, to support the additional 5,419 students.

The school district requirements are likely to be on the conservative side since some population growth is expected to occur outside of the cities within each of the respective school districts. Such rural growth has not been forecasted as part of this study and therefore the projected enrollment figures should be viewed as a minimum.

RECREATION

As mentioned in Chapter I of this report, recreation/open space facilities in Brazoria County are of two general types: (1) Active-user oriented and (2) Passive-Environmental oriented. Use of the "Passive-Environmental Oriented" recreation areas, including two major wildlife refuges, is not directly related to the needs of the Brazoria County population. The "Active-user oriented" facilities are more appropriate measures of recreational facilities.

Total "active" recreation area, including both formal major parks and beach front, comprises approximately 1700 acres of Brazoria County as described in Chapter I. Applying the projected 1998 Brazoria County population of 209,829 to the nationally accepted recreation standard of 10 acres/1,000 population, results in a theoretical shortage of 390 acres by 1998. The Texas Parks and Wildlife Department, however, has proposed a number of new park facilities in Brazoria County. In their Texas Outdoor Recreation Plan, published in 1975, the TRWD recommended the following:

1. A 5,686 acre state park at the mouth of the Brazos River. The Bryan Beach State Park is the first installment of this park which would include several miles of coastal beaches. Beach-oriented facilities including camping areas are proposed here.

2. A 10,600 acre regional park west of Angleton and an 11,040 acre park in the northwest corner of the county where the San Bernard River and Cedar Creek intersect. Nature trails and study areas as well as camping and picnicking facilities are proposed.

3. Four county parks have also been proposed including: a 1810 acre park west of Alvin on Chocolate Bayou, a 317 acre park on the Brazos River between Clute and Lake Jackson, a 700 acre park on the west side of Brazos River north of the city of Brazoria, and a 683 acre park on the coast 4 miles from San Luis Pass.

The development of all of these facilities would provide an additional 30,000 acres of recreational land in Brazoria County. Such additional acreage would seem more than is needed to provide for the county's recreation needs based on 10 acres/1000 population guideline. However, it should be realized that such facilities would attract a large number of users from throughout the region particularly from the Houston area.

TRANSPORTATION

The extension and improvements of highways in Brazoria County by 1998 will add to the existing transportation network (Map 8).

It is primarily the traffic flow north-south which will be facilitated. By 1998, there will be another north-south, four-lane divided highway (Highway 288) near Angleton and Lake Jackson. There will also be an additional four-lane highway running from Pearland to Alvin as a continuation of Highway 35. A four lane highway will connect Highway 288 and Highway 35 north of Angleton. In conjunction with these major additions to the transportation network will be new or improved roads providing access to them. Assuming the projected expansions and upgradings are made on schedule, there may still be spot capacity problems in the interim. This is particularly true in the case of the improvements of Highway 35 and the construction of new Highway 288.

POLICE PROTECTION

The Brazoria County Sheriff's Department provides police protection to the unincorporated areas of Brazoria County. In order to maintain the present personnel/population ratio, a total of 125 personnel, including sworn officers and office personnel, will be required in 1998 for the projected population of 209,829. Thus 43 additional personnel will have to be added to the staff periodically between 1980 and 1998.

SOLID WASTE

Cities in Brazoria County have jurisdiction over municipal solid waste disposal. Such systems vary throughout the county. Most municipalities analyzed in this study provide public solid waste collection services. Commercial services are used by Jones Creek, Oyster Creek, Richwood, and Surfside.

In addition to the municipal systems, the county is partially responsible for permitting disposal sites for many minor toxic chemicals.

These are primarily from industrial facilities, some of them energy-related. A House Commerce Subcommittee has determined that certain chemical waste sites in Alvin, Angleton, Clute, Freeport and Sweeny may contain toxic materials.

The data for determining the magnitude of the increased population and expansion of energy facilities on both municipal and industrial disposal sites is insufficient. However, it must be noted that such an impact will occur by 1998 and that capacity of disposal sites should be expanded accordingly.

STORM DRAINAGE

With increased population by 1998 and accompanying residential, commercial and industrial development, there will be a greater amount of drainage from storm water runoff. It is beyond the scope of this study to assess the amount of increase in storm drainage, other than to note it will occur. Brazoria County is in the process of seeking funding for a master drainage study.

At the present time, storm drainage is managed by six drainage districts: Angleton, Velasco, Alvin, Pearland, Iowa County and Danbury. Each is an individual political entity. In addition, most cities also have drainage departments within the city government. Such departments are independent of, yet encompassed in, the drainage districts.

Brazoria County officials are studying three solutions to management of the drainage problems. They are: (1) to retain the present system but provide more financing, (2) divide the county into four districts by watersheds, and (3) form a county-wide district.

SUMMARY

All major public facilities and services will be impacted by increased population anticipated by 1998. On a municipal level, police and fire protection, water supply system and wastewater treatment have been analyzed in this section. In addition, effects on school districts, recreation, transportation, county police protection, solid waste disposal and storm drainage have been discussed.

Analysis of municipal facilities has shown that all cities will have to increase their fire and police department personnel to maintain the present service/population ratio. In the Alvin/Pearland/Friendswood area, water and sewer systems in both Alvin and Pearland will be inadequate to handle the anticipated demand. The Angleton growth area will need additional water supply, while the sewage treatment should be adequate. In Brazosport, the water supply systems will, in general, be adequate, while the sewage treatment facilities will not. West Brazoria County, consisting primarily of Sweeny and West Columbia, will have adequate wastewater treatment plants. However, it is anticipated that West Columbia will need to expand its water supply system.

Impacts on the other facilities and services analyzed can be summarized as follows. With the exception of Alvin Independent School District, all school districts will have to expand their facilities by 1998 to support increased enrollment. County police protection must be augmented. Present "active" recreation acreage will be insufficient to meet the needs of projected Brazoria County population of 209,829. There will be additional highways by 1998, particularly north-south arteries. Finally, there will be additional demand on both solid waste collection and storm drainage systems.

GROWTH TRENDS AND OPTIONS

There are several major growth trends apparent in Brazoria County. This section describes the "natural trends" and the various "growth options" which are exaggerations and amplifications of the natural trends.

Table II-7 describes both the natural trends and growth options in the county. The implications of those trends and options and the possibilities open to the county are outlined according to the following categories: population distribution and housing, land use, highways and transportation, infrastructure, environment, governmental revenues and expenditures, and governmental coordination. In combination, these trends provide an overall picture of the likely development and possibilities for development in Brazoria County over the next 20 years. In most cases, the natural trends can be accelerated or constrained by community and county actions which would yield the "growth options". The manner in which the county and communities use transportation improvements, provisions of public facilities and services, land use and housing policies, and intergovernmental coordination to influence these trends should be carefully and deliberately considered on a county-wide basis. The following discussion summarizes the natural trends and growth options presented in TableII-7 and describes some of the implications and effects.

NATURAL TRENDS

The major factors that will guide growth in Brazoria County are the existing and proposed transportation system and the flood plain designations. The forecasted new development shown on the "Natural Trends" map has generally been concentrated in non flood-prone areas, along or

near major thoroughfares, and near existing developed cities.

The new route of Highway 288 will likely attract a great deal of commercial/industrial development - particularly at intersections. The improved commuting time into Houston will also likely result in a significant expansion of residential construction on larger vacant tracts in the northern part of the county including the Pearland area, and in the Highway 288 corridor towards Angleton.

In the Freeport area, "Natural Trends" suggest an in-filling of residential development. Lake Jackson and Clute will receive a large share of the anticipated residential development, while the expansion of the Port of Freeport and Dow facilities will bring significant industrial and related growth to Freeport.

For the purpose of this study, the population growth and land use requirements for the individual communities in the Brazosport area were totaled to produce a population and land use requirement for the entire area. The projected total population growth of 30,000 and new urban land requirement of about 3800 acres was then geographically distributed throughout the Brazosport area based on available undeveloped land, flood prone areas, and highway access. Simply stated, the population and land use shown on Map 8 "Natural Development Trends" does not correspond to specific city population figures shown on Table II-7, but does not correspond to the population and land use figures for the composite Brazosport area.

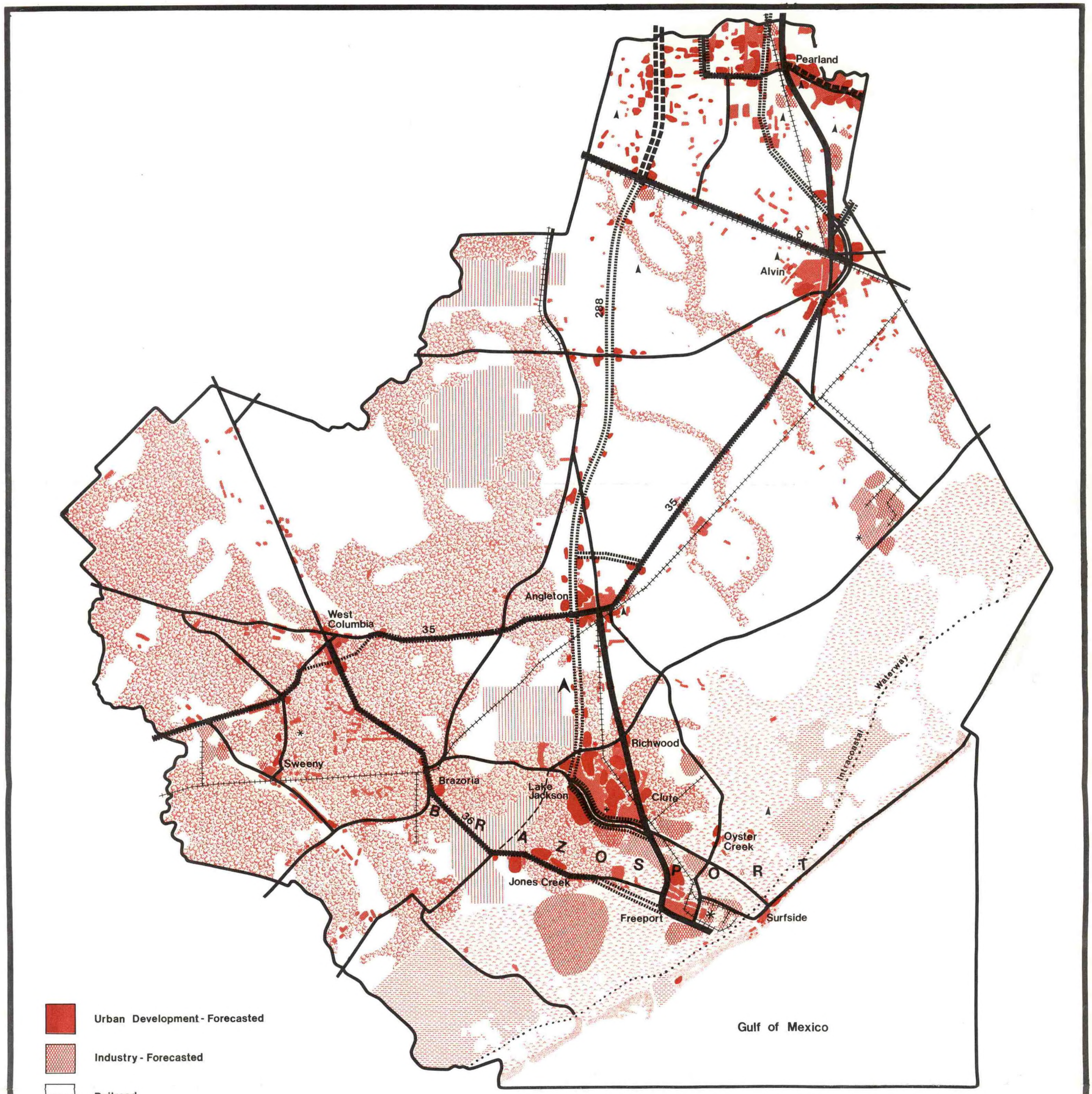
GROWTH OPTIONS

In analyzing natural development patterns in Brazoria county over the next 20 years, four major and somewhat distinct growth centers were identified. The first is the Alvin/Pearland area in the northeast

Table II-7

BRAZORIA COUNTY NATURAL TRENDS AND GROWTH OPTIONS

Growth/Trends/ Options	Population Distribution and Housing	Land Use Influences and Compatibility	Highways and Transportation System	Infrasturcture Implications	Environmental Implications	Fiscal Implications	Institutional Implications
NATURAL TRENDS							
Continuation of past trends with no effort to change government or private sector actions.	Continued sub-urbanization of extreme northern part of county - related to Houston growth. Brazosport area continues to grow as the major employment center of county population growth concentrates in Lake Jackson, Clute and Richwood. Scattered subdivision activity brought about by new Hwy. 288 and new commercial and industrial areas near proposed intersections.	Projected growth to nearly double the amount of urban land uses by 1998. County to remain primarily rural though, in land use totals. Industrial concentrations, mostly petrochemical, to expand from existing concentrations in Freeport, Chocolate Bayou and near Old Ocean. New port facilities at Freeport not to pose compatibility problems with residential.	Hwy. 288 (new) will be major backbone of county (with 4 lane divided facility) linking Brazosport and Angleton to Houston. Upgrading of Hwy. 35 to 4 lanes through entire county also important though unlikely till later years. Expansion of Port of Freeport to accommodate larger ships will bring additional activity to port and rail facilities.	Continued establishment of new MUD's to serve scattered residential subdivisions. Increased demand for flood control projects (particularly in Brazosport area to protect new developments). Overall increased demands for other public facilities and services.	Scattered subdivisions and commercial development pressures in flood-prone areas - particularly in Brazosport area. Forecasted industrial areas near Freeport and Chocolate Bayou not likely to pose significant additional conflicts since use is already established.	Continued increase in local government expenditures, but likely greater concentration on efficiency rather than new or expanded services; continued rapid increases in property and housing values to avoid need to raise tax rates. Additional revenues and income to increase at rate faster than for population growth largely because of continued acceleration in property values.	No additional coordination between government and private sector. Little additional local land use controls likely. County responsiblity for police and road improvements will continue to grow - particularly in northern sections of county - following Houston-related suburbanization.
OPTION A-1							
North/East Brazoria County Residential growth in the Alvin/Pearland/ Friendswood complex and along Hwy. 288 corridor	Residential growth pressures from Houston area employment largely outside the county; growth in combined residential/ suburban communities forming an Alvin/Pearland/ Friendswood complex; projected population increase of 20,000 to 25,000 in the year 2000. About 7000-8000 additional housing units required.	Industrial, commercial and residential development concentrating along Hwy. 6 and 35 corridors; major new residential land use north of Alvin, south of Pearland; may be some residential and industrial uses accommodated in south Alvin area; oil and gas fields between Pearland and Alvin are active and would not be compatible with residential/ commercial activity. Also increase in residential use of area along 518 east and west of Pearland and north to Friendswood.	Hwy. 6 forming outside Houston metro area loop facilitating commuting from Alvin area to Houston, Galveston, Texas City/La Marque; Hwy. 35-new ROW, facilitating commuting to Houston.	With addition of 7,000 population additional water supply (approx. 5 mgd) and sewage treatment (approx. 1.5 mdg) capacity will be required for Alvin. Additional Police and fire personnel will also be required; drainage improvements will be necessary; and increased demands for extension of services into ETJ and adjacent areas.	Increased urbanization (residential/ commercial) will create significant drainage and flooding problems - will have cumulative effect of development in Alvin/ Pearland/ Friendswood complex.	Short term fiscal effects appear to be positive; long term effects include increased tax base along with expanded residential and commercial development if annexation is paced with growth; pressure for additional services will create a lag in revenues vs. expenditures but significant deficits should not occur.	Immediate need for coordination between Alvin, Pearland, and Friendswood seen; focus on cumulative drainage problems, coordination of utility/service standards and timing of utilities to discourage sprawl and substandard infrastructure, coordinate annexation plans.
OPTION A-2							
Industrial development in the Alvin/ Chocolate Bayou Area	Additional residential growth in Alvin area to serve Chocolate Bayou area Industrial complex. Approximately 3500 additional residences required in the Alvin area.	Industrial development will be compatible with most uses in the Chocolate Bayou area	Expanded water access to Chocolate Bayou area can stimulate industrial growth along and beyond 2004 and 2917 provides link to Angleton and Galveston via rail along Hwy. 6; Alvin may become distribution center.	See A-1 additional demand for services due to new resident employees. Also, more demand on industrial waste disposal	Drainage and sensitive habitats in Chocolate Bayou area must be accommodated; Entire Chocolate Bayou is in 100 year floodplain.	See A-1 additional tax revenues may accrue as a result of industrial expansion but will affect Angleton, Alvin I.S.D., county, rather than city of Alvin.	See A-1 Special emphasis should be on drainage and disposal of industrial waste (solid waste and wastewater).
OPTION B-1							
South Brazoria County Angleton	Will be the center of a major growth corridor along 288; population growth resulting from industrial expansion in Brazosport and local industry; estimated increase of about 10,000 persons by year 2000. An estimated 2,400-3000 additional residential units required.	Possible transportation distribution center - light industrial, processing and storage; residential land uses concentrated south toward Richwood.	Could become major multi-modal transportation link due to junction of Hwy. 288 and 35, MoPac Rail - east/west and south to Brazosport.	Additional police and fire personnel required; drainage improvements necessary. Also, more ISD facilities.	Increased population will increase drainage problems and expansion of development will cause decrease in forest and other vegetation.	Surplus will remain as revenues should continue to exceed expenditures as population increases	Angleton will continue to function somewhat remote from Brazosport until "spillover" residential growth is felt.
OPTION B-2							
Brazosport	Brazosport as major county population center; residential growth concentrated in Clute, Lake Jackson, ~~Richwood~~, Oyster Creek, Surfside, with lesser concentration in Jones Creek, Brazoria; projected increase as much as 30,000 persons in Brazosport by year 2000. Thus, about 8,900 residential units will be needed.	Concentration of industrial uses in Freeport, less residential uses. Residential, recreation, shrimping, industry conflicts; industrial development could expand west from Freeport, south of Hwy. 36 and east to Oyster Creek. Major residential and commercial development would be located in Clute, Lake Jackson, Richwood; expansion north from Lake Jackson, Richwood and west to Jones Creek, if Hwy. 36 is upgraded. Prison farm relocations would be major advantage to industrial and residential development - Clemens is suitable industrial tract; Retrieve is prime residential/commercial site if flood potential can be alleviated.	Expansion of port to 50 ft. depth; possible extension of GIWW inland to access major tracts south of Hwy. 36; rail south of Angleton/Brazoria will require upgrading new spurs; upgrading of Hwy. 36 west of Freeport is necessary to accommodate additional residential growth in Jones Creek/ Brazoria areas; by year 2000 a well developed public commuting system throughout the Brazosport area.	Freeport, Lake Jackson, Richwood should have sufficient water supply, will require expanded capacity in other Brazosport communities; wastewater treatment will be deficient throughout the area, as will educational facilities and police and fire services. Efficiencies can be realized by centralizing major public facilities to serve Brazosport area; services should be shared by communities; surface water supply and properly spaced wells will be necessary.	Sensitive coastal ecosystems should be accommodated by concentrating growth inland; reserve waterfront, GIWW areas for resort, tourism navigation uses; groundwater withdrawals should be constrained to prevent accelerated subsidence. County should continue beach access and traffic control plans as well as expansion of state park facilities to compliment resort/tourism uses at waterfront.	Greatest impacts on Clute, Lake Jackson, Richwood, Oyster Creek, and Surfside in the form of increased ~~capital~~ expenditures. However, revenues will continue to exceed expenditures and fiscal situation will remain generally sound. An exception is Richwood which may experience further deficit.	Need to strengthen coordination between Brazosport communities consider development of compatible utility ~~standards and~~ codes; develop overall Brazosport zoning plans; consider joint planning and zoning commission, integrated public transportation system.
OPTION C							
West Brazoria County	West Columbia continues to expand primarily with residential development serving Sweeny and Brazosport areas; Sweeny develops strong industrial base; West Columbia projected to increase in population by as much as 4,000 - 5,000 as Sweeny industrial area expands and transportation to Brazosport area is improved. An estimated 1500 to 2000 more residences.	Expanded industrial uses in Sweeny and north west of it; expanded residential uses in Sweeny and larger concentration of residential uses in West Columbia develops as residential community serving Sweeny and Brazosport industries; Hwy. 1459 would require upgrading to facilitate commuting between Sweeny and West Columbia.	Hwy. 35 and 36 upgrading would strongly influence extent to which West Columbia develops as residential community serving Sweeny and Brazosport industries; Hwy. 1459 would require upgrading to facilitate commuting between Sweeny and West Columbia.	Additional water and waste treatment facilties will be required in both Sweeny and West Columbia; police and fire services will require expansion; West Columbia - Brazoria ISD will require additional facilities by 1988, Sweeny by 1998.	Decreased vegetation cover, especially forests in both Sweeny and West Columbia due to increased development; accompanying this will be increase in drainage problems.	Fiscal situation will remain sound, with surplus in Sweeny and West Columbia remaining. Increased expenditures for general government and capital improvements will be offset by increased tax base.	Coordination of efforts between West Columbia and Sweeny encouraged to manage common concerns such as drainage, transportation, and recreation.



BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Natural Development Trends

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 8

portion of the County. Angleton and Brazosport are two growth centers in the central and south parts of the county and Sweeny and West Columbia are the western growth center. The "growth options" summarized below and in Table II-7 are amplified from the "natural trends" and have been described in terms of these four growth centers. Map 9, "Growth Options", further illustrates the following discussion.

Northeast Brazoria County

The northeast Brazoria County area encompassing Alvin and Pearland will contain a concentration of industrial, residential and commercial development which will occur along Highway 6 and Highway 35. Most development will occur between Pearland and Alvin. Active oil and gas fields in this area will limit development in certain areas. Urbanization between Pearland and Friendswood will also occur, as an extension of Houston suburban growth. Highway 6 outside the Houston metropolitan area will be a major influence in increased commuting from Alvin to Houston, Galveston and Texas City/ La Marque; the timing of proposed improvements to this route as well as Highway 35 is a major factor influencing the extent to which Alvin contributes to, and accommodates, Houston suburban growth.

To support the anticipated population increase of roughly 21,000 persons, additional housing (approximately 7,000 units), and public facilities and services will be required in the Alvin area. Such facilities and services include water, wastewater, police, fire, and schools. Flooding and drainage problems will be exacerbated by the extensive urban development in the Alvin area, northward to Friendswood. Although additional capital expenditures will be required to support the new population, Alvin's fiscal balance should remain positive, providing the opportunity to meet the necessary demands. The timing and location of the capital improvements will be an important growth management option.

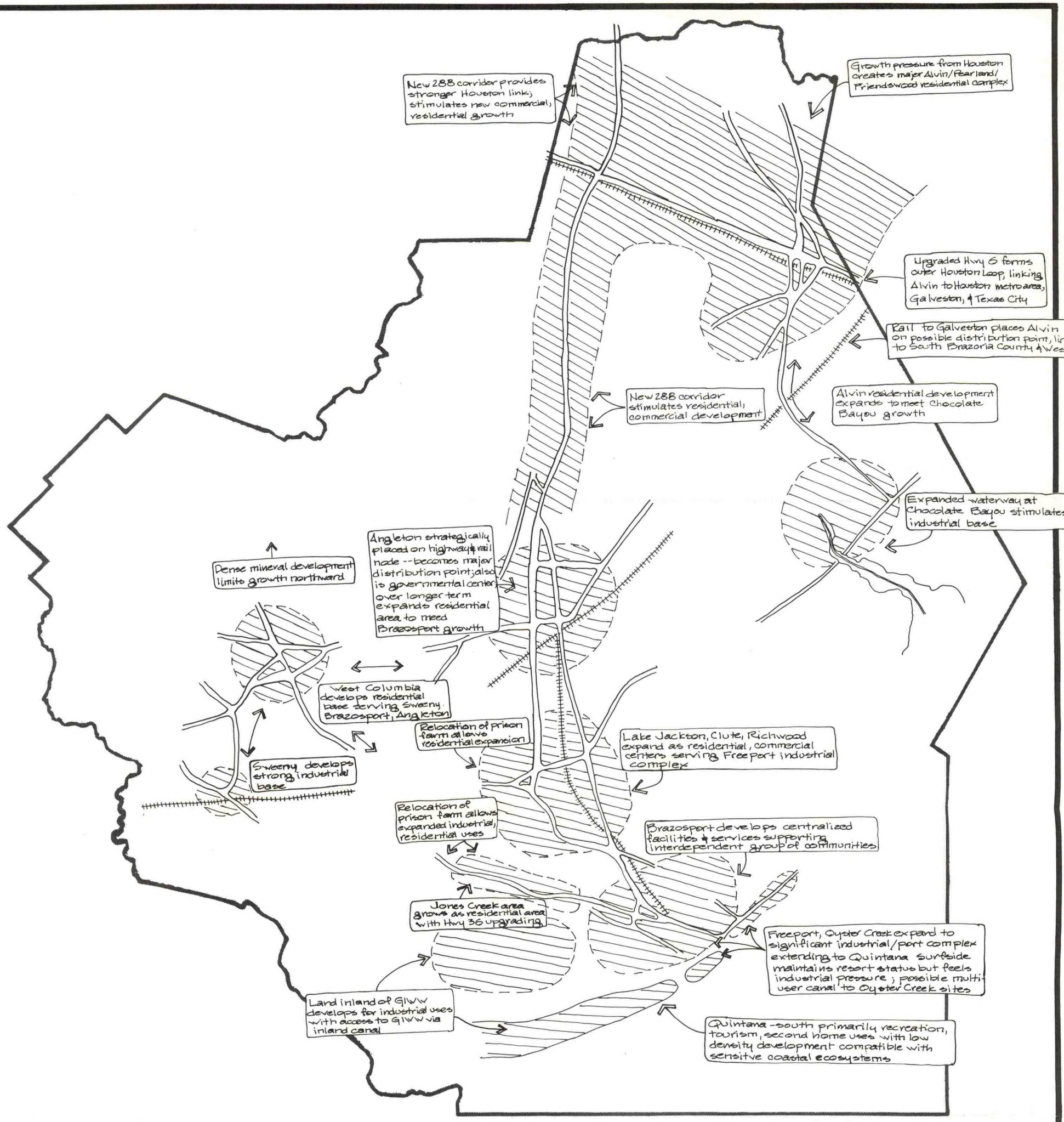
Industrial development in the Alvin/Chocolate Bayou area will result in additional residential and commercial development northward to Alvin. Transportation arteries will be the major determinants of the direction and extent of the growth. These include rail, highway, and possibly water access along and beyond Highways 2004 and 2917. Increased population will bring additional demand on public facilities and services in the Alvin area. The major environmental concerns will be flood hazard and protection of critical habitats in the Chocolate Bayou area.

Central Brazoria County

Central Brazoria County is faced with the option of becoming a transportation distribution center due to the confluence of major north-south and east-west highway and rail corridors. Processing and storage industries would likely find Angleton as an attractive location if suitable land and utilities can be provided. Residential land uses will concentrate south toward Richwood. Angleton, however, will be the major growth center. Drainage problems will increase in this area as a result of expanded urbanization .

South Brazoria County

In south Brazoria County the major growth center is Brazosport. Within that area, Freeport will develop as a major industrial area. However some conflicts can be expected between residential, recreational, shrimping, and industrial interests. The maintenance of coastal ecosystems will be a major environmental concern as pressure from industrial development extends south, and east-west of Brazosport. Accommodation of these interests may require positive land use guidance policies. Growth in this area, especially industrial expansion, may be accelerated by the expansion of the port to a depth of 50 feet and/or the extension of the Intracoastal



BRAZORIA CO. COMPREHENSIVE PLAN

COASTAL ENERGY IMPACT PROGRAM - 1979

Growth Options

BOVAY ENGINEERS, INC./RPC, INC.
HOUSTON/AUSTIN

The preparation of this report was financed by a grant under the Coastal Zone Management Act of 1972, as amended, administered by the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U. S. Department of Commerce, as administered in the State of Texas by the Governor's Budget and Planning Office.

MAP 9

0 5 10 15 Statute Miles
0 5 10 15 20 25 Kilometers

Waterway.

Clute, Lake Jackson, and Richwood will likely become the centers of major commercial and residential development. Relocating one or more of the prison farms would be a major factor in accommodating the extra residential and commercial growth pressure.

To facilitate the transportation in the area, a well-developed public commuting system may become necessary.

For each community in Brazosport, there will be an increased demand on public facilities and services. Revenues should continue to exceed expenditures, resulting in a sound fiscal situation for all Brazosport communities. Because the Brazosport communities already regard themselves as a functional urban unit, this may strengthen the potential of further coordination among these communities.

West Brazoria County

West Brazoria County will expand its industrial acreage primarily in Sweeny and northwest at Old Ocean. Residential development in both West Columbia and Sweeny is expected. Highways 35, 36, and 1459 will all require upgrading to facilitate both development and commuting within the area. The extent to which West Columbia establishes a strong position as a residential area serving Sweeny, Old Ocean, and Brazosport will depend to a large extent upon the timing of improvements to Highways 35 and 36. Public facilities and services will need to be expanded as well. Government revenues should continue to exceed expenditures. Thus, it will be possible to provide the additional services and facilities needed. Drainage will be the major environmental concern. A major opportunity will be presented to the governments for coordination, especially in areas of shared facilities such as roads and parks.

SUMMARY

As the preceding discussion and Table II-7 point out, there are several distinct growth trends in Brazoria County which will surface within the next 20 years. The major options facing the county and the respective communities pertain to how these trends are managed. A growth trend can be deliberately stimulated through, for instance, accelerating proposed transportation improvements or capital outlays for expanded infrastructural capacity. Conversely, growth can be confined, or re-directed, through the same mechanisms. There are a variety of means by which rate, direction, and quality of growth can be influenced, including powers vested in county and city governments, special districts, as well as through the citizen role. These will be discussed in greater detail in subsequent sections.

One of the most obvious options the county has is to facilitate intergovernmental coordination and the involvement of private institutions in helping to shape the growth of Brazoria County. The type, rate, and direction of growth, land use compatibility, and standards of public facilities and services should be topics of concern.

The logical body to oversee such coordination, if it is deemed desirable, is the government of Brazoria County. It is the county government, although possessing limited powers of its own, which is in the prime position to oversee efforts of the smaller groups within it. In fact, whether there is a conscious decision made to influence growth, or whether the natural trends will continue, the county government will be the institution most concerned with the total development of Brazoria County for the next 20 years.

CHAPTER III

CHAPTER III - LEGAL AND FISCAL ANALYSES AND CAPITAL IMPROVEMENTS

This chapter will examine the legal, fiscal, and the capital improvements aspects of the "Long Range Plan" described in Chapter II. The Legal Analysis section describes the legislated powers and abilities of Brazoria County related to land use, development, and public services. The Fiscal Analysis examines in general terms the finances of the County and trends in revenues and expenditures to evaluate the impact of growth on the County. Finally, the Capital Improvements section lists the various new/expanded facilities (identified as needed in Chapter II) and makes a rough estimate of costs and dates of completion to accommodate the anticipated energy activity related development.

LEGAL ANALYSIS

The powers of Counties in the State of Texas are limited to the following areas: subdivisions, roads, fire and police protection, recreation, historic preservation, conservation and flood control, solid waste disposal, spetic tanks, drinking water, and zoning. This section discusses the major legislative powers that the counties have, and notes whether, or not, Brazoria County exercises them.

SUBDIVISIONS

Several articles of Vernon's Texas Annotated Civil Statutes provide the basic authority for limited regulation of subdivisions by the county

commissioners court. The primary articles are Article 2372K, which applies to counties with a population of over 190,000, and Article 6626, which deals with counties with a population of less than 190,000. With a 1980 population of about 140,000, Brazoria County is below the 190,000 level. However, by the end of the study period of 1998, the population should exceed that level.

Article 6626 applies to counties with populations of less than 190,000. Outside the extra territorial jurisdiction of any incorporated city, no plat or replat of any subdivision may be filed or recorded unless it has been authorized or approved by the commissioners court. Both Article 6626 and 2372k states that counties may adopt minimal subdivision regulations outside the corporate limits of cities. The commissioners court may require minimum rights-of-way and street-pavement widths for subdivision streets, reasonable street construction and drainage standards, and require a bond to insure paving requirements are met. If a map or plat does not meet the requirements as set forth in the Act, the court shall have the authority to refuse to approve and authorize the map or plat of any such subdivision.

Using their powers of extraterritorial jurisdiction (ETJ) (Article 970a, Section 3 of Vernon's Civil Statutes), cities can maintain control of certain areas outside their city limits, depending on their population. Section 4 of Vernon's Civil Statutes authorizes a city to extend to its ETJ all rules and regulations governing plats and the subdivison of land. In addition, a city has the authority to annex territory within the confines of its extraterritorial jurisdiction which may further affect growth and development.

Brazoria County has established extensive subdivision regulations in accordance with Article 6626 above, administered by the Brazoria County Road and Bridge Department. The county is, thus, presently active in exercising

the authority designated to it with regard to subdivisions. This power will become even more important in the future as growth expands beyond the estra-territorial jurisdiction of Brazoria County communities. Coordination between the county subdivision standards and municipal standards can ensure comparability and minimum burdens in the communities upon annexation.

ROADS AND BRIDGES

Commissioners courts are granted authority over roads in Article 2351. Through their courts, counties may lay out and establish public roads, build bridges, exercise general control over roads, highways, ferries and bridges in their counties, and have other related powers and jurisdiction.

The legal basis for county road specifications is set out in Articles 6626a and 2373k for counties of less than 190,000 and 190,000 and more, respectively. Article 6626 a is quite specific in its listing of specifications, while Article 2373k is general. From these articles, county commissioners court have drawn up the road and drainage parts of their subdivision ordinances.

Article 6717-1 allows counties to construct and maintain county roads via a county road department, by popular election. This department includes the Commissioners Court as the policy-determining body, the county road engineer as the chief executive officer, other administrative personnel, and road employees. Construction and maintenance activities are carried on throughout the entire county, without regard to commissioners precincts.

Brazoria County has a Road and Bridge Department. As provided in Article 6626a, specifications have been laid out for roads to be constructed in subdivisions, under the jurisdiction of the County Commissioners' Court. "Policies for the operation of the Brazoria County Road and Bridge Department as Amended" were adopted on May 27, 1959, and have been amended subsequently.

The Road and Bridge Department has jurisdiction outside cities' extraterritorial jurisdictions. It is concerned with such items as street width, load capacities on bridges or county roads, and subdivision regulations. Through its Road and Bridge Department, Brazoria County is exercising the authority, road construction and maintenance standards can play a key role in ensuring quality and compatible development. The county role in construction will also clearly influence the rate and direction of development.

FIRE AND POLICE PROTECTION

Article 2351a-1, Fire Protection and Fire Fighting Equipment in all counties, authorizes the commissioners court in all counties to provide fire protection and fire fighting equipment for its citizens outside of incorporated city limits. The county may either purchase and maintain the necessary equipment itself, or enter into contracts with the governing body of cities or towns located within the county and/or adjoining counties for the use of their fire fighting equipment. The Act states that when the city provides this service, it shall be considered as an option of the county and its employees acting as county agents. The purchase of fire fighting equipment must be authorized by election.

Article 2351l-6, Rural Fire Prevention Districts, provides for the creation of Rural Fire Prevention Districts through the petition and election processes. The governing bodies become political subdivisions of the state. The governing body is to be the Board of Fire Commissioners, appointed by the commissioners court. Rural Fire Prevention Districts have full authority to carry out the act, to acquire and maintain equipment and property, to enter into contracts with others, to sue and be sued, to levy and enforce the collec-

tion of taxes, and to inspect within the district and promote educational programs.

The Authority of Brazoria County to provide fire protection in unincorporated areas of the County is exercised in accordance with Article 2351a-1, rather than by Fire Prevention Districts. Each city has a fire truck which is purchased by the county. This truck is used to make runs outside the city limits. In the case of a large fire in an unincorporated area, the trucks and necessary personnel from more than one department may be used. In addition, a number of the chemical plants have their own private fire protection service.

Police protection is authorized under Article 5, Section 23, State Constitution: Sheriffs. The Sheriff of each county is elected by the qualified voters of each county, for a four year term. Duties and prerequisites, and fees of office, are prescribed by the Legislature and vacancies in the office are filled by the Commissioners Court until the next general election.

Brazoria County utilizes the authority granted under Article 5, Section 23. Brazoria County has a Sheriff and a department consisting of both sworn officers and office personnel. The county can serve an important function in coordination law enforcement between municipalities. In addition, a similar system for emergency medical treatment may warrant further investigation.

RECREATION

Legislation grants the county authority to develop park systems. In addition, there is legislation providing for joint activities between cities and counties.

Article 1015c-1, Establishment of Recreational Programs and by Local Governments, Jointly or Singly enables any governmental unit to establish,

provide, acquire, maintain, construct, equip, operate, and supervise recreational facilities and programs, either singly or jointly, upon approval of the voters. General revenues or other revenues provided by law for the establishment and operation of parks may be used to finance the above. Operational costs are to be jointly agreed.

A governing body may administer and operate facilities and programs through a bureau of recreation or through a joint board.

Other articles concerning the regulation of open spaces for recreation deal with taxes for Parks (Article 6078), privileges and concessions (Article 6079), acquisition of lands and buildings for parks, playgrounds, historical museums and sites (Article 6081e). Article 6081e, for example authorizes any county to acquire by gift, or purchase, or condemnation lands and buildings to be used for public parks, playgrounds, or historical museums-either singly or jointly or with the Board of The Texas Park and Wildlife Department. Article 6081f grants counties the authority to operate and maintain parks. Article 6081t allows any political subdivision of the state to enter joint agreements with another such government to provide any manner of park and recreational facilities on land owned by either unit.

Involvement of Brazoria County in the provision of park and recreation facilities has been limited to maintenance of some of the beaches. There is, however, authority granted to the county through the above described legislation which has not yet been utilized. A county wide park and open space-plan might be formulated as an initial step in exercising this authority delegated to the county. Such a plan could help coordinate the park and recreation efforts of various municipalities, as well as provide for larger facilities serving a county-wide population. Another county power of assistance in providing parks

and recreation facilities is through Historic Preservation as discussed below.

For historic preservation, the state has authorized the formation of a state agency, the Texas State Historical Survey Committee (THC). Article 6145.1, County Historical Survey Committee, says the Commissioners Courts may appoint a County Historical Survey Committee of seven residents for the preservation of the historical heritage of the county. Duties of the Commission may include instituting and carrying out a continuing survey of the county to determine the existence of historical buildings and sites, and reporting the data collected to the Court and the THC. The Commission can make recommendations to the Court and the THC concerning the acquisition of property of historical significance. It may also operate and manage museums which may be owned or leased by the county.

Commissioners Courts may appropriate funds from the general fund for erecting historical markers, monuments, and medallion, purchasing objects and collections of objects of historical value, and preparing, publishing, and disseminating, by sale or otherwise, a history of the county.

Article 608.1e, Acquisition of Lands and Building for Parks, Playgrounds, Historical Museums and Sites defines lands of historical significance and says that all historic or prehistoric sites, historical museums, or historically significant objects acquired under the Act shall be under the control and management of the city or county acquiring same or by the city and county jointly, where they have acted jointly.

Brazoria County has established a County Historical Survey commission which has written a county history and is fairly active in the historical markers program. The commission and the county could expand their activities further to encompass all powers noted above.

CONSERVATION AND FLOOD CONTROL

Counties are granted the authority to acquire property for flood control in Article 1851e, Flood Control Powers. Article 1581e grants counties the right of eminent domain to condemn and acquire property and easements of right of way for flood control purposes. Commissioners Courts are also given the authority to contract with other political subdivision of the state for joint acquisition or joint construction or maintenance of facilities for flood control.

The Texas Water Code, Articles 16.311 et seq., authorizes counties to take necessary and reasonable actions for the purchase of complying with requirements of the National Flood Insurance Program. Such actions include, but are limited to: making land use adjustments to contain development on land exposed to floods, guiding development of proposed construction away from flood area, guiding development of land exposed to flooding, and adopting permanent land use and control measures with enforcement provisions. Map 4 illustrates the flood prone areas in Brazoria County.

In accordance with Article 1581, Brazoria County has established a Building Permit Section and building regulations necessary for it to maintain eligibility for participation in the National Flood Insurance Program. In accordance with and pursuant to the National Flood Insurance Act of 1968, Title 42 and the National Flood Disaster Protection Act of 1973, the Building Permit Section was established for the purpose of issuing building permits in the unincorporated areas of Brazoria County for all new structures and for major additions or improvements to existing structures which amount to more than 50% of the value of the original building.

Drainage and flood management will be one of the most important manage-

ment functions available to the county in the future. A coordinated drainage plan will be essential to minimizing the adverse effects of growth and such problems are clearly beyond the scope of any individual municipality.

SOLID WASTE MANAGEMENT

The County Solid Waste Control Act, Article 4477-8, is for the purpose of authorizing a cooperative effort by counties, other public agencies, and other persons for the safe and economic collection, transportation, and disposal of solid wastes. Under Article 4477-8, a county may acquire, construct, or maintain solid waste disposal systems. It is also authorized to enter into operating agreements with any person, for the operation of a solid waste disposal system by any person or by the county; to issue bonds to acquire, construct or repair solid waste disposal systems; and to offer solid waste disposal service to persons within its boundaries. The commissioners court may make regulations for the areas not within the territorial limits or ETJ of its incorporated cities. They may provide for governing and controlling solid waste collection, handling, storage, and disposal.

Brazoria County began licensing solid waste facilities outside cities' extraterritorial jurisdiction in 1971, and periodically inspects the solid waste facilities. Due to the rapid growth expected in some areas of the county, the impending difficulties of fixing solid waste sites and the need for management of a variety of industrial wastes, it would be appropriate for the county to investigate preparation of a solid waste disposal plan, and begin a long range process of selecting and acquiring approved sites.

PRIVATE SEWAGE FACILITIES AND DRINKING WATER SUPPLY FACILITIES

The Texas Water Code authorizes counties to adopt septic tank ordinances through Article 26.032. They are to proceed in the same manner as the state.

Article 26031 describes that procedure. Penalty for violation is given in Article 26.214. Article 5.131 outlines the rules for notification and Article 5.132 discusses the hearing process.

Article 4477-1, Minimum Standards of Sanitation and Health Protection Measures, applies to sewage facilities and drinking water supply facilites. In both cases, facilities should comply with standards established by the State Department of Health or the U.S. Public Health Service.

Brazoria County does not have any regulations concerning the above. For public facilities it complies with the regulations and standards as administered by the Department of Health. These regulations provide the county the opportunity to insure that adquate development standards are met in areas not served by municipal service or utility districts.

ZONING

In Texas, counties have not been granted zoning authority, with the exception of specific instances of zoning for particular purposes. Counties are autnorized to adopt zoning regulations to prevent the creation of establishment of airport hazards and use the power of eminent domain to remove hazards, according to Article 46e-1, et seq. Zoning powers granted to the county are, thus, quite limited.

SUMMARY

The preceeding discussion points out how some of these powers, although limited, can be instrumented in shaping the county's growth pattern. Of particular importance is the manner in which the county exercises its subdivision review, solid waste control, flood control, sewage and water supply facilities ordinances, and road construction and maintenance authority. These powers cannot only ensure quality growth and compatible standards of development, but

also the application of such power can also influence the rate and direction of growth. Other authority which could be more fully exercised in the future includes the establishment of a county parks system and historic preservation areas.

FISCAL ANALYSIS

The Brazoria County budget constitutes three major funds: the General Fund, the Road and Bridge Fund, and the Jury Fund. This section analyzes the potential aggregate of the revenues and expenditures of these funds over the next 20 years and also looks at Brazoria County's borrowing power and debt service.

It must be noted that the numbers shown are not as significant as the trends that they imply. There are many factors which may change the figures projected. Such factors include a different population than projected, a change in tax rate, or a change in assessed valuation.

REVENUES AND EXPENDITURES

The most dominant funds are the General Fund, and the Road and Bridge Fund. The general Fund is used for such items as the salaries of officials and staff who serve the administrative needs of the county. It is broken down into the following categories: general administration, judicial, legal, elections, financial administration, public facilities, public safety, environmental protection, health and welfare, culture and recreation, conservation, employee benefits and other. The Road and Bridge Fund is divided into administration and engineering, maintenance, and construction.

Brazoria County revenues are derived from four major sources: property

taxes, fees and fines, motor vehicle registrations, and intergovernmental revenues from the state and federal government. In specific, General Fund revenues, not including intergovernmental revenues, come from the following sources: The general property tax (accounts for over 50 per cent of the revenue), other taxes and fees (eg., voter registration and car license fees), business licenses and permits (eg., building permits and sanitary landfill fees), general government (fees of office), fines and forfeitures, shared revenue,criminal justice planning fund, law enforcement officers standards and education fund, law library and child support services. The Road and Bridge Fund revenues are derived primarily from the general property taxes. Other revenues are from auto registration, certificates of title, wildlife refuge, sale of scrap, sale of maps, and interest.

Revenues and expenditures for the General Fund, the Road and Bridge Fund and the Jury Fund for the next 20 years are shown in Table III-1. Intergovernmental revenues, such as CETA grants and Revenue Sharing were not included in the calculations because they are not dependable sources of revenues. Such grants are allocated according to formulas based on a variety of factors and it is not possible to predict whether they will be available over the study period.

The analysis was based on the assumption that business will continue "as usual", i.e. the previous patterns and relationships between population, revenues, and expenditures will continue through the next 20 years. Lease regression analysis was utilized to make the projections. This analysis establishes the curves which best fit the past relationships between population and revenues, and population and expenditures. The projections were based on

TABLE III-1

REVENUES AND EXPENDITURES

Brazoria County

Year	Population[1]	Revenues[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	141,027	18,258,649	15,898,116	2,360,533
1980	141,526	18,462,991	16,068,868	2,394,123
1981	144,225	19,568,241	16,992,438	2,575,803
1982	146,917	20,670,624	17,913,613	2,757,011
1983	149,822	21,860,232	18,907,674	2,952,558
1984	154,134	23,625,940	20,383,096	3,242,844
1985	157,800	25,127,178	21,637,561	3,489,617
1986	161,447	26,510,888	22,885,524	3,625,364
1987	165,179	28,148,900	24,162,574	3,986,326
1988	168,997	29,712,383	25,469,051	4,243,332
1989	172,093	31,311,902	26,805,642	4,506,260
1990	176,900	32,948,685	28,173,371	4,775,314
1991	180,859	34,569,907	29,528,097	5,041,810
1992	184,906	36,227,166	30,912,936	5,314,230
1993	189,044	37,921,689	32,328,914	5,592,775
1994	193,275	39,654,297	33,776,716	5,877,581
1995	197,600	41,425,397	35,256,683	6,168,714
1996	201,595	43,061,362	36,623,728	6,437,634
1997	205,671	44,730,496	38,018,491	6,712,005
1998	209,829	46,433,209	39,441,313	6,991,896

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures.

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures include total revenues and expenditures for the General Fund, Road and Bridge Fund and Jury Fund.

[3]Revenues minus Expenditures.

data obtained from audit reports for the five year period covering 1974 - 1978. Applying the future population, future revenues and expenditures can be calculated which are coincident with a comparable curve.

The rate of inflation was not considered in the forecast period in the analysis. However, both revenues and expenditures would be similarly affected by the inflation rate, so the realtionship between the two remains constant. Also, in accordance with the assumption of "business as usual", no attempt has been made to project a change in tax base. Nor have specific capital improvements been considered.

The results of the analysis show that revenues could continue to exceed expenditures between now and 1998. In addition, as the population increases, the amount of surplus could increase, i.e. the cost to provide both general government services and specific services and facilities to each person should decrease. For example, the anticipated county surplus for 1988, with a population of 168,997 and business as usual is projected to be $4,243,332. For 1998, when the population projected is 209,829, the surplus is estimated at $6,991,896.

It must be emphasized, that it is the trends which are established that are of primary significance, rather than the numbers which are projected. There are various factors which may alter the actual projections, such as a change in assessed value or the unanticipated introduction of large scale commercial or industrial development.

BORROWING POWER AND DEBT SERVICE

The total outstanding debt for Brazoria County as of December 31,

1978 was $3,405,000. This debt is a result of the County Wide Road Bond Issue of 1968. Brazoria County's present debt is scheduled to be paid off by the year 1988. Table III-2 shows the annual schedule of payment on this debt until that year.

There are other outstanding bonds within Brazoria County, eg. one for Road District No. 33 - Sweeny. However, such bonds are not county-wide. They have an Interest and Sinking Fund separate from that of the county-wide bond issue, and only the specified districts within the county are responsible for payment on these debts.

While the present debt will be paid off by 1988, it is likely that additional debt will be incurred by 1998. Because of the continued projected growth described in the previous chapters, it is anticipated that the county will need to issue additional bonds. Only a portion of a county's list of projects is suitable for long-term debt financing. That is, most projects for which bonds may be issued are designated as such in Texas law or under the constitution. Indicated in the projects which may be funded by the county are road improvements, and acquisition of park lands. The financial capability of Brazoria County will also influence the projects to be financed, and their priorities. The increasing surplus projected in Revenues and Expenditures in this section indicates that Brazoria County should be in good financial position to pay off additional bonds, if necessary.

Selecting the source of funds for long-term debt involves deciding the type of security to be pledged, basically, whether to issue tax bonds or revenue bonds. The general objective is to secure the most favorable interest rate. Interest rates vary according to the type of bond. According to a recent Moody bond rating, for example, the interest rate on AAA bonds is 6.50

TABLE 111-2

SCHEDULE OF UNLIMITED TAX DEBT SERVICE REQUIREMENTS

Brazoria County

Tax Year Ending 9-30	Principal	Interest	Total Requirements
1979	340,000	152,210	492,210
1980	340,000	137,590	477,590
1981	340,000	122,970	462,970
1982	340,000	108,010	448,010
1983	340,000	93,050	433,050
1984	340,000	77,750	417,750
1985	340,000	62,450	402,450
1986	340,000	47,150	387,150
1987	340,000	31,510	371,510
1988	345,000	15,870	360,870
Totals	$3,405,000	$848,560	$4,253,560

Source: Municipal Advisory Council of Texas, 1979.

percent and that on BAA bonds is 7.4 percent. Interest rate varies during the year depending on money market conditions. However other factors, such as the equitable distribution of the debt burden within the county, must also be considered. Tax bonds are secured by the taxing power of the issuing government. Revenue bonds are secured by the net revenues generated by the facility.

CONCLUSION

This relatively rudimentary analysis serves as an indication that the population growth which Brazoria County is projected to receive is not expected to have a detrimental financial impact on the county government. Furthermore, sufficient funds should be realized to provide for the expansion of facilities and services required by the projected population increase. The following section of this report presents a program of these Capital Improvements for the County.

CAPITAL IMPROVEMENTS

This section lists the major capital improvements that will be needed by 1988 to accommodate the forecasted growth, natural and energy related, in Brazoria County as outlined in Chapter II. Table III-3, "Recommended Capital Improvements" summarizes for each facility its location, year needed, (or planned), the size of the facility, a very rough cost estimate, the likely source of funding, and the county share of costs when known. All cost estimates are based on 1979 dollars with the exception of the highway costs which are in 1978 dollars and come directly from the Texas Highway Department's 1978-1998 20 year plan.

The following discussion summarizes the sources of information and methodology used to determine the requirements and costs of the various types of facilities.

FIRE PROTECTION.

Within the next ten years a total of six fire trucks will need to be replaced within the county. These figures were obtained from the coordinatior of all the fire departments in Brazoria County. One truck from each of the following cities will need a replacement - Alvin, Pearland, Angleton, Freeport, West Columbia, and Danbury. Each station in the county will have to be analyzed in more detail to determine any more future equipment, replacement or additional, to accommodate the projected growth. The existing facilities in each city are adequate to house present equipment according to the county coordinator. Each truck costs $35,000 to $40,000, and is furnished to the individual city by the county from federal revenue sharing funds.

POLICE

The number of additional police that will be required through 1983 for each community and the county sheriff's department was estimated in Chapter 1. The same methodology used for estimating the police force needs by 1983 was used to project 1988 needs. It was assumed that the present ratio of police to total community size should be maintained and that the additional population growth will require the same ratio of police to population that serves the existing population. The only exception to this procedure was in the case of Surfside where the present ratio of 0.9 policemen to 1000 population was considered inadequate. The county average of 2.4 police/1000 population was considered more appropriate and therefore an additional six policemen by 1983 and one additional by 1988 are recommended.

From the above described police manpower needs, additional office space requirements were estimated based on a rule-of-thumb guideline of 200 sq. ft./

policeman.[1] The resulting additional office space requirements should be viewed only as a first round estimate since a detailed examination of the adequacy of the existing facilities in each community and the sheriff's department would be required to develop true office space expansion requirements.

Finally, based on the calculated additional office space requirements to accommodate the police manpower increases, a typical construction cost estimate of $40/sq. ft. was applied to yield the total preliminary construction cost estimate for the expansion of that particular facility in each of the cities.

In addition to the above described police officer space requirements, the expanded police forces will require additional equipment such as patrol cars, support office personnel (dispatcher, desk man), radio communications, and possibly retention facilities. These manpower and equipment needs have not been detailed as part of this study, but will have to be examined by the individual communities and the county as the police protection forces are increased.

WATER SYSTEM FACILITY

In the analysis of the various cities' projected water demands, only one city will need additional water capacity by 1983. This is the city of Angleton. Their projected demand was calculated using the same method as that for the waste water facilities. A 300,000 gallon capacity system expansion for 1983 and another 300,000 gallon expansion for 1988 is recommended. For cost estimation purposes the first system was assumed to include a well, ground storage tank, and plant. The estimated cost is for these components except for the treatment plant.

---

[1] Chalmers, J.A., Economic/Demographic Assessment Manual, Bureau of Reclamation, Dept. of Interior, Denver, Co., 1977, p. 116.

WASTEWATER

The Wastewater needs for the major cities in Brazoria County were estimated using the following method. An existing ratio of the number of gallons used per day per person was calculated based on the total number of gallons used per day divided by the existing 1978 population. This ratio is based on today's consumption pattern, and it is assumed that it will continue throughout the 20 year planning period of this report. This consumption ratio was then multiplied by the 1983 and 1988 projected population figure to determine the total number of gallons required to be treated for the respective years. These calculations were finally compared to the existing capacity of each city's sewage treatment facilities to determine if additional capacity is or will be needed.

This methodology was employed for each city except Lake Jackson. There, a detailed report had already been compiled outlining the future needs for that city. The report indicates that a 2.5 million gallon facility, presently under construction, will supply the city's needs to the year 1990. Beyond that date, additional capacity could be needed. After computing the additional number of gallons required for each city, an estimated cost was applied to each. It should be pointed out that this analysis is only cursory. The recommendations assume construction of new plants adjacent to the existing facilities to accommodate the city's expanded treatment needs. No consideration of the individual treatment plant's design was taken into account. This means that an existing plant may better be midified to accommodate a certain percentage of the additional capacity rather than the construction of a new plant. Before such decisions are made, detailed analysis of each facility

TABLE III-3

RECOMMENDED CAPITAL IMPROVEMENTS

(all cost in 1979 dollars)

LOCATION	YEAR	ITEM (UNITS)	COST EST.	SOURCE OF FUNDS	COUNTY SHARE
ALVIN	1983	1 Fire truck (replacement)	$ 40,000	Fed. Rev. Sharing	*
		800 SF additional space for 4 policemen	32,000	City	0
	1988	1000 SF additional space for 5 policemen	40,000	City	0
PEARLAND	1983	1 Fire Truck (replacement)	40,000	Fed. Rev. Sharing	*
		1200 SF additional space for 6 policemen	48,000	City	0
		3.18 mil. gal/day sewage treatment	4,600,000	EPA 2/3 City 1/3	0
	1988	1800 SF additional space for 9 policemen	72,000	City	0
ANGLETON	1983	1 Fire truck (replacement)	40,000	Fed. Rev. Sharing	*
		600 SF additional space for 3 policemen	24,000	City	0
		.30 mil. gal/day additional water supply	270,000	FmHA 2/3 City 1/3	0
	1988	800 SF additional space for 4 policemen	32,000	City	0
		.30 mil. gal/day additional water supply	170,000	FmHA 2/3 City 1/3	0
BRAZORIA	1983	400 SF additional space for 2 policemen	16,000	City	0
CLUTE	1983	600 SF additional space for 3 policemen	24,000	City	0
		2 mil. gal/day sewage treatment	3,000,000	EPA 2/3 City 1/3	0
	1988	600 SF additional space for 3 policemen	24,000	City	0
FREEPORT	1983	1 Fire truck (replacement)	40,000	Fed. Rev. Sharing	*
		800 SF additional space for 4 policemen	32,000	City	0
		.4 mil. gal/day sewage treatment	650,000	EPA 2/3 City 1/3	0
	1988	600 SF additional space for 3 policemen	24,000	City	0

TABLE III-3, Cont.

LOCATION	YEAR	ITEM (UNITS)	COST EST.	SOURCE OF FUNDS	COUNTY SHARE
LAKE JACKSON	1983	600 SF additional space for 3 policemen	$ 24,000	City	0
	1988	1000 SF additional space for 5 policemen	40,000	City	0
JONES CREEK	1983	.5 mil.gal/day sewage treatment	1,200,000	EPA 2/3 City 1/3	0
OYSTER CREEK	1983	.5 mil.gal./day sewage treatment	1,200,000	EPA 2/3 City 1/3	0
RICHWOOD	1983	.03 mil. gal./day sewage treatment	60,000	EPA 2/3 City 1/3	0
SURFSIDE	1983	1400 SF additional space for 6 policemen	56,000	City	0
SWEENY	1983	400 SF additional space for 2 policemen	16,000	City	0
		.8 mil. gal./day sewage treatment	1,250,000	EPA 2/3 City 1/3	0
West Columbia	1983	1 Fire truck (replacement)	40,000	Fed. Rev. Sharing	*
		400 SF additional space for 2 policemen	16,000	City	0
HWY 288	1983	4 lane divided from Harris County Line to HWY 6	20,150,000	State	0
	1988	4 lane divided from Hwy. 6 to Hwy. 332	91,150,000	State	0
FM 518	1983	4 lane road from Galveston County Line to Park St.	5,880,000	State	0
	1988	4 lane road from Hatfield Rd. to FM 3344	1,290,000	State	0
		4 lane divided from FM 3344 to Harris County Line	460,000	State	0
FM 528	1988	4 lane divided from Galveston County Line to Hwy. 35	1,000,000	State	20,000

TABLE III-3, Cont.

LOCATION	YEAR	ITEM (UNITS)	COST EST.	SOURCE OF FUNDS	COUNTY SHARE
Hwy. 6	1988	4 lane road from Fort Bend County Line to 409 Loop	9,600,000	State	0
Hwy 35	1988	4 lane road from Matagorda County Line to San Bernard River	5,080,000	State	0
		2 lane road from San Bernard River to Brazos River	8,200,000	State	0
		4 lane road from Brazos River to proposed Hwy. 288	7,370,000	State	0
		4 lane divided from proposed Hwy. 288 to Hwy. 35 north of Angleton.	8,030,000	State	0
		4 lane road from FM 523 to FM 2403	16,280,000	State	0
		4 lane divided from FM 2403 to 409 Loop	1,000,000	State	0
		4 lane divided from 409 Loop to Harris County Line	54,850,000	State	0
Hwy. 36	1988	4 lane road from South of West Columbia to Jones Creek Community	12,640,000	State	0
		4 lane divided from Jones Creek Community to 1/2 mile east of Brazos River	13,250,000	State	0
Hwy. 332	1988	6 lane divided from proposed Hwy. 288 to existing Hwy 288	12,430,000	State	0
FM 2611 Ext.**	1983	2 lane road from FM 2611 and Hwy 36 to Hwy 332 and FM 2004			
Brazoria Co.	1983	Airport	970,000	FAA	97,000
		Roads and Bridges	470,000	County	470,000
	1988	Airport	1,500,000	FAA	150,000
		Roads and Bridges	525,000	County	525,000

* A Portion of Brazoria County's Federal Revenue Sharing monies would be given to the individual cities for purchase of fire-fighting equipment.

** cost unavailable

would be required to determine the most efficient way to accommodate the increased treatment requirements and to prepare a more accurate cost estimate.

HIGHWAYS

The Texas State Department of Highways and Public Transportation (TSDHPT) has analyzed and evaluated the highway system throughout the state of Texas and prepared a "20 Year Project Development and Control Plan - For the years 1978-1998". There are a number of highway improvements listed for Brazoria County in this document and they are contained in Table III-3. The scheduling, cost estimates, and the funding sources were also extracted from the TSDHPT 20 year plan. It should be cautioned that such scheduling, particularly the cost estimates, may be somewhat dated (1978) and will require adjustment in future years to reflect escalating construction costs and the changing construction priorities of the TSDHPT. Some of the scheduling on Tabel III-3 already reflects updated information that was received in December 1979 from the District 12 Office of the TSDHPT.

BRAZORIA COUNTY FACILITIES

Only two items were taken into account for future capital improvements in the county. They are the county airport and the roads and bridges. Other facilities such as the courthouse, armory building, and county library have either been newly constructed or have had recent alterations or additions. The county also has adequate park space to the 1988 based on the 10 acre/1000 population guideline.

The county's projected Road and Bridge Fund was calculated by using the following method. A ratio of the average construction cost over the past four years to the county's 1978 population was calculated. This figure was then used to project the estimated cost for the years 1983 and 1988.

FEDERAL AND STATE PROGRAMS

There are programs available through both the federal and state governments for which counties and cities may apply to obtain aid in planning for and developing facilities and services. Brazoria County and/or the communities within its jurisdiction may find it desirable to apply for such funds. The following is a description of the major programs offered.

HOUSING

The Texas Department of Community Affairs (TDCA) is the state agency in Texas which administers housing programs to communities in the state. Programs offered through TDCA which may be of aid to the communities include the Statewide Housing Assistance Payments Program and the Rural Housing Coordinator Program.

The Statewide Housing Assistance Payments Program is a federal program that is available through TDCA to help limited and lower-income people afford safe, desirable housing through rental assistance. The program is for families, elderly individuals, handicapped, and disabled persons who make less than 80% of the median income in their area of the state. TDCA has received money from the federal Department of Housing and Urban Development to administer this housing assistance program, also known as Section 8.

Rural Housing Coordinator Workshops are 40-hour courses in rural housing programs and development techniques. Every housing program which is available and funded in rural Texas is covered, with emphasis on

Farmers Home Administration (FmHA) Homeownership Program, FmHA Home Repair Program, FmHA Rural Rental Program, Organizing Community Support Foreclosure Prevention, and Counseling and Interviewing Techniques. The program is designed for the practicing housing professional working at the grassroots level.

In addition to the programs already in operation, during the 1979 session, the Texas State Legislature passed H.B. 1876, "The Texas Housing Corporations Act." Since incorporated into the statutes as Article 12671-7, V.T.C.S., this Act allows cities or counties to create nonprofit housing finance corporations that can issue tax-exempt housing bonds. The lower interest rates available on such bonds can be transferred to residential mortgages. The purpose of this legislation is to increase the availability of mortgage money through normal channels, and to create a special vehicle for lowering the cost of mortgage money.

The "Texas Housing Agency Act" was also passed in 1979. It is similar to the "Texas Housing Corporations Act," but it establishes a statewide agency designed to issue tax-exempt revenue bonds, the proceeds of which can be used to finance single family and multi-family housing. The Board for the agency, however, has not yet been established. The law is general and it will require the actions of the Board to formulate specific guidelines and policies.

RECREATION

For recreation, the major program at the federal level is through the Land and Water Conservation Fund Program. The Land and Water Conservation Fund Act of 1965 (Public Law 88-578) became effective for a 25-year period on January 1, 1965. It is a reimbursement program which provides for, among other things, financial assistance to the states and their

political subdivisions for the acquisition and development of recreation areas and facilities. Acquisition of lands and waters for public outdoor recreation, including new areas or additions to existing parks, forests, wildlife areas, beaches, and other similar areas dedicated to outdoor recreation, may be eligible for assistance.

In addition, Coastal Energy Impact Program (CEIP) funds are available. A notice of financial assistance availability has not yet been published in the Texas Register. Approximately $1.7 million of 100% fiscal year 1979 grant money will be available. This money will be available for alleviating environmental and recreational losses resulting from coastal energy activities. The allocations for fiscal year 1980 for the environmental/recreational grants have not yet been made.

The state also has loan funds (some 5% money) for which they are receiving applications. This money is in a national pool, which was created with funds which were turned back from fiscal years 1977-1978.

On the state level, the Texas Legislature in 1979 passed a bill, "State Assistance for Local Parks," to set up a state program. Specific rules have not yet been formulated. Basically, the Act establishes a Texas local parks, recreation, and open space fund. Appropriations from the fund may be used for assistance grants to a political subdivision in an urban area for use by the political subdivision as all or part of the subdivision's required share of funds for eligibility for receiving a federal rehabilitation and recovery grant.

WASTEWATER, WATER, SOLID WASTE

Coastal Energy Impact Program (CEIP) funds will be available to communities impacted by coastal energy activites for

planning and development of public facilities and services. The amount of financial assistance available has not yet been published in the Texas Register.

For the treatment of wastewater in specific, communities may apply for a grant from the Environmental Protection Agency (EPA) through its Construction Grants Program. The applicant must be a public body created under State law and must have the legal authority for the disposal of sewage, industrial, or other wastes. It must also have authority to plan, design, finance, construct, operate and maintain sewage treatment works. The community must pay for 25% of the project and the federal government will pay the remaining 75 percent.

Four types of projects are eligible for assistance. Sewage treatment plants, providing at least secondary treatment, may be new, expanded, or upgraded. Interceptor sewers may be new or rehabilitated. Sewage collection systems for communities in existance before October 18, 1972, may be new, expanded, or rehabilitated. Pumping stations are included in this category. Finally, combined sewer overflow control systems are included. These may be for reducing, storing, treating, separating or disposing of wastewaters from combined storm and sanitary sewer systems.

Each State is allotted a specific sum of money annually for construction grants. Projects are ranked in priority order by the States, on the basis of specific criteria, to determine which will receive these funds. In order to quality for a grant, an applicant's project must be on the State priority list.

The Farmers Home Administration, at the federal level, is authorized to provide financial assistance for water and waste disposal facilities

in rural areas and towns of up to 10,000 people. Public entities such as municipalities, counties and special purpose districts are included in the list of those eligible. Priority will be given to public entities in areas smaller than 5,500 people to restore a deteriorating water supply, improve, enlarge, or modify a water system or an inadequate waste system. Preference will also be given to projects which involve the merging of small systems. Loans and grant funds may be used to do the following:

1. Construct, repair, improve, expand or otherwise modify rural water supply and distribution systems,

2. Acquire a water supply or a water right,

3. Construct, repair, improve, expand, or otherwise modify waste collection, treatment, or disposal systems,

4. Pay fees connected with development of facilities,

5. Pay other costs related to the development of the facility, such as the acquisition of rights-of-way.

The Farmers Home Administration also has authority to loan money to communities for the purchase of solid waste sites. In addition, loans are available for the purchase of trucks and equipment. These are 40 year loans at 5 percent based on general obligation bonds.

APPENDIX

APPENDIX I

LIST OF TABLES

Definition of Variables and Population Projections

Variable	Description		Calculation
ESTPx	Estimated population for year x	=	Table 2 volumes
HYPMx	Hypothetical total employment for year x, assuming constant population/ employment ration	=	ESTPx ÷ 2.4
HYPEx	Hypothetical energy-related employment for year x, assuming constant ratio between energy-related and total employment	=	(HYPMx)(.10050505)
HYPGx	Hypothetical energy-related employment growth through year x, with base year 1974 = 0	=	$HYPEx - HYPE_{1974}$
ESTGx	Estimated energy employment growth through year x, with base year 1974 = 0, using project data and gravity model	= =	HYPGx (1974 to 1976) HYPGx + Gravity model values (1977 to 1983)
POPOx	"Without" Energy population for year x, assuming no energy-related employment growth since 1974	=	ESTPx - (2.4)(HYPGx)
POPEx	"With" energy population for year x, taking into account estimated energy-related employment growth since 1974	=	POPOx + (2.4)(ESTGx)

APPENDIX IA-1

POPULATION PROJECTIONS FOR ALVIN

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	13,112	5,463	549	0	0	13,112	13,112
1975	13,561	5,650	568	19	19	13,515	13,561
1976	13,747	5,728	576	27	27	13,682	13,747
1977	13,936	5,807	584	35	29	13,852	13,922
1978	14,127	5,886	592	43	45	14,024	14,132
1979	14,321	5,967	600	51	74	14,199	14,376
1980	14,517	6,049	628	59	52	14,275	14,500
1981	14,878	6,199	623	74	43	14,700	14,804
1982	15,249	6,354	639	90	40	15,033	15,129
1983	15,628	6,512	654	105	30	15,376	15,470

APPENDIX IA-2
POPULATION PROJECTIONS FOR ANGLETON

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	10,292	4,288	431	0	0	10,292	10,292
1975	10,589	4,412	443	12	12	10,560	10,589
1976	10,954	4,564	459	28	28	10,887	10,954
1977	11,331	4,721	475	44	43	11,225	11,329
1978	11,723	4,885	491	60	110	11,579	11,843
1979	12,127	5,053	508	77	193	11,942	12,405
1980	12,545	5,227	525	94	119	12,319	12,605
1981	12,862	5,359	529	108	97	12,603	12,836
1982	13,187	5,495	553	121	85	12,897	13,101
1983	13,520	5,633	566	135	79	13,196	13,386

APPENDIX IA-3
POPULATION PROJECTIONS FOR BRAZORIA

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	1,814	756	76	0	0	1,814	1,814
1975	1,890	788	79	3	3	1,883	1,890
1976	1,928	803	81	5	5	1,916	1,928
1977	1,966	819	82	6	7	1,952	1,968
1978	2,006	836	84	8	23	1,987	2,042
1979	2,046	853	86	10	52	2,022	2,147
1980	2,087	870	87	11	30	2,061	2,133
1981	2,131	888	89	13	21	2,100	2,150
1982	2,176	907	91	15	18	2,140	2,183
1983	2,222	926	93	15	17	2,186	2,227

APPENDIX IA-4
POPULATION PROJECTIONS FOR CLUTE

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	6,720	2,800	281	0	0	6,720	6,720
1975	6,959	2,900	291	10	10	6,935	6,959
1976	7,138	2,974	299	18	18	7,095	7,138
1977	7,322	3,051	307	26	49	7,260	7,377
1978	7,511	3,130	315	34	117	7,429	7,710
1979	7,704	3,210	323	42	167	7,603	8,004
1980	7,903	3,293	331	50	97	7,783	8,016
1981	8,076	3,365	338	57	100	7,939	8,179
1982	8,252	3,438	346	65	86	8,096	8,302
1983	8,432	3,513	353	72	77	8,259	8,444

APPENDIX IA-5
POPULATION PROJECTIONS FOR FREEPORT

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	11,518	4,799	482	0	0	11,518	11,518
1975	11,724	4,885	491	99	9	11,702	11,724
1976	12,261	5,109	513	31	31	12,197	12,261
1977	12,822	5,343	537	55	108	12,690	12,949
1978	13,409	5,587	562	80	325	13,217	13,997
1979	14,022	5,843	587	105	417	13,770	14,771
1980	14,664	6,110	614	132	301	14,347	15,070
1981	14,993	6,247	628	146	416	14,643	15,641
1982	15,330	6,388	642	160	327	14,946	15,731
1983	15,674	6,531	656	174	274	15,256	15,914

APPENDIX IA-6
POPULATION PROJECTIONS FOR JONES CREEK

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	1,716	715	72	0	0	1,716	1,716
1975	1,805	752	76	4	4	1,795	1,805
1976	1,823	760	76	4	4	1,813	1,823
1977	1,842	768	77	5	8	1,830	1,849
1978	1,861	775	78	6	14	1,847	1,880
1979	1,881	784	79	7	14	1,864	1,898
1980	1,900	792	80	8	10	1,881	1,905
1981	1,910	796	80	8	17	1,891	1,932
1982	1,920	800	80	8	13	1,901	1,932
1983	1,929	804	81	9	11	1,907	1,934

APPENDIX IA-7
POPULATION PROJECTIONS FOR LAKE JACKSON

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	14,642	6,101	613	0	0	14,742	14,642
1975	15,363	6,401	643	30	30	15,291	15,363
1976	15,876	6,615	665	52	52	15,751	15,876
1977	16,406	6,836	687	74	89	16,228	16,442
1978	16,954	7,064	710	97	202	16,721	17,206
1979	17,520	7,300	734	121	335	17,230	18,034
1980	18,105	7,544	758	145	196	17,757	18,227
1981	18,612	7,755	779	166	186	18,214	18,660
1982	19,134	7,973	801	188	162	18,683	19,072
1983	19,670	8,196	824	211	147	19,164	19,516

APPENDIX IA-8
POPULATION PROJECTIONS FOR OYSTER CREEK

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	941	392	39	0	0	941	941
1975	976	407	41	2	2	971	976
1976	1,004	418	42	3	3	997	1,004
1977	1,033	430	43	4	18	1,023	1,067
1978	1,062	443	44	5	37	1,050	1,139
1979	1,093	455	46	7	30	1,076	1,148
1980	1,124	468	47	8	20	1,105	1,153
1981	1,154	481	48	9	26	1,132	1,195
1982	1,185	494	50	11	23	1,159	1,214
1983	1,217	507	51	12	21	1,188	1,239

APPENDIX IA-9
POPULATION PROJECTIONS FOR PEARLAND

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	9,177	3,824	384	0	0	9,177	9,177
1975	9,734	4,056	408	24	24	9,676	9,734
1976	10,221	4,259	428	44	44	10,115	10,221
1977	10,732	4,472	449	65	48	10,576	10,691
1978	11,268	4,695	472	88	56	11,057	11,191
1979	11,831	4,930	495	111	55	11,565	11,697
1980	12,423	5,176	520	136	51	12,097	12,219
1981	12,973	5,405	543	159	58	12,591	12,731
1982	13,548	5,645	567	183	54	13,109	13,238
1983	14,148	5,895	592	208	62	13,649	13,798

APPENDIX IA-10
POPULATION PROJECTIONS FOR RICHWOOD

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	1,623	676	68	0	0	1,623	1,623
1975	1,679	700	70	2	2	1,674	1,679
1976	1,721	717	72	4	4	1,711	1,721
1977	1,765	735	74	6	8	1,751	1,770
1978	1,809	754	76	8	14	1,790	1,823
1979	1,855	773	78	10	13	1,831	1,862
1980	1,902	793	80	12	9	1,873	1,895
1981	1,949	812	82	14	14	1,915	1,949
1982	1,997	832	84	16	12	1,959	1,987
1983	2,047	853	86	18	10	2,004	2,028

APPENDIX IA-11
POPULATION PROJECTIONS FOR SURFSIDE

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	1,460	608	61	0	0	1,460	1,460
1975	1,620	675	68	7	7	1,603	1,620
1976	1,781	742	75	14	14	1,747	1,781
1977	1,957	815	82	21	20	1,907	1,955
1978	2,152	897	90	29	28	2,082	2,150
1979	2,365	985	99	38	26	2,274	2,336
1980	2,600	1,083	109	48	22	2,485	2,538
1981	2,858	1,191	120	59	27	2,716	2,781
1982	3,142	1,309	132	71	24	2,972	3,029
1983	3,453	1,439	145	84	22	3,251	3,304

APPENDIX IA-12
POPULATION PROJECTIONS FOR SWEENY

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	3,037	1,265	127	0	0	3,037	3,037
1975	3,025	1,260	127	0	0	3,025	3,025
1976	3,137	1,307	131	4	4	3,127	3,137
1977	3,253	1,355	136	9	6	3,231	3,246
1978	3,373	1,405	141	14	68	3,339	3,503
1979	3,498	1,458	146	19	208	3,452	3,952
1980	3,627	1,511	152	25	98	3,567	3,802
1981	3,691	1538	155	38	49	3,624	3,741
1982	3,757	1,565	157	30	46	3,685	3,795
1983	3,824	1,593	160	33	45	3,745	3,853

APPENDIX IA-13
POPULATION PROJECTIONS FOR WEST COLUMBIA

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	3,233	1,347	135	0	0	3,233	3,233
1975	3,330	1,388	139	4	4	3,320	3,330
1976	3,417	1,424	143	8	8	3,398	3,417
1977	3,507	1,461	147	12	11	3,478	3,505
1978	3,598	1,499	151	16	55	3,560	3,692
1979	3,692	1,538	155	20	151	3,644	4,006
1980	3,789	1,579	159	24	79	3,731	3,921
1981	3,850	1,604	161	26	43	3,788	3,891
1982	3,912	1,630	164	29	41	3,843	3,841
1983	3,976	1,657	165	32	39	3,899	3,993

APPENDIX IA-14
POPULATION PROJECTIONS FOR BRAZORIA COUNTY

	ESTP	HYPM	HYPE	HYPG	ESTG	POPO	POPE
1974	120,033	50,014	5,027	0	0	120,033	120,033
1975	124,380	51,825	5,209	182	182	123,943	124,380
1976	127,412	53,088	5,336	309	309	126,670	127,412
1977	130,519	54,383	5,466	439	543	129,465	130,769
1978	133,701	55,709	5,599	572	1,364	132,328	135,602
1979	136,961	57,067	5,736	709	2,403	135,259	141,027
1980	140,300	58,875	848	1,359	138,265	141,526	
1981	143,637	59,849	6,015	988	1,233	141,266	144,225
1982	147,054	61,273	6,158	1,131	1,074	144,340	146,917
1983	150,552	62,730	6,305	1,278	974	147,485	149,822

APPENDIX IA-15
BRAZORIA COUNTY FIRE AND POLICE PROTECTION

CITIES	FIRE		POLICE	
	PERSONNEL	BUDGET	PERSONNEL	BUDGET
Alvin	47	$ 60,000	32	$663,000
Angleton	40	52,000	22	363,000
Brazoria	35	26,800	8	132,800
Clute	33	51,800	26	477,200
Freeport	37*	159,000	28	534,600
Jones Creek	15	0	3	25,000
Lake Jackson	41**	85,300	28	500,000
Oyster Creek	19	0	3	41,600
Pearland	33***	29,600	28	547,100
Richwood	10	1,800	5	103,600
Surfside	25	0	2	20,000
Sweeny	30	24,200	9	80,000
West Columbia	37	36,900	10	201,000

* Includes 7 Paid personnel

** Includes 1 paid personnel

*** Includes 2 paid personnel

APPENDIX IA-16
BRAZORIA COUNTY WATER SERVICE

(Gallons Per Day)

CITIES	DEMAND		CAPCITY
	AVERAGE (000)	PEAK (000)	(000)
Alvin	2,100	3,000	4,320
Angleton	1,300	2,000	2,000
Brazoria	310	458	619
Clute	960	1,400	1,960
Freeport	1,186	2,368	4,000
Jones Creek	--	--	--
Lake Jackson	1,980	3,200	7,000
Oyster Creek	--	--	--
Pearland	1,760	2,284	5,000
Richwood	112	132	1,059
Surfside	--	--	--
Sweeny	400	500	1,160
West Columbia	475	525	675

APPENDIX IA-17
BRAZORIA COUNTY SEWAGE AND WASTEWATER TREATMENT

(Gallons Per Day)

CITIES	FLOW AVERAGE (000)	FLOW PEAK (000)	CAPACITY (000)
Alvin	2,900	4,690	6,000
Angleton	1,290	2,080	4,000
Brazoria	537	563	750
Clute	1,474	1,950	2,000
Freeport	1,011	1,643	1,700
Jone Creek	--	--	--
Lake Jackson	1,600	4,000	4,000
Oyster Creek	--	--	--
Pearland	2,615	3,979	3,000
Richwood	55	100	98
Surfside	--	--	--
Sweeny	350	400	400
West Columbia	475	750	3,000

APPENDIX IA-18
BRAZORIA COUNTY SOLID WASTE DISPOSAL

CITIES	VOLUME (TONS PER DAY)
Alvin	45
Angleton	25
Brazoria	12
Clute	25
Freeport	34
Jones Creek	--
Lake Jackson	55
Oyster Creek	--
Pearland	60
Richwood	--
Surfside	--
Sweeny	9
West Columbia	24

APPENDIX IA-19
BRAZORIA COUNTY INDEPENDENT SCHOOL DISTRICTS

ENROLLMENT & CAPACITY 1978-79					PROJECTIONS		
SCHOOL DISTRICT	K-8	9-12	TOTAL	PHYSICAL CAPACITY	1978-1983 ADDITIONAL SCHOOL ENROLLMENT	1983 STUDENT SURPLUS (+) OR DEFICIENCY (-)	1983 CLASSROOM SURPLUS (+) OR DEFICIENCY (-)
Alvin	6,091	2,361	8,452	11,400	357	+ 2591	+ 104
Angleton	3,404	1,562	4,966	5,000	428	- 394	- 16
Brazosport	7,965	3,337	11,302	12,700	1,825	- 427	- 17
Damon	145	---	145	380	---	---	---
Danbury	395	172	567	600	---	---	---
Pearland	3,469	1,717	5,186	5,450	686	- 422	- 17
Sweeny	1,410	579	1,989	2,350	107	+ 254	+ 10
West Columbia-Brazoria	2,678	659	3,337	3,100	141	- 378	- 15

APPENDIX IA-20
BRAZORIA COUNTY INDEPENDENT SCHOOL DISTRICTS
ASSESSED VALUATION AND BONDED INDEBTEDNESS

CITIES	ASSESSED VALUATION (000)	BONDED INDEBTEDNESS (000)
Alvin	$663,400	$ 2,995
Angleton	471,850	11,013
Brazosport	825,047	18,080
Damon	19,552	13
Danbury	36,000	2,740
Pearland	250,858	10,450
Sweeny	272,774	235
West Columbia - Brazoria	287,500	1,075

APPENDIX IA-21
BRAZORIA COUNTY HEALTH CARE FACILITIES

FACILITY	NUMBER OF BEDS SET UP	LICENSED
Alvin Community Hospital	75	86
Angleton-Danbury Community Hospital	56	61
Freeport Community Hospital	121	192
Sweeny Community Hospital	42	51

APPENDIX IA-22
1983
BRAZORIA COUNTY FACILITY REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population			Including Energy Population		
				Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Police	0.60/1000	Yes	0	0.55/1000	None-deficit of 6	No	0.55/1000	None-deficit	No
Recreation Open Space	218/1000 ac	Yes	5,919,600	201/1000 ac	28,861ac	Yes	198/1000 ac	28,849ac	Yes

APPENDIX IA-23
1983
CITY OF ALVIN
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	3.3/1000	Yes	0	3.1/1000	None-deficit of 4	No	3.0/1000	None-deficit of4	No
Police	2.3/1000	Yes	0	2.1/1000	None-deficit of 3	No	2.1/1000(1)	($16,350) None-deficit of 4	No
Water	3.0 mgd or 212 gpd(peak) *	Yes	6,226	3.260 mgd	1.060 mgd	Yes	3.28 mgd	1.04 mgd	Yes
Sewage	4.69 mgd or 332gpd(peak) *	Yes	3,945	5.105 mgd	.9 mgd	Yes	5.136 mgd	.86 mgd	Yes
Solid Waste	45 tons/day 6.4 lbs ppd *	Yes		49 tons/day			50 tons/day(1ton)		

* Per Person

APPENDIX IA-24
1983
CITY OF ANGLETON
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	3.4/1000	Yes	0	3.01/1000	None-deficit of 5	no	3.01/1000	None-deficit of 5	no
Police	1.9/1000	Yes	0	1.7/1000	None-deficit of 3	No	1.6/1000	None-deficit of 3	No
Water	2.0 mgd or 169 gpd(peak)	Yes	0	2.23 mgd	None-deficit of .23 mgd	No	2.262 mgd	Non-deficit of .26 mgd	No
Sewage	2.08 mgd or 176 gpd(peak)	Yes	10,909	2.322 mgd	1.68 mgd	Yes	2.356 mgd	1.64 mgd	Yes
Solid Waste	25 tons/day or 4.2 lbs ppd			28 tons/day			28 tons/day		

APPENDIX IA-25
1983
CITY OF BRAZORIA
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population			Including Energy Population		
				Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	17.1/1000	Yes	0	16.0/1000	None-deficit of 3	No	15.7/1000	None-deficit of 3	No
Police	3.9/1000	Yes	0	3.7/1000	None-deficit of 1	No	3.6/1000	None-deficit of 1	No
Water	.458 mgd or 224 gpd(peak)	Yes	719	.49 mgd	.12 mgd	Yes	.499 mgd	.12 mgd	Yes
Sewage	.537 mgd or 263 gpd(peak)	Yes	2850	.575 mgd	.18	Yes	.586 mgd	.16 mgd	Yes
Solid Waste	12 tons/day or 11.8 lbs ppd			13 tons/day			13 tons/day		

APPENDIX IA-26
1983
CITY OF CLUTE
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population			Including Energy Population		
				Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in
Fire	4.3/1000	Yes	0	4.0/1000	None-deficit Of 3	No	3.9/1000	None-deficit Of 3	No
Police	3.4/1000	Yes	0	3.1/1000	None-deficit of 2	No	3.1/1000	None-deficit of 3	No
Water	1.4 mgd or 182 gpd(peak)	Yes	0	1.503 mgd	.457 mgd	Yes	1.537 mgd	.423 mgd	Yes
Sewage	1.95 mgd or 253 gpd(peak)	Yes	198	2.09 mgd	1.91 mgd - includes new 2.0 mgd capacity planned	Yes	2.136 mgd	1.864 mgd - includes new 2.0 mgd capacity planned	Yes
Solid Waste	25 tons/day or 6.5 lbs ppd			27 tons/day			27 tons/day		

APPENDIX IA-27
1983
CITY OF FREEPORT
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	2.6/1000	Yes	0	2.4/1000	None-deficit of 3	No	2.3/1000	None-deficit of 4	No
Police	2.0/1000	Yes	0	1.8/1000	None-deficit of 3	No	1.8/1000	($17,350) None-deficit of 4	No
Water	2.368 mgd or 169 gpd(peak)	Yes	9,657	2.578 mgd	1.423 mgd	Yes	2.689 mgd	1.311 mgd	Yes
Sewage	1.644 mgd or 117 gpd(peak)	Yes	479	1.785 mgd	None-defict of .085 mgd	No	1.862 mgd	None-defict of .162 mgd	No
Solid Waste	34 tons/day or 4.9 lbs ppd			37 tons/day			39 tons/day		

APPENDIX IA-28
1983
CITY OF JONES CREEK
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population: Projected Use/ Facility Ratio with New Population	Excluding Energy Population: New Reserve Capacity	Excluding Energy Population: Projected Adequacy in 1983	Including Energy Population: Projected Use/ Facility Ratio with New Population	Including Energy Population: New Reserve Capacity	Including Energy Population: Projected Adequacy in 1983
Fire	8.0/1000	Yes	0	7.9/1000	None	Yes	7.8/1000	None	Yes
Police	1.6/1000	Yes	0	1.6/1000	None	Yes	1.6/1000	None	Yes
Water	No water system currently in use or planned								
Sewage	New system being planned - 500,000 gallons per day								
Solid Waste	Commercial Service - data not available								

APPENDIX IA-29
1983
CITY OF LAKE JACKSON
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	2.4/1000	Yes	0	2.1/1000	None-deficit of 5	No	2.1/1000	None-deficit of 5	No
Police	1.6/1000	Yes	0	1.5/1000	None-deficit of 3	No	1.4/1000	None-deficit of 3	No
Water	3.2 mgd or 186 gpd	Yes	20,430	3.565 mgd	3.435 mgd	Yes	3.63 mgd	3.37 mgd	Yes
Sewage	5.0 mgd or 290 gpd	No	0	5.556 mgd	None-deficit of 1.56 mgd		5.66 mgd	None-deficit of 1.66 mgd	No
Solid Waste	55 tons/day or 6.4 lbs ppd			61 tons/day			62 tons/day		

APPENDIX IA-30
1983
CITY OF OYSTER CREEK
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	16.7/1000	Yes	0	16.0/1000	None-deficit of 1	No	15.3/1000	None-deficit of 2	No
Police	2.6/1000	Yes	0	2.5/1000	None	Yes	2.4/1000	None	No
Water	Non current system							New .35 mgd capacity planned	
Sewage	No current system							New .50 mgd capacity planned	
Solid Waste	Commercial Service - data not available								

APPENDIX IA-31
1983
CITY OF PEARLAND
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in
Fire	2.9/1000	Yes	0	2.4/1000	None-deficit of 7	No	2.4/1000	None-deficit of 7	No
Police	2.5/1000	Yes	0	2.1/1000	None-deficit of 6	No	2.0/1000	None-deficit of 6	No
Water	2.284 mgd or 204 gpd	Yes	13,314	2.784 mgd	2.22 mgd	Yes	2.815 mgd	2.19 mgd	Yes
Sewage	3.979 mgd or 356 gpd	No	0	4.859 mgd	None-1.86 mgd deficiency	No	4.912 mgd	None-1.91 mgd deficiency	No
Solid Waste	60 tons/day or 10.7 lbs ppd			73 tons/day			74 tons/day		

APPENDIX IA-32
1983
CITY OF RICHWOOD
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

				Excluding Energy Population			Including Energy Population		
Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	5.5/1000	Yes	0	4.9/1000	None-deficit of 1	No	4.9/1000	None-deficit of 1	No
Police	2.7/1000	Yes	0	2.5/1000	None	Yes	2.5/1000	None	Yes
Water	.132 mgd or 72 gpd	Yes	12,875	.144 mgd	.915 mgd	Yes	.146 mgd	.913 mgd	Yes
Sewage	.10 mgd or 54 gpd	No	0	.108 mgd	None-.01 mgd deficiency	No	.11 mgd	None-.012 mgd deficiency	No
Solid Waste	Commercial Service - data not available								

APPENDIX IA-33
1983
CITY OF SURFSIDE
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population: Projected Use/ Facility Ratio with New Population	Excluding Energy Population: New Reserve Capacity	Excluding Energy Population: Projected Adequacy in 1983	Including Energy Population: Projected Use/ Facility Ratio with New Population	Including Energy Population: New Reserve Capacity	Including Energy Population: Projected Adequacy in 1983
Fire	11.6/1000	Yes	0	7.7/1000	None-deficit of 13	No	7.6/1000	None-deficit of 13	No
Police	2.4/1000	Yes	0	0.6/1000	None-deficit of 1	No	0.6/1000	None-deficit of 1	No
Water	Commercial service - data not available								
Sewage	No system in use or planned								
Solid Waste	Commercial Service - data not available								

APPENDIX IA-34
1983
CITY OF SWEENY
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population			Including Energy Population		
				Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in
Fire	8.6/1000	Yes	0	8.0/1000	None-deficit of 2	No	7.8/1000	None-deficit of 3	No
Police	2.6/1000	Yes	0	2.4/1000	None-deficit of 1	No	2.3/1000	None-defict of 1	No
Water	.50 mgd or 143 gpd	Yes	4615	.536 mgd	.62 mgd	Yes	.551 mgd	.61 mgd	Yes
Sewage	.4 mgd or 114 gpd	Yes	0	.43 mgd	.77 mgd	Yes	.44 mgd	.76 mgd	Yes
Solid Waste	9 tons/day or 5.1 lbs ppd			10 tons/day			10 tons/day		

APPENDIX IA-35
1983
CITY OF WEST COLUMBIA
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Excluding Energy Population			Including Energy Population		
				Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1983
Fire	10.0/1000	Yes	0	9.5/1000	None-deficit of 2	No	9.3/1000	None-defict of 3	No
Police	2.7/1000	Yes	0	2.6/1000	None-deficit of 1	No	2.5/1000	None-deficit of 1	No
Water	.525 mgd or 142 gpd	Yes	1,056	.554 mgd	.12 mgd	Yes	.567 mgd	.11 mgd	Yes
Sewage	.75 mgd or 203 gpd	Yes	11,084	.791 mgd	2.209 mgd	Yes	.811 mgd	2.189 mgd	Yes
Solid Waste	24 tons/day or 13.0 lbs ppd			25 tons/day			26 tons/day		

APPENDIX IB-1
1983
BRAZORIA COUNTY
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	141,027	18,258,649	15,898,116	2,360,533
1980	141,526	18,462,991	16,068,868	2,394,123
1981	144,225	19,568,241	16,992,438	2,575,803
1982	146,917	20,670,624	17,913,613	2,757,011
1983	149,822	21,860,232	18,907,674	2,952,558

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures include total revenues and expenditures for the General Fund, Road Bridge Fund, Jury Fund, Salary Fund and [3]Permanent Improvement Fund.
[3]Revenues minus Expenditures

APPENDIX IB-2
1983
BRAZORIA COUNTY
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	135,259	15,896,633	13,924,366	1,972,267
1980	138,265	17,127,600	14,952,988	2,172,612
1981	141,266	18,356,520	15,979,899	2,376,621
1982	144,340	19,615,334	17,031,790	2,583,544
1983	147,485	20,903,222	18,107,976	2,795,246

Source:
[1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures include total revenues and expenditures for the General Fund, Road and Bridge Fund, Jury Fund, Salary Fund and Permanent Improvement Fund.

[3]Revenues minus Expenditures

APPENDIX IB-3
REVENUE SHARING HISTORY
BRAZORIA COUNTY

Year	Revenue Sharing Allocation
1974	$1,150,920
1975	1,076,410
1976	1,019,642
1977	1,374,528
1978	1,148,500

Source: Brazoria County

APPENDIX IB-4
1983
ALVIN
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	14,376	2,663,068	1,910,300	752,768
1980	14,500	2,813,551	2,010,804	652,264
1981	14,804	3,182,483	2,257,203	925,280
1982	15,129	3,576,898	2,520,622	1,056,276
1983	15,470	3,990,730	2,797,010	1,193,720

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression

[3]Revenues minus Expenditures

APPENDIX IB-5
1983
ALVIN
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	14,199	2,448,268	1,766,837	681,431
1980	14,375	2,661,860	1,909,489	752,371
1981	14,700	3,056,276	2,172,909	883,367
1982	15,033	3,460,401	2,442,812	1,017,589
1983	15,376	3,876,662	2,702,821	1,155,841

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression

[3]Revenues minus Expenditures

APPENDIX IB-6
REVENUE SHARING HISTORY
CITY OF ALVIN

Year	Revenue Sharing Allocation
1974	$ 118,349
1975	113,470
1976	132,115
1977	140,854
1978	140,192

Source: City of Alvin

APPENDIX IB-7
1983
ANGLETON
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	12,405	2,548,962	2,261,667	287,295
1980	12,605	2,703,226	2,403,308	299,918
1981	12,836	2,881,400	2,566,903	314,497
1982	13,101	3,085,799	2,754,577	331,222
1983	13,386	3,305,624	2,956,415	349,209

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the General Fund and operating revenues only for the Water and Sewer Utility Fund. Expenditures include total expenditures for the General Fund and operating expenditures only for the Water and Sewer Utility Fund.

[3]Revenues minus Expenditures

APPENDIX IB-8
1983
ANGLETON
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	11,942	2,191,843	1,933,769	258,074
1980	12,319	2,482,629	2,200,762	281,867
1981	12,603	2,701,683	2,401,892	299,791
1982	12,897	2,928,450	2,610,104	318,346
1983	13,196	3,159,074	2,821,857	337,217

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the General Fund and operating revenues only for the Water and Sewer Utility Fund. Expenditures include total expenditures for the General Fund and operating expenditures only for the Water and Sewer Utility Fund.

[3]Revenues minus Expenditures

APPENDIX IB-9
1983
ANGLETON
REVENUE/EXPENDITURE FORECAST

Year	Revenue Sharing Allocation
1974	$ 87,323
1975	85,209
1976	73,152
1977	73,220
1978	85,013

Source: City of Angleton

APPENDIX IB-10
1983
BRAZORIA
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	2,147	1,133,028	930,326	202,702
1980	2,133	1,096,666	899,641	197,025
1981	2,150	1,140,820	936,902	203,918
1982	2,183	1,226,530	1,009,232	217,298
1983	2,227	1,340,811	1,105,672	235,139

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the General Fund and the Water and Gas Meter Deposit Fund and operating revenues only for the Water and Gas Meter Deposit Fund. Expenditures include total expenditures for the General Fund and the Water and Gas Meter Deposit Fund and operating revenues only for the Water and Gas Meter Deposit Fund.

[3]Revenues minus Expenditures

APPENDIX IB-11
1983
BRAZORIA
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	2,022	808,366	656,349	152,017
1980	2,061	909,660	741,830	167,830
1981	2,100	1,010,955	827,311	183,644
1982	2,140	1,114,847	914,983	199,864
1983	2,186	1,234,322	1,015,807	1,132,515

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the General Fund and the Water and Gas Meter Deposit Fund and operating revenues only for the Water and Gas Meter Deposit Fund. Expenditures inlcude total expenditures for the General Fund and the Water and Gas Meter Deposit Fund and operating revenues only for the Water and Gas Meter Deposit Fund.

[3]Revenues minus Expenditures

APPENDIX IB-12
REVENUE SHARING HISTORY
CITY OF BRAZORIA

Year	Revenue Sharing Allocation
1974	$ 7,344
1975	5,842
1976	5,773
1977	6,411
1978	16,530

Source: City of Brazoria

APPENDIX IB-13
1983
CLUTE
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	8,004	3,002,257	2,649,688	352,569
1980	8,016	3,019,840	2,664,967	354,873
1981	8,179	3,258,677	2,872,501	386,176
1982	8,302	3,438,903	3,029,106	409,797
1983	8,444	3,646,969	3,209,902	437,067

Source:

[1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures are total revenues and expenditures for the General Fund and the Water and Sewer Fund.

[3]Revenues minus Expenditures

APPENDIX IB-14
1983
CLUTE
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	7,603	2,414,691	2,139,130	275,561
1980	7,783	2,678,436	2,368,309	310,127
1981	7,939	2,907,016	2,566,930	340,086
1982	8,096	3,137,061	2,766,824	370,237
1983	8,259	3,375,897	2,974,357	401,540

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures are total revenues and expenditures for the General Fund and the Water and Sewer Fund.

[3]Revenues minus Expenditures

APPENDIX IB-15
REVENUE SHARING HISTORY
CITY OF CLUTE

Year	Revenue Sharing Allocation
1974	$268,704
1975	340,528
1976	415,082
1977	464,658
1978	516,160

Source: City of Clute

APPENDIX IB-16
1983
FREEPORT
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population [1]	Revenues Excluding Revenue Sharing [2]	Expenditures [2]	Surplus (Deficit) [3]
1979	14,771	4,084,415	3,351,850	732,565
1980	15,070	4,266,521	3,461,961	804,360
1981	15,641	4,613,706	3,672,239	941,467
1982	15,731	4,668,460	3,705,383	963,077
1983	15,914	4,779,794	3,772,775	1,007,019

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues are total revenues for the General Fund and operating revenues for the Water and Sewer Utility Fund. Expenditures are total expenditures for the General Fund and operating expenditures for the Water and Sewer Utility Fund.

[3]Revenues minus Expenditures

APPENDIX IB-17
1983
FREEPORT
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	13,770	3,475,427	2,983,217	492,210
1980	14,347	3,826,462	3,195,706	630,756
1981	14,643	4,006,523	3,304,712	701,811
1982	14,946	4,190,882	3,416,296	774,586
1983	15,256	4,379,480	3,530,458	849,622

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues are total revenus for the General fund and operating revenues for the Water and Sewer Utility Fund. Expenditures are total expenditures for the General Fund and operating expenditures for the Water and Sewer Utility Fund.

[3]Revenues minus Expenditures

APPENDIX IB-18
REVENUE SHARING HISTORY
CITY OF FREEPORT

Year	Revenue Sharing Allocation
1974	$181,679
1975	167,017
1976	159,507
1977	166,993
1978	171,339

Source: City of Freeport

APPENDIX IB-19
1983
LAKE JACKSON
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population [1]	Revenues Excluding Revenue Sharing [2]	Expenditures [2]	Surplus (Deficit) [3]
1979	18,034	4,230,529	4,216,362	14,167
1980	18,277	4,353,392	4,332,840	20,552
1981	18,660	4,629,038	4,594,160	34,878
1982	19,072	4,891,315	4,842,806	48,509
1983	19,516	5,173,963	5,110,765	63,198

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression analysis and budgeted total revenues and expenditures for the General Fund and the Utility Fund.

[3]Revenues minus Expenditures

APPENDIX IB-20
1983
LAKE JACKSON
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population [1]	Revenues Excluding Revenue Sharing [2]	Expenditures [2]	Surplus (Deficit) [3]
1979	17,230	3,718,706	3,731,140	(12,434)
1980	17,757	4,054,192	4,049,190	5,002
1981	18,214	4,345,116	4,324,994	20,122
1982	18,683	4,643,679	4,608,041	35,638
1983	19,164	4,949,882	4,898,329	51,553

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression analysis and budgeted total revenues and expenditures for the General Fund and the Utility Fund.

[3]Revenues minus Expenditures

APPENDIX IB-21
REVENUE SHARING HISTORY
CITY OF LAKE JACKSON

Year	Revenue Sharing Allocation
1974	78,000
1975	85,500
1976	81,630
1977	36,096
1978	93,900

Source: City of Lake Jackson

APPENDIX IB-22
1983
PEARLAND
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	11,697	2,685,989	2,549,713	136,276
1980	12,219	3,051,906	2,891,426	160,480
1981	12,731	3,410,812	3,226,593	184,219
1982	13,238	3,766,214	3,558,487	207,727
1983	13,798	4,158,769	3,925,076	233,693

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include operating revenues for the Generating and total revenues for the Water and Sewer Fund. Expenditures include operating expenditures for the General Fund and total expenditures for the Water and Sewer Fund.

[3]Revenues minus Expenditures

APPENDIX IB-23
1983
PEARLAND
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	11,565	2,593,458	2,463,303	130,155
1980	12,097	2,966,385	2,811,562	154,439
1981	12,591	3,312,674	3,134,946	177,728
1982	13,109	3,675,787	3,474,041	201,746
1983	13,649	4,054,321	3,827,537	226,784

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include operating evenues for the General Fund and total revenues for the Water and Sewer Fund. Expenditures include operating expenditures for the General Fund and total expenditures for the Water and Sewer Fund.

[3]Revenues minus Expenditures

APPENDIX IB-24
REVENUE SHARING HISTORY
CITY OF PEARLAND

Year	Revenue Sharing Allocation
1974	$ 74,387
1975	81,884
1976	100,284
1977	90,632
1978	102,979

Source: City of Pearland

APPENDIX IB-25
1983
RICHWOOD
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	1,862	270,171	285,339	(15,168)
1980	1,895	289,542	207,507	(17,965)
1981	1,949	321,241	343,782	(22,541)
1982	1,987	343,547	369,309	(25,762)
1983	2,028	367,614	396,851	(29,237)

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression

[3]Revenues (including Revenue Sharing) minus Expenditures

APPENDIX IB-26
1983
RICHWOOD
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	1,831	251,974	264,512	(12,538)
1980	1,873	276,628	292,726	(16,098)
1981	1,915	301,282	320,940	(19,658)
1982	1,959	327,111	350,497	(23,386)
1983	2,004	353,526	380,727	(27,198)

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the three major funds. Expenditures include total expenditures for the General Fund, and operating expenditures only for the Water Department and the Gas Department.

[3]Revenues minus Expenditures

APPENDIX IB-27
REVENUE SHARING HISTORY
CITY OF RICHWOOD

Year	Revenue Sharing Allocation
1974	$ 5,022
1975	11,875
1976	7,803
1977	8,600
1978	6,727

Source: City of Richwood

APPENDIX IB-28
1983
SWEENY
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	3,952	980,317	784,153	196,164
1980	3,802	896,239	721,256	174,983
1981	3,741	862,048	695,678	166,370
1982	3,795	892,316	718,321	173,995
1983	3,853	924,826	742,641	182,185

Source:

[1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the General Fund and operating revenues for the Water Department and the Gas Department. Expenditures include total expenditures for the General Fund and operating expenditures for the Water Department and the Gas Department.

[3]Revenues minus Expenditures

APPENDIX IB-29
1983
SWEENY
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	3,452	700,057	574,496	125,561
1980	3,567	764,517	622,717	141,800
1981	3,624	796,467	646,618	149,849
1982	3,685	830,659	672,196	158,463
1983	3,745	864,290	697,355	166,935

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues include total revenues for the General Fund and operating revenues for the Water Department and the Gas Department. Expenditures include total expenditures for the General Fund and operating expenditures for the Water Department and the Gas Department.

[3]Revenues minus Expenditures

APPENDIX IB-30
REVENUE SHARING HISTORY
CITY OF SWEENY

Year	Revenue Sharing Allocation
1974	$ 19,378
1975	17,372
1976	15,002
1977	15,561
1978	19,319

Source: City of Sweeny

APPENDIX IB-31
1983
WEST COLUMBIA
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Including Energy Population[1]	Revenues Excluding Revenue Sharing[2]	Expenditures[2]	Surplus (Deficit)[3]
1979	4,006	1,251,540	1,079,301	172,239
1980	3,921	1,157,346	996,990	160,356
1981	3,891	1,124,101	967,939	156,162
1982	3,941	1,179,509	1,016,357	163,152
1983	3,993	1,237,134	1,066,712	170,422

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures include total revenues and expenditures for the General Fund and the Water and Sewer Fund.

[3]Revenues minus Expenditures

APPENDIX IB-32
1983
WEST COLUMBIA
REVENUE/EXPENDITURE FORECAST

Year	Estimated Total Population Excluding Energy Population [1]	Revenues Excluding Revenue Sharing [2]	Expenditures [2]	Surplus (Deficit) [3]
1979	3,644	850,385	728,754	121,631
1980	3,731	946,795	813,002	133,793
1981	3,788	1,009,960	868,198	141,762
1982	3,842	1,069,801	920,490	149,311
1983	3,899	1,132,967	975,686	157,281

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Consultant's estimates, based on least squares linear regression. Revenues and expenditures include total revenues and expenditures for the General Fund and the Water and Sewer Fund.

[3]Revenues minus Expenditures

APPENDIX IB-33
REVENUE SHARING HISTORY
CITY OF WEST COLUMBIA

Year	Revenue Sharing Allocation
1974	$ 33,737
1975	35,386
1976	37,340
1977	37,858
1978	46,070

Source: City of West Columbia

APPENDIX IB-34
ALVIN
IDEPENDENT SCHOOL DISTRICT
HISTORIC REVENUES AND EXPENDITURES

Year	Population[1]	Current Revenues[2,a]	% of Revenues from State Government[2]	% of Revenues from Federal Government[2]	Expenditures[2]
1974	13,112	7,334,705	25	2	8,547,705
1975	13,561	8,605,662	26	2	11,464,105
1976	13,747	10,799,027	25	1	9,955,145
1977	13,922	10,973,982	24	.5	10,566,626
1978	14,132	12,626,714	33	1	11,887,524

[2]Does not include receipts from sale of bonds

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Texas Education Agency

APPENDIX IB-35
1983
ALVIN
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
TOTAL POPULATION

Year	Total Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	14,376	13,627,711	12,492,876	1,134,836
1980	14,500	14,275,688	12,913,520	1,362,168
1981	14,804	15,864,276	14,005,682	1,858,594
1982	15,129	17,562,603	15,275,647	2,286,956
1983	15,470	19,344,534	16,732,110	2,612,424

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression tecniques

[3]Current Revenues minus Expenditures

APPENDIX IB-36
1983
ALVIN
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
EXCLUDING ENERGY POPULATION

Year	Estimated Total Population Excluding Energy Population[1]	Current Revenues	Expenditures[2]	Projected Surplus (Deficit)[3]
1979	14,199	12,702,486	11,916,068	786,418
1980	14,375	13,622,192	12,489,540	1,132,652
1981	14,700	15,320,512	13,622,028	1,698,484
1982	15,033	17,060,637	14,888,981	2,171,656
1983	15,376	18,853,108	16,317,291	2,535,727

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression tecniques

[3]Current Revenues minus Expenditures

APPENDIX IB-37
ANGLETON
INDEPENDENT SCHOOL DISTRICT
HISTORIC REVENUES AND EXPENDITURES

Year	Population[1]	Current Revenues[2,a]	% of Revenues from State Government[2]	% of Revenues from Federal Government[2]	Expenditures[2]
1974	10,292	3,506,128	36	2	3,520,692
1975	10,589	3,784,271	40	3	4,029,214
1976	10,954	4,704,084	39	2	4,926,686
1977	11,329	5,271,016	34	3	5,480,674
1978	11,843	8,107,981	30	2	7,589,406

[2]Does not include receipts from sale of bonds

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Texas Education Agency

APPENDIX IB-38
1983
ANGLETON
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
TOTAL POPULATION

Year	Total Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	12,405	9,102,950	8,676,701	426,249
1980	12,605	9,676,939	9,185,017	491,922
1981	12,836	10,339,897	9,772,123	567,774
1982	13,101	11,100,432	10,445,643	654,789
1983	13,386	11,918,366	11,169,994	748,372

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-39
1983
ANGLETON
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
EXCLUDING ENERGY POPULATION

Year	Estimated Total Population Excluding Energy Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	11,942	7,773,633	7,500,147	273,486
1980	12,319	8,855,585	8,458,331	397,254
1981	12,603	9,670,637	9,180,145	490,492
1982	12,897	10,514,387	9,927,375	587,012
1983	13,196	11,372,487	10,687,314	685,173

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-40
BRAZOSPORT
INDEPENDENT SCHOOL DISTRICT
HISTORIC REVENUES AND EXPENDITURES

Year	Population[1]	Current Revenues[2,a]	% of Revenues from State Government[2]	% of Revenues from Federal Government[2]	Expenditures[2]
1974	36,620	10,937,406	26	1	10,865,901
1975	40,126	13,170,095	30	1	12,697,437
1976	41,604	14,071,341	31	1	14,677,683
1977	43,409	15,513,747	29	.9	15,103,722
1978	45,905	18,548,294	33	.7	16,791,723

[2]Does not include receipts from sale of bonds

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Texas Education Agency

APPENDIX IB-41
1983
BRAZOSPORT
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
TOTAL POPULATION

Year	Total Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	48,053	20,496,060	18,807,515	1,688,545
1980	48,804	21,238,186	19,394,089	1,844,097
1981	50,337	22,753,072	20,591,448	2,161,624
1982	51,267	23,672,083	21,317,831	2,354,252
1983	52,379	24,770,944	22,186,366	2,584,578

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-42
1983
BRAZOSPORT
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
EXCLUDING ENERGY POPULATION

Year	Estimated Total Population Excluding Energy Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	45,648	18,575,955	16,929,052	1,646,903
1980	47,231	20,156,080	18,165,464	1,990,616
1981	48,450	21,372,866	19,117,571	2,255,295
1982	49,716	22,636,567	20,106,388	2,530,179
1983	51,029	23,947,183	21,131,914	2,815,269

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-43
COLUMBIA-BRAZORIA
INDEPENDENT SCHOOL DISTRICT
HISTORIC REVENUES AND EXPENDITURES

Year	Population[1]	Current Revenues[2,a]	% of Revenues from State Government[2]	% of Revenues from Federal Government[2]	Expenditures[2]
1974	5,047	2,891,266	40	4	2,789,405
1975	5,220	3,371,414	38	4	4,459,857
1976	5,345	5,045,466	30	5	4,442,689
1977	5,473	4,467,671	35	5	4,786,794
1978	5,734	5,525,649	39	.09	5,494,562

[2]Does not include receipts from sale of bonds

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Texas Education Agency

APPENDIX IB-44
1983
COLUMBIA - BRAZORIA
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
TOTAL POPULATION

Year	Total Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	6,153	7,289,768	7,162,663	127,105
1980	6,054	6,909,740	6,815,435	94,305
1981	6,041	6,860,045	6,769,840	90,205
1982	6,124	7,178,447	7,060,950	117,497
1983	6,220	7,546,959	7,397,655	149,304

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-45
1983
COLUMBIA - BRAZORIA
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
EXCLUDING ENERGY POPULATION

Year	Estimated Total Population Excluding Energy Population [1]	Current Revenues	Expenditures [2]	Projected Surplus or (Deficit) [3]
1979	5,666	5,420,532	5,454,861	(34,329)
1980	5,792	5,904,208	5,896,793	7,415
1981	5,888	6,272,724	6,233,503	39,221
1982	5,982	6,633,561	6,563,199	70,362
1983	6,085	7,028,947	6,924,157	104,790

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-46
PEARLAND
INDEPENDENT SCHOOL DISTRICT
HISTORIC REVENUES AND EXPENDITURES

Year	Population[1]	Current Revenues[2,a]	% of Revenues from State Government[2]	% of Revenues from Federal Government[2]	Expenditures[2]
1974	9,177	3,594,606	48	1	3,449,451
1975	9,734	4,036,635	53	.8	3,921,427
1976	10,221	4,743,457	58	.6	4,736,339
1977	10,691	5,686,359	50	1	5,229,251
1978	11,191	7,931,058	48	1	6,516,709

[2]Does not include receipts from sale of bonds

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Texas Education Agency

APPENDIX IB-47
1983
PEARLAND
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
TOTAL POPULATION

Year	Total Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	11,697	8,274,330	6,994,663	1,279,667
1980	12,219	9,348,900	7,771,629	1,577,271
1981	12,731	10,402,885	8,533,711	1,869,174
1982	13,238	11,446,577	9,288,350	2,158,227
193	13,798	12,599,373	10,121,877	2,477,496

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-48
1983
PEARLAND
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
EXCLUDING ENERGY POPULATION

Year	Estimated Total Population Excluding Energy Population [1]	Current Revenues	Expenditures [2]	Projected Surplus or (Deficit) [3]
1979	11,565	8,003,012	6,797,721	1,205,291
1980	12,097	9,098,187	7,589,550	1,508,637
1981	12,591	10,115,136	8,324,820	1,790,316
1982	13,109	11,181,491	9,095,811	2,085,680
1983	13,649	12,293,135	9,899,547	2,393,588

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-49
SWEENY
INDEPENDENT SCHOOL DISTRICT
HISTORIC REVENUES AND EXPENDITURES

Year	Population[1]	Current Revenues[2,a]	% of Revenues from State Government[2]	% of Revenues from Federal Government[2]	Expenditures[2]
1974	3,037	2,593,415	13	2	2,924,867
1975	3,025	2,996,339	18	2	3,260,389
1976	2,137	3,662,727	17	1	3,590,152
1977	3,246	3,782,739	16	2	3,845,300
1978	3,503	4,336,034	20	1	4,222,913

[2]Does not include receipts from sale of bonds

Source: [1]Consultant's estimates based on Texas Department of Water Resources figures

[2]Texas Education Agency

APPENDIX IB-50
SWEENY
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
TOTAL POPULATION

Year	Total Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	3,952	5,894,675	4,236,754	1,657,921
1980	3,802	5,418,463	4,131,734	1,286,729
1981	3,741	5,224,804	4,089,025	1,135,779
1982	3,795	5,396,240	4,126,833	1,269,407
1983	3,853	5,580,375	4,167,441	1,412,934

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX IB-51
SWEENY
INDEPENDENT SCHOOL DISTRICT
PROJECTED REVENUES AND EXPENDITURES
EXCLUDING ENERGY POPULATION

Year	Estimated Total Population Excluding Energy Population[1]	Current Revenues	Expenditures[2]	Projected Surplus or (Deficit)[3]
1979	3,452	4,306,121	3,886,685	419,436
1980	3,567	4,672,390	3,967,201	705,189
1981	3,624	4,853,350	4,007,109	846,241
1982	3,685	5,047,009	4,049,817	997,192
1983	3,745	5,237,493	4,091,825	1,145,668

Source: [1]Consultant's estimates based Texas Department of Water Resources figures

[2]Consultant's estimates based on application of least squares linear regression techniques

[3]Current Revenues minus Expenditures

APPENDIX II

APPENDIX IIA-1
1998
CITY OF ALVIN
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	3.3 Firemen/ 1,000 pop.	Yes	0	2.1 Firemen/ 1,000 pop.	None. Deficit of 26	No
Police	2.3 police/ 1,000 pop.	Yes	0	1.4 police/ 1,000 pop.	None. Deficit of 19.	No
Water	3.0 mgd total or 212 gpd (peak) per person	Yes	6,226	4.7 mgd total	None. Deficit of .36 mgd	No
Sewage	4.69 mgd or 332 gpd (peak) per person	Yes	3,945	7.3 mgd total	None. Deficit of 1.3 mgd	No

APPENDIX IIA-2
1998
CITY OF ANGLETON
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	3.4 firemen/ 1,000 pop.	Yes	0	2.1 firemen/ 1,000 population	None. Deficit of 25.	No
Police	1.9 police/ 1,000 pop.	Yes	0	1.2 police/ 1,000 population	None. Deficit of 14.	No
Water	2.0 mgd or 169 gpd (peak) per person	Yes	0	3.2 mgd	None. Deficit of 1.2 mgd	No
Sewage	2.08 mgd or 176 gpd (peak) per person	Yes	10,909	3.4 mgd	.6 mgd	Yes

APPENDIX IIA-3
1998
CITY OF BRAZORIA
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	17.1 firemen/ 1,000 pop.	Yes	0	11.7 firemen/ 1,000 population	None. Deficit of 16.	No
Police	3.9 police/ 1,000 pop.	Yes	0	2.7 police/ 1,000 population	None. Deficit of 4.	No
Water	.458 mgd or 224 gpd (peak) per person	Yes	719	.67 mgd	None. Deficit of .05 mgd	No
Sewage	.537 mgd or 263 gpd (peak) per person	Yes	2850	.788 mgd	None Deficit .04 mgd	No

APPENDIX IIA-4
1998
CITY OF CLUTE
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio With New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	4.3 firemen/ 1,000 pop.	Yes	0	2.9 firemen/ 1,000 population	None. Deficit of 16	No
Police	3.4 police/ 1,000 pop.	Yes	0	2.3 police/ 1,000 population	None. Deficit of	No
Water	1.4 mgd or 182 gpd (peak) per person	Yes	0	2.1 mgd total	None. Deficit of .13 mgd	No
Sewage	1.95 mgd or 253 gpd (peak) per person	Yes	198	2.9 mgd	None. Deficit of .9 mgd	No

APPENDIX IIA-5
1998
CITY OF FREEPORT
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	2.6 firemen/ 1,000 pop.	Yes	0	1.7 firemen/ 1,000 population	None. Deficit of 19	No
Police	2.0 police/ 1,000 pop.	Yes	0	1.3 police/ 1,000 population	None. Deficit of 15	No
Water	2.368 mgd or 169 gpd (peak) per person	Yes	9,657	3.6 mgd	.37 mgd	Yes
Sewage	1.644 mgd or 117 gpd (peak) per person	Yes	4[illegible]	2.5 mgd	None. Deficit of .8 mgd	No

APPENDIX IIA-6
1998
CITY OF JONES CREEK
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	8.0 firemen/ 1,000 pop.	Yes	0	6.8 firemen/ 1,000 population	None. Deficit of 3	No
Police	1.6 police/ 1,000 pop.	Yes	0	1.4 police/ 1,000 population	None. Deficit of 1.	No
Water	No water system currently in use or planned					
Sewage	0.5 mgd sewage treatment plant proposed					

APPENDIX IIA-7
1998
CITY OF LAKE JACKSON
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	2.4 firemen/ 1,000 pop.	Yes	0	1.4 firemen/ 1,000 population	None. Deficit of 28.	No
Police	1.6 police/ 1,000 pop.	Yes	0	1.0 police/ 1,000 population	None. Deficit of 18.	No
Water	3.2 mgd or 186 gpd (peak) per person	Yes	20,430	5.3 mgd	1.7 mgd	Yes
Sewage	5.0 mgd or 290 gpd (peak) per person	No	0	8.3 mgd	None. Deficit of 4.3 mgd	No

APPENDIX IIA-8
1998
CITY OF OYSTER CREEK
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	16.7 firemen/ 1,000 pop.	Yes	0	10.8 firemen/ 1,000 population	None. Deficit of 10.	No
Police	2.6 police/ 1,000 pop.	Yes	0	1.7 police/ 1,000 population	None. Deficit of 2.	No
Water	.35 mgd system soon to be completed.					
Sewage	No current system. New .50 mgd capacity planned.					

APPENDIX IIA-9
1998
CITY OF PEARLAND
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	2.9 firemen/ 1,000 pop.	Yes	0	1.4 firemen/ 1,000 population	None. Deficit of 38	No
Police	2.5 police/ 1,000 pop.	Yes	0	1.2 police/ 1,000 population	None. Deficit of 33	No
Water	2.284 mgd or 204 gpd (peak) per person	Yes	13,314	4.97 mgd	.03 mgd	Yes
Sewage	3.979 mgd or 356 gpd (peak) per person	No	0	8.7 mgd	None. Deficit of 5.7 mgd	No

APPENDIX IIA-10
1998
CITY OF RICHWOOD
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	5.5 firemen/ 1,000 pop.	Yes	0	3.4 firemen/ 1,000 population	None. Deficit of 6.	No
Police	2.7 police/ 1,000 pop.	Yes	0	1.7 police/ 1,000 population	None. Deficit of 3.	No
Water	.132 mgd or 72 gpd per person	Yes	12,875	.208 mgd	.85 mgd	Yes
Sewage	.10 mgd or 54 gpd per person	No	0	.16 mgd	None. Deficit of .058 mgd	No

APPENDIX IIA-11
1998
CITY OF SURFSIDE
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio With New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	11.6 firemen/ 1,000 pop.	Yes	0	5.2 firemen/ 1,000 population	None. Deficit of 31.	No
Police	2.4 police/ 1,000 pop.	Yes	0	.4 police/ 1,000 population	None. Deficit of 10	No
Water	Commercial service-data not available					
Sewage	No system in use or planned.					

APPENDIX IIA-12
1998
CITY OF SWEENY
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	8.6 firemen/ 1,000 pop.	Yes	0	6.1 firemen/ 1,000 population	None. Deficit of 13.	No
Police	2.6 police/ 1,000 pop.	Yes	0	1.8 police/ 1,000 population	None. Deficit of 4.	No
Water	.50 mgd or 143 gpd per person	Yes	4615	.71 mgd	.45 mgd	Yes
Sewage	400,000 gpd or 114 gpd per person	Yes	0	.57 mgd	None. Deficit of .17	No

APPENDIX IIA-13
1998
CITY OF WEST COLUMBIA
PUBLIC FACILITIES AND SERVICES REQUIREMENTS

Factor	Existing Use/ Facility Ratio	Present Adequacy	New Population That Can Be Absorbed	Projected Use/ Facility Ratio with New Population	New Reserve Capacity	Projected Adequacy in 1998
Fire	10.0 firmen/ 1,000 pop.	Yes	0	7.3 firemen/ 1,000 population	None. Deficit of 13.	No
Police	2.7 police/ 1,000 pop.	Yes	0	2 police/ 1,000 population	None. Deficit of 4.	No
Water	.525 mgd or 142 gpd (peak) per person	Yes	1,056	.72 mgd	None. Deficit of .04 mgd	No
Sewage	.75 mgd or 203 gpd per person	Yes	11,084	1.0 mgd	2.0 mgd	Yes