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16. Abstract

The foremost objective of this project is to demonstrate the importance of the ports in the State of Texas to the economy of the State and the Nation. Traditionally, the economic value of the state's ports has focused upon the economic impact to the region or a small sector of the state. Seldom has the full interior regions of the state been considered in the economic value of the ports.

Moreover, the assessment will provide information including data, analyses and findings that may be used by TxDOT in developing a statewide port planning assistance program. In fulfilling these objectives, the study synthesizes the information which has been collected and analyzed to developed regional benefits of the state's ports. Where these data are absent, additional data has been obtained from the port and the region as appropriate to extend the regional impacts to the State.

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THE VALUE OF TEXAS PORTS

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IMPLEMENTATION STATEMENT

The findings of this research can be implemented when making policy decisions concerning Texas ports and intermodal connections and when providing public information on Texas ports. The results will be useful in educating the public, media, industry, and government agencies of the importance of the state's ports to the economy of Texas. The findings can also be implemented when providing information on a national scale about economic importance of the Texas ports.

DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the official views or policies of the Texas Department of Transportation or the Texas Port Association. This report does not constitute a standard, specification, or regulation.

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SUMMARY

This report assesses the economic impacts of Texas ports to the state and the nation, and also assesses the economic impacts of port growth due to increased trade associated with the North American Free Trade Agreement (NAFTA). These economic impacts of ports are measured in terms of employment, personal income, business sales, and local, state, and federal taxes.

CHAPTER 1
INTRODUCTION

1.0 BACKGROUND

The U.S. port system is an essential component not only in our national transportation and defense systems, but is also a significant contributor to our national economy. Ports act as economic catalysts in the region in which they are located. They generate jobs, income, revenue, and taxes by providing services that move the waterborne cargo either into the hinterlands or from the hinterlands onto the waterways. The shipping and receiving industries, in turn, make investments that generate more jobs, income, revenues, and taxes (U.S. Maritime Administration, 1994). A recent U.S. Maritime Administration study (1996) revealed that U.S. ports

- handled over 2.2 billion tons[1] of cargo (1994),
- handled over 1 billion tons of foreign trade valued at $565.7 billion (1994), and
- handled 95% of U.S. waterborne foreign trade tonnage (1995).

In turn, this activity stimulated the following economic impacts in 1994:

- 15.9 million jobs,
- $515.1 billion in personal income,
- $1.6 trillion in business sales,
- $783.3 billion to the nation's Gross Domestic Product or 12% of the nation's Gross Domestic Product, and
- $210.1 billion in local, state, and federal taxes.

This implies that, on the average, 7179 jobs are supported by one million tons of cargo, $233 in personal income is supported by one ton of cargo, and $733 in business sales is associated with one ton of cargo, all of which results in $96 in taxes collected per one ton of cargo. Of course,

[1] Throughout this report, a ton will refer to the English unit of 2,000 pounds.

these are merely averages, and outcomes will differ significantly from port to port, depending significantly on cargo mix.

Despite these significant economic impacts, ports and waterways are overlooked. Pat Younger (1996), Vice President of the Texas Port Association, reports that while attending a forum on transportation, the moderator--a transportation expert--displayed a slide depicting the major transportation modes. Conspicuously absent was the water mode. Even more distressing was that none of the attendees, except Younger, appeared to notice the exclusion of the nation's highest tonnage transportation mode.

Perhaps the reason for being overlooked lies in the fact that water transportation mode is so efficient and safe that it goes unnoticed. In terms of labor productivity, the water mode is over 23% more productive than rail, and 1250% more productive than trucking[2]. This means that there are 162,000 water transportation employees, 250,000 rail employees, and over 1.5 million trucking employees in the United States. In terms of energy used per ton-mile, barge transportation is again the most efficient. Barge is 48% more energy efficient than rail and over 990% more energy efficient than trucking (Hardebeck et al., 1996; Davis, 1995). Water transportation is also safe in terms of deaths per ton-mile: it is over 160% safer than rail and over 21,000% safer than trucking[2].

1.1 OVERVIEW OF TEXAS PORTS

In Texas, there are 12 deep-draft ports, each of which is directly accessible to the Gulf of Mexico, and there are 15 shallow-draft ports or port districts in the state.

Table 1.1 Deep-draft and Shallow-draft Ports in Texas

Deep-draft Ports		Shallow-draft Ports	
Beaumont	Orange	Anahuac	Port Aransas
Brownsville	Port Arthur	Aransas Pass	Port Mansfield
Corpus Christi	Port Isabel	Bay City	Port O'Connor
Freeport	Port Lavaca/Point Comfort	Fulton	Rockport
Galveston	Sabine Pass Harbor	Harlingen	Seadrift
Houston	Texas City	Ingleside	Sweeney
		Liberty	Victoria
		Palacious	

[2] Figures derived from tables contained in reference U.S. Dept. of Commerce, 1996 on the basis of tons per employee.

Additionally, there are many more docking facilities along the Texas portion of the Gulf Intracoastal Water Way (GIWW).

For 1994, Texas had six ports that ranked in the top 50 U.S. ports in terms of tonnage: Houston (2nd), Corpus Christi (6th), Port Arthur (14th), Texas City (16th), Beaumont (30th), and Freeport (36th). Also for the same year, two Texas ports, Houston and Galveston, ranked 9th and 24th, respectively, in containerized cargo (U.S. Maritime Administration, 1996). This is a spectacular performance, especially when one considers that in 1994 the top 50 U.S. ports accounted for over 89% of all port tonnage, and that the top 25 container ports handled over 97% of all U.S. container units.

Texas ports averaged about 350 million tons of cargo annually for the years 1990-94, and from 1989-94, Texas port tonnage grew at almost a 3% annual rate, while U.S. Gross Domestic Product (GDP) grew at a 2% annual rate. The almost 380 million tons going through Texas ports in 1994 represents over 17% of the total U.S. port tonnage.

Table 1.2 Cargo Tonnage of Texas Ports, 1989-94

Year	Tonnage (Millions)	Annual Change
1989	329.5	
1990	330.8	0.4%
1991	326.8	-1.2%
1992	338.8	3.7%
1993	356.5	5.2%
1994	378.9	6.3%
5-Year Avg. *	346.4	2.8%

* compound rate

The Texas ports exported almost 44 million tons of cargo in 1994. However, these exports consisted of essentially five products: chemicals, petroleum, agricultural, manufactured

Table 1.3 Major Exports of Texas Ports, 1994

Product	Tons (Million)	Portion of total exports
Chemicals & related products	13.3	30%
Petroleum & related products	12.7	29%
Agricultural products	12.6	29%
Manufactured equipment	1.2	3%
Forest products	0.6	1%
Total top 5 products	40.4	92%
Total exports	43.9	

equipment, and forest products. According to Table 1.3, these products accounted for 92% of all Texas for 1994.

Table 1.4 depicts the import cargo of Texas ports. In 1994, Texas ports imported over 187 million tons of cargo. Petroleum and related products accounted for 86% of theses imports, followed by iron/steel and chemicals at 2% each, sand and gravel at 1%, and agricultural-related products at 1%. These five products accounted for 93% of total imports by Texas ports.

Table 1.4 Major Imports of Texas Ports, 1994

Product	Tons (Million)	Portion of total imports
Petroleum & related products	161.2	86%
Iron and steel	4.6	2%
Chemicals & related products	4.2	2%
Sand & gravel	2.2	1%
Agricultural products	1.7	1%
Total top 5 products	173.9	93%
Total imports	187.1	

Additionally, domestic movement of nearly 148 million tons of cargo went through Texas ports in 1994.

The ports of Texas have achieved these impressive figures and concomitant rankings with very little governmental assistance. On the other hand, the competitors of the Texas ports, the ports located in Louisiana, Mississippi, and Alabama, obtain subsidies from their respective states for a variety of revenue generating capital improvement projects. Louisiana, for example, provides funding to develop new projects, giving Louisiana ports a competitive advantage over Texas ports in attracting new business.

The problem of obtaining capital will continue to worsen. Environmentally related regulations and laws, such as those imposed by the Texas Parks and Wildlife Department, the Texas General Land Office, the Texas Natural Resource Commission, the U.S. Clean Air Act, the U.S. Endangered Species Act, and the U.S. Oil Pollution Act will increase port expenses without generating revenues. In addition, Texas ports also need to have their own channels dredged (Boske and Harrison, 1995b).

Reductions in funding for the U.S. Army Corps of Engineers have persisted for the last several years and will continue to be reduced by 15% over the next four years. This presents a serious impediment to the operation, maintenance and improvement of the GIWW. Since the GIWW provides Texas ports with needed access to the inland waterway system, these federal cut-backs threaten to further diminish the financial capacity of Texas ports.

However, strengthening the relationship with the state would benefit the Texas ports in many ways. One of the benefits to the ports would be increasing the borrowing capacity of the ports for infrastructure improvements. Currently, several small ports have difficulty obtaining funds for infrastructure development and improvements. A closer alliance with the state would reduce this difficulty.

One of the ways to develop a stronger relationship between the Texas seaports and the state's stakeholders is to identify the direct, indirect, and induced economic impacts to the stakeholders and the state. The regional importance of the seaports has been documented for several of the ports in the state, but the regional studies have not been extended to include the entire state. Therefore, this economic impact study includes statewide aspects for the collective seaports to help demonstrate the economic value of the seaports to the entire state.

As trade progresses due to the North American Trade Agreement (NAFTA), important trading relationships with Mexico and Latin American countries are poised to flourish. Successful relationships, however, will be a result of appropriately applied investments that are predicated upon economic studies fully demonstrating the value or benefits to be derived from such investments.

1.2 STUDY OBJECTIVES

There are two objectives of this study: (1) to assess the economic impacts of Texas ports to the state and the nation, and (2) to assess the economic impacts of port growth due to increased trade associated with NAFTA.

The economic impacts of ports are measured in terms of employment, personal income, business sales, and local, state, and federal taxes.

1.3 RESEARCH APPROACH

Four tasks comprise the research approach of this study:

- *Literature review*, which consisted of a review of other port economic impact studies, a review of the literature on input-output models, a review of economic impact computer models, and a review of pertinent port statistics and data for sufficiency, availability, and suitability;

- *Synthesis* of port economic impact studies, which includes the evaluation of approaches and integration of their main features into a practicable framework for estimating the economic impacts of Texas ports;

- *Data collection*, which includes gathering information for each port regarding surface transportation, port direct employment, port capital spending and port users; and

- *Estimation* of employment, business sales, local, state, and federal taxes due ports.

1.4 ORGANIZATION OF REPORT

Chapter two presents a review of pertinent literature, along with the methodology used to estimate the economic impacts of the Texas ports on the state and nation. In chapter three, there is a detailed description of the Texas ports. Chapter four presents the estimation of employment, business sales, and taxes attributable to Texas ports, and chapter five summarizes and concludes this report.

CHAPTER 2
LITERATURE REVIEW AND METHODOLOGY

2.0 INTRODUCTION

The following sections provide a synopsis of the relevant literature that was reviewed in preparation for this study, as well as the methodology used in estimating the economic impacts of the Texas ports. Section 2.1 reviews the pertinent concepts of the Port Economic Impact Kit (PortKit) that was developed through sponsorship of the U.S. Maritime Administration. Section 2.2 provides an overview of some port studies that have employed the Port Economic Impact Kit, while Section 2.3 reviews port economic impact studies that did not utilize the Port Economic Impact Kit. Section 2.4 reviews the input-output models, upon which is based a majority of the port economic impact studies, and specifically reviews the Texas Input-Output Model, which is the basis for estimating the direct, indirect, and induced economic impacts in this study. Section 2.5 concludes this chapter and presents the methodology used for this study--a combination of the PortKit and the Texas Input-Output Model.

2.1 MARAD PORT ECONOMIC IMPACT KIT (PortKit)

The Port Economic Impact Kit (PortKit) is a computer software system, developed under the auspices of the U.S. Maritime Administration by a team of economists, financial analysts, maritime consultants, and regional economists (Temple et al., 1985). In the PortKit, economic impacts are calculated in terms of

- employment attributable to the port related economic activity,
- personal income of those employed as a result of port activity,
- business sales of firms and organizations as a result of port activity, and
- taxes collected from this port system related activity.

The PortKit also assumes a port system comprising the following activities:

- Port industry--services associated with the movement of cargo through the port under study;

- Port users--activities of exporters and importers making use of the study port; and,

- Port capital spending--new construction, expansion, or rehabilitation activities of the port under study.

The economic impacts of each of the above activities consist of direct, indirect, and induced effects, defined as follows:

- Direct effects are the initial round of spending and employment by the port industry, the port users, and the firms receiving the port capital spending;

- Indirect effects refer to the goods and services purchased by the firms producing direct effects; and

- Induced effects are the household purchases of goods and services of those employed by the direct and indirect firms.

A 30-sector regional input-output model that can calculate indirect and induced economic interactions of any U.S. county is used. In addition, standardized relationships are utilized to translate input data into direct economic activity.

The PortKit is versatile. It allows two major approaches: those using estimating procedures that are built in to the model, and those that rely on extensive surveys. The estimation-based studies do not require detailed, time-consuming, and costly surveys. This approach is based on standardized values, in terms of tons per cargo type, that permit an estimation of the economic impact. On the other hand, survey-based studies provide greater precision and detail. These type of studies are suitable for specific port facilities.

2.2 PORTKIT STUDIES

The PortKit has been used by a number of port studies. For example, the PortKit has been used in estimating the economic impacts of: the Port of Brownsville (Hardebeck et al., 1994), the Port of Long Beach, CA (Port of Long Beach, 1995), the Ports of North Carolina (Shoesmith, 1995), and the Ports of South Carolina (South Carolina State Port Authority, 1995). Table 2.1 presents a summary of the findings of these port studies.

There is a definite positive correlation with the amount of tonnage going through a port and the magnitude of the impact; however, this is not a perfect correlation. Notice that although the ports of North Carolina handled less than one-half of the tons handled by the ports of South

Carolina, the magnitude of the impacts in employment, personal income, and business revenue were higher than those of South Carolina. This is primarily due to the type of cargo being handled, and the labor-intensive characteristics of the port industries accessing the port.

Table 2.1 Results of Port Studies Using PortKit

Port	Study Year	Cargo Tons (Millions)	Employment (000s)	Personal Income ($ Millions)	Business Revenue ($ Millions)	State & Local Taxes ($ Millions)
Brownsville, TX	1993	1.7	4.2	60.3	242.9	2.6
Long Beach, CA	1994	56.0	260.0	6,700.0	27,200.0	Not Reported
North Carolina	1994	4.5	78.4	1,900.0	10,800.0	258.1
South Carolina	1994	9.5	78.0	2,200.0	8,900.0	257.2

2.3 NON-PORTKIT STUDIES

Ryan (1996) used an approach similar to that used in the PortKit mode to estimate the economic contribution of the ports and maritime industry to the Louisiana economy. Information about port-related firms was gathered by surveying state firms, in which case the recipients were queried about employment and sales. From these responses and the use of supplementary sources such as the Louisiana Department of Labor and the U.S. Bureau of Economic Analysis, estimates on the total amount of spending and income generated from activities of the ports were made.

The port industry was defined as those firms that are located in Louisiana due to the ports. These were identified as large steamship companies; firms providing longshoreman services; railroads, tugboat, barge, and trucking companies that ship the goods to and from the port; freight forwarders; law firms that hire maritime attorneys; insurance companies that write maritime insurance; and various government agencies that support the movement of cargo through the ports. Port users were defined as those firms consisting primarily of importers and exporters that utilize the port activities.

Using the regional multipliers of the RIMS II Input-Output Model, the study found that while the ports of Louisiana moved nearly 340 million tons of cargo in 1994, the economic impacts on the state of Louisiana were significant.

- Total economic output related to port industry and port users was $21.9 billion.

- Personal earnings related to the port industry and the port users was $3.8 billion or 4.7% of the entire personal income of the state.

- Employment related to the port industry and the port users was 178,581 or 10% of the jobs within the state.

- Total local and state taxes due to Louisiana ports and related activities was $301.1 million.

- Louisiana ports and related activities contributed 21% of Louisiana's Gross State Product.

Martin Associates[3] (1995a, b) developed economic impact studies for the ports of Houston and Corpus Christi. They are one of the few researchers that do not primarily use input-output models to estimate multiplier impacts for port economic impact studies. This group does estimate the indirect and induced impacts of employment; however, only the estimates at the retail level and wholesale level for household spending is used, and only first round effects are estimated for the indirect impacts. For personal income impacts, Martin Associates does use multipliers from regional input-output models; however, only direct impacts are estimated for business revenues.

State and local tax impacts are based on per employee tax burdens, which are developed at the county, local, and state jurisdiction levels. These were developed from State Comptroller's Office data.

The key to their estimates is based on the extensive interviews and surveys that they engage in. For example, for the Houston study 840 firms were interviewed and surveyed, while 100 firms were interviewed for the Corpus Christi study. Other data sources include:

- "The Journal of Commerce", Transportation Telephone Tickler,
- directories of the port under study, and
- internal customer and tenant lists of the port under study.

Since Martin Associates uses only first and second round spending estimates, their estimates tend to be more conservative in magnitude than port economic impact studies employing the PortKit.

[3] Martin Associates also does business as Martin O'Connor Associates.

2.4 INPUT-OUTPUT MODELS

All free-market economies comprise business firms, public and private organizations, and individuals, each engaging in producing and consuming activities. For example, a trucking company provides the service of moving goods from one geographic location to another. In the process of this type of production, the trucking company consumes fuel, oil, tires, and the truck itself (i.e., wear and tear on the truck in which case the truck would have to be eventually replaced). The trucking company must also pay for rent and insurance, utilities, and communication equipment. The trucking company also purchases the services of drivers, dispatchers, marketers, administrators, mechanics, and other personnel. In turn, the industries that supply the goods must pay their employees, rent, insurance, and replenish their inventories. The trucking company employees and the employees of the supplying firms must each pay businesses engaged in the production of food, housing, clothing, heating, et cetera.

Input-output models describe these flows of goods and services between industries comprising the economy. They can be thought of as an accounting statement of the dollar value of transactions among the sectors of the economy the model represents. The economy under study can be classified into homogeneous sectors, on the basis of service provided, product made, or function performed. The input-output model thus summarizes the transactions from industrial sector to industrial sector, including the sale of finished goods and services to meet final user demand, sales of raw materials and partially finished goods to intermediate users, sales to customers outside the economy modeled, payments of wages to labor, payments of taxes to government, payment for imports, dividend payments for the use of capital, and depreciation allowances to recover costs of capital goods used in production (Grubb and Lesso, 1974).

Thus, input-output models are a matrix of consuming industries (columns) and producing industries (rows). In each column of the matrix, the proportion of purchases made by a particular industry from each industry in the economy is represented. Each row of the matrix shows the proportion of sales of the various products services (outputs) to the consuming industries. Table 2.2 illustrates this structure. For example, out of every dollar of output by Sector C, \$0.04 is purchased from Sector A, \$0.24 from Sector B, \$0.32 from Sector C, \$0.08 from Sector D, \$0.04 from Sector E, and \$0.28 from Sector F.

The basic input-output model can be mathematically expressed as

$$X= (I-A)Y \qquad [1]$$

where:

X = vector of each sector's total value of output

I	=	identity matrix
A	=	matrix of direct requirement coefficients, i.e., Table 2.2
Y	=	vector of final demand

Table 2.2 Example of Direct Requirements

	Purchasing Sector:					
Supplying Sector:	A	B	C	D	E	F
A	0.200	0.600	0.040	0.080	0.200	0.240
B	0.200	0.160	0.240	0.040	0.120	0.320
C	0.280	0.080	0.320	0.040	0.200	0.120
D	0.080	0.040	0.080	0.320	0.280	0.000
E	0.160	0.000	0.040	0.280	0.120	0.080
F	0.080	0.120	0.280	0.240	0.080	0.240
Total outputs	1.000	1.000	1.000	1.000	1.000	1.000

As in Table 2.2, each column of the matrix shows the dollar value of purchases made from each sector of the economy per dollar of output by another sector. The Y vector contains values for each sector and measures that sector's total sales to final demand. From this model, analysts estimate the final demand, employment, and income multipliers.

Table 2.3 provides an illustration of final demand output multipliers. For example,

Table 2.3 Example of Direct, Indirect, and Induced Requirements for Economy Described in Table 2.2

	Purchasing Sector:					
Supplying Sector:	A	B	C	D	E	F
A	1.00	0.693	0.795	0.568	0.613	0.077
B	0.312	1.181	0.313	0.057	0.122	0.431
C	0.470	0.144	1.204	0.069	0.264	0.125
D	0.121	0.061	0.105	1.045	0.522	0.000
E	0.316	0.000	0.063	0.423	1.140	0.133
F	0.108	0.225	0.396	0.264	0.124	1.405
Total	2.33	2.31	2.88	2.43	2.78	2.17

$1.00 of output from Sector C "ripples" through the economy under study and produces $0.795 from Sector A, $0.313 from Sector B, $1.204 from Sector C, $0.105 from Sector D, $0.063 from Sector E, and $0.396 from Sector F. Summing up these effects, then, $1.00 of output from Sector C produces $2.88 in direct, indirect, and induced output from the economy under study. The indirect and induced impacts are obtained by subtraction to get $1.88.

The Texas Input-Output Model was developed in 1968 and sponsored by 21 Texas agencies, the U.S. Department of Housing and Urban Development, and the Office of the Governor. Eight universities in Texas participated in the collection of data and development of the input-output model, along with the Division of Planning Coordination of the Governor's Office (Grubb and Lesso, 1974). It was updated in 1978 and 1983 by the Texas Water Development Board. The current version was updated to 1986 by the Texas Comptroller's Office.

The Texas Input-Output Model is produced in three versions. The largest version divides the Texas economy into 164 sectors. Two other versions are based on a 40-sector Texas economy and a 18 super-sector Texas economy (Texas Comptroller of Public Accounts, 1989). The Texas Input-Output Model, in addition to the transaction matrix, provides three basic types of multipliers: final demand multipliers by sector, personal income multipliers, and employment multipliers. Each set of multipliers provides the direct effect, except final demand multipliers, and the total effect. Indirect and induced effects are obtained by subtraction, as in the previous example.

2.5 METHODOLOGY

This research team used the same basic framework and methodology as the MARAD's PortKit. Three categories of port impacts were used: port industry, port users, and port capital spending. The 40-sector version of the Texas Input-Output Model was used to estimate the direct, indirect, and induced effects of employment, personal income, and business sales for each of the aforementioned categories.

For each Texas port, direct employment and wage estimates were obtained from the following sources:

- interviews and surveys of the individual port authorities,
- brief surveys of local firms listed in the Directory of Texas Manufacturers, 1996 (Brazos River Harbor Navigation District, 1996), and
- County Business Patterns, 1993 (U.S. Bureau of the Census, 1996).

Wage data from the County Business Patterns, 1993 were updated to 1994 levels using the Employers Cost Index (U.S. Department of Labor, 1996).

Employment estimates made by Martin Associates economic impact studies of the ports of Houston and Corpus Christi were used. Martin Associates conducted extremely extensive

surveys for these two ports, and not using them appeared to be injudicious and imprudent to the research team.

Local, state, and federal taxes were estimated using the coefficients found in the Texas Input-Output Model.

The economic impacts--employment, personal income, business sales, and taxes--were estimated for each port (see Appendix A) and summed to obtain the economic impacts of all the Texas ports.

CHAPTER 3
DESCRIPTION OF TEXAS PORTS

3.0 INTRODUCTION

This chapter presents profiles of the Texas ports that have commercial cargo entering or exiting their waterways. Section 3.1 provides descriptions of Texas deep-draft ports, while Section 3.2 describes the pertinent shallow-draft ports of Texas.

3.1 DEEP-DRAFT PORTS

The twelve deep-draft ports of Texas are all accessible to the Gulf of Mexico, and each deep-draft port significantly utilizes the Texas portion of the Gulf Intracoastal Waterway. These twelve ports handle almost 99% of the annual total commercial cargo tonnage going through all Texas ports.

The following sections describe these ports. Each section discusses the location, tonnage handled, major exports and imports, extant facilities, planned capital improvements, and inland transportation access.

3.1.1 Port of Beaumont

The Port of Beaumont is located on the Sabine-Neches Ship Channel 42 miles from the Gulf of Mexico and 84 miles east of Houston. The port was created in 1949 and is governed by a six-member board that is responsible for the policies, rules, rates, and regulations of the port. The navigation district covers approximately 150 square miles.

The facilities at the Port of Beaumont center around 6,488 feet of general cargo docks. The docks include eight general cargo berths, a 543-foot grain wharf, and one wharf with roll on / roll off capabilities. Although the port does not have a liquid-cargo dock, it offers shipside packaging and crating, and is equipped to handle containers. In addition to 36 acres of open, surfaced, storage area, the port operates a 3.5 million bushel grain elevator that is located behind the grain wharf. The port operates five transit sheds (500,000 square feet) that are located adjacent to wharves 4, 5, 6, 7, Harbor Island, and the Carroll Street Wharf. There are 6,200 feet of marginally tracked berths to expedite loading of cargoes between ships and rail cars.

The port has a mobile 220-ton capacity crane, a 60-ton capacity gantry crane able to travel 700 feet along wharves 2 and 3, and a 40-ton capacity lift machine that is used for dockside

heavy lifting and container handling. In addition to the port's cranes, there are a variety of cranes available from stevedores.

The port has a 72-foot conveyor used in the loading and unloading of bulk goods. Behind the conveyor is a large open holding area run by the Neches River Terminal. Adjacent to the terminal is a storage area for construction aggregates. Both the Neches River facility and the aggregates storage area have 48-foot conveyor stacks.

The port specializes in forest products, grains, project cargo, aggregates, bagged goods, and military cargo. Foreign aid has been one of the port's top tonnage cargoes for many years. The Port of Beaumont attained the following U.S. rankings in 1994 (U.S. Army Corps of Engineers, 1996b):

- 27th in import tonnage,
- 30th in total tonnage,
- 32nd in foreign tonnage, and
- 38th in export tonnage.

Major exports for 1994 were

- food products ($173 million),
- primary manufacturing ($62 million),
- petroleum and related products ($35 million), and
- chemical and related products ($34 million).

Major imports for the port in 1994 were

- petroleum and related products ($589 million),
- primary manufacturing ($17 million),
- crude material ($17 million),
- chemical and related products ($6 million)

The Port of Beaumont grain elevator is leased to Continental Grain in a 30-year partnership. In 1993, the elevator handled more than 23% of the grain along the Texas Gulf Coast. In 1995, the United States Army's 1314th Medium Port Command spent its first full

year headquartered at the port. In 1996, the first full shipment of iron-ores briquettes was delivered to the port. This industry has the potential to develop into a large volume business similar to the wood chip business.

In 1991, $20 million of revenue bonds financed the construction of a 400-foot Carroll Street Wharf extension. An additional transit shed was constructed behind the Harbor Island Wharf increasing storage space by 30,000 feet. The port also stabilized 1,360 feet of bank and constructed a new rail holding yard. A new administration building was also constructed.

In 1995, the port purchased the Neches Park Homes property thus completing the $20 million expansion program. Ten acres located adjacent to the port's Harbor Island Terminal will allow for extension of a rail holding yard and storage capacity.

The port, in coordination with Lanier & Associates, plans to have a master plan completed by mid-1996. The master plan study will include development of the Orange County property and expansion of port facilities to the south.

The Port of Beaumont is serviced by six railroads: Kansas City Southern, Southern Pacific, Union Pacific, Atchison, Topeka, and Santa Fe. The trackage owned by the port can accommodate 500 rail cars of which 80 can be shipside. The Main Street wharves and the Harbor Island Terminal have apron tracks for rapid loading and unloading of rail freight. All transit sheds have tracks extending into them to allow for cargo transfer between shed and rail.

The port is directly served by Main and Franklin streets, which provide access to U.S. Highway 90. Surface streets provide access to Interstate 10. U.S. Highways 69, 96, and 287 are all within port access via surface streets.

3.1.2 Port of Brownsville

Located at the end of a 17-mile channel, the Port of Brownsville is the nation's southernmost deep-water port, just minutes from the Mexican border. The Port of Brownsville was opened in 1936 and is governed by the Brownsville Navigation District (Barry, 1996).

In 1994, the port handled almost 3.4 million tons of cargo, nearly two times the previous high tonnage established the preceding year. From 1989-94, the port grew, in terms of tonnage, at a compound annual rate of over 20 percent (U.S. Army Corps of Engineers, 1996a). This is the fastest growth experienced by any Texas port for this period. The Port of Brownsville is ranked 48th in the nation in import tonnage and 93rd in total tonnage handled in the United States (U.S. Army Corps of Engineers, 1996b).

Major exports in 1994 were

- ships and boats ($63 million),

- vegetable oils ($1.6 million), and
- petroleum and related products ($0.5 million).

Major imports in 1994 were

- iron and steel bars and shapes ($492 million),
- fabricated metal products ($336 million), and
- vegetable oils ($169 million).

The port has ten deep-draft dry cargo docks, four deep-draft liquid cargo docks, two liquid cargo shallow-draft docks, and one dry cargo shallow-draft dock. The six liquid cargo docks have a storage capacity of 3.4 million barrels. Three public grain storage elevator companies are tenants of the port. The largest grain elevator has a capacity of over 3 million bushels. Also, the port owns and operates eight transit sheds totaling about 444,000 square feet in area. Another 1.25 million square feet of public warehousing is available near the docks (Boske and Harrison, 1995b).

The Port of Brownsville has, what they term, the "Nation's Busiest" Foreign Trade Zone. Additionally, the port has recently dredged the channel to a 42-foot depth and widened the turning basin from 1,000 feet to 1,200 feet.

An ambitious capital improvement project is planned. This will include adding a multi-purpose dock having a 2500 lb. per square foot live-load capacity, a $31.2 million railroad relocation project, construction of a two-span international bridge for use by both truck and rail, and a 160,000 square foot transit shed facility (Barry, 1996).

Both highway and rail modes serve the Port of Brownsville. The port has direct access to FM 511; U.S. 77/83 is about ten miles from the port. However, access to interstate highways is some 100 miles north of the port in Corpus Christi. The Brownsville Rio Grande International Railroad services the port and connects shippers and receivers with the Union Pacific, the Southern Pacific and the Ferrocariles Nationales de Mexico-the National Railway of Mexico (Boske and Harrison, 1995b).

3.1.3 Port of Corpus Christi

The Port of Corpus Christi is located in the Texas mid-coast area, 200 miles south of Houston and 150 miles north of the Mexican boarder. The Corpus Christi Ship Channel is 45 feet deep, 300 feet wide at its narrowest, and intersects with the Gulf Intracoastal Waterway. The

distance from the entrance of the channel to the port is about 20 nautical miles. Four divisions comprise the port: Harbor Island, Port Ingleside, La Quinta, and the Inner Harbor, which houses the public facilities (Port of Corpus Christi Authority, 1996a).

Over 78 million tons of cargo passed through the port in 1994, and the annual compound growth rate for the Port of Corpus Christi was over 5 percent between 1989-94, making it one of the fastest growing ports in Texas for this period (U.S. Army Corps of Engineers, 1996a). In 1994, the port attained the following rankings (U.S. Army Corps of Engineers, 1996b):

- 2nd in import tonnage in the U.S.,
- 3rd in foreign tonnage in the U.S.,
- 6th in total tonnage the U.S., and
- 19th in export tonnage the U.S.

The major exports in 1994 were

- chemicals and related products ($1.4 billion),
- petroleum and related products ($316 million),
- aluminum ore ($199 million),
- wheat, corn, and sorghum ($125 million), and
- machinery ($26 million).

The major imports in 1994 were

- petroleum and related products ($4.5 billion),
- machinery ($1297 million),
- chemicals and related products ($541 million),
- primary iron and steel products ($190 million), and
- vegetable oils ($138 million).

The port has more than 125 acres of open storage and fabrication sites, over 395,000 square feet of covered dockside storage, and over 1.4 million square feet of additional covered storage. It has heavy lift capabilities, dockside rail supplied by the Union Pacific, Southern Pacific, and the

Texas and Mexican Railway, as well as access to I-37, and U.S. 181. Specifically, the public facilities consist of the following (Port of Corpus Christi Authority, 1996a):

> • Southside General Cargo Area, which has over 220,000 square feet of open wharf area, over 217,000 square feet of shipside transit shed area, and over 750,000 square feet of near dock covered storage. In addition, it has a 250 metric ton capacity Manitowic mobile crane and two 90,000 lb. capacity lift machines. Dockside rail serves this terminal, as does a general purpose bagging facility, and a seed treating plant. Public cotton warehouses are at this location also.
>
> • Northside General Cargo Terminal has a berth capable of handling vessels up to 750 feet in length, with a 38-foot draft. It has 178,000 square foot shipside covered storage, and a 48 foot wide canopy of double rail tracks located at the rear of the Dock 9 warehouse. A RO/RO ramp design for either bow or stern ramp vessels is located there; over 120 acres of open storage is available, as is a 318 acre industrial park served by two shallow draft barge canals.
>
> • Dry Bulk Terminal has a 1500 ton per hour radial ship loader, a traveling unloading tower that can discharge cargo at rates up to 600 tons per hour, on-site dry bulk storage, and dockside rail.
>
> • Liquid Bulk Docks that consists of 11 public oil docks including three 45-foot draft docks that can accommodate 150,000 DWT tankers, and port located refineries.
>
> • Grain Terminal that has an automated, modern public grain elevator having a 5 million bushel capacity, an adjacent 45-foot draft dock, and on-site storage. High speed bagging, cleaning, and fumigating services are also available.
>
> • Dockside Pavilion, which is next to major tourist attractions, can be used for large special events, cruise ship or military ship berthing.

The port has also obtained a new traffic and cargo network that includes a harbormaster system, cargo reservation system, and automated billing system. The harbor master system automatically monitors and stores time of entry, berth assignments, pilotage requirements, tug service, line handling service, terminal usage, cargo handling services, storage tracking, time of movement, and time of departure data (Port of Corpus Christi Authority, 1996b).

A $38.3 million phased expansion program to increase bulk material capacity is planned. This investment includes constructing a public bulk pad, constructing a rail and truck unloading station, constructing a truck unloading pit and stacker, as well as constructing the structure for the new bulk dock. In addition, a dockside conveyer system will be purchased along with a 1600

ton per hour gantry crane ship unloader. Dredging to a depth of 45 feet for the new bulk material facility is also planned.

Inland transportation can be obtained via highway mode, rail mode, or water mode. Interstate 37 and U.S. 181 can be accessed at the port. Port rail service is by the Union Pacific, Southern Pacific, and the Texas and Mexican Railway. The Corpus Christi Ship Channel intersects the Gulf Intracoastal Waterway giving shippers access to the U.S. inland waterway system (Port of Corpus Christi Authority, 1996a).

3.1.4 Port of Freeport

The Port of Freeport is located approximately 60 miles due south of Houston and 3.5 miles west of the Gulf of Mexico. The port has a 400-foot wide main channel with a 45-foot depth, which cuts across the Gulf Intracoastal Waterway. The port complex consists of the public port facilities owned and operated by the Brazos River Harbor Navigation District, which was established by the Texas State Legislature in 1920s, and five private terminals operated by petrochemical and related companies (Brazos River Harbor Navigation District, 1996).

Over 17 million tons of cargo went through the port complex in 1994, one million tons of which traveled through the public port facilities. Cargo tonnage of the total port complex increased at an annual rate of almost 3% from 1989-94 (U.S. Army Corps of Engineers, 1996a), where as the public port increased its tonnage over 9% annually for the same period. The port serves Mexico, Central America, Texas, and the Midwestern United States (Brazos River Harbor Navigation District, 1996). In 1994, the Port of Freeport had the following U.S. rankings (U.S. Army Corps of Engineers, 1996b):

- 18th in import tonnage,
- 25th in foreign tonnage,
- 34th in export tonnage, and
- 36th in total tonnage.

The major exports of the port complex in 1994 were

- chemicals and related products ($774 million),
- ships and boats ($89 million),
- rice ($59 million), and

- machinery ($41 million).

The major imports in 1994 were

- petroleum and related products ($1,114 million),
- chemicals and related products ($108 million), and
- bananas ($42 million).

Facilities at the Port of Freeport consist of the following (Brazos River Harbor Navigation District, 1996):

- 7,000 acres of deep draft, shallow draft and highway frontage available for industrial development;
- four general cargo wharves with minimum depths of 36 feet;
- 641,000 square feet of transit shed area;
- 107,100 square foot berthing area located in the upper Turning Basin, dredged to a depth of 60 feet and used as a major staging site for semisubmersible and tension-leg off-shore platforms; and
- site location for Foreign Trade Zone No. 149.

A $90 million project to widen the Freeport Harbor channel to 400 feet and deepen it to 45 feet is nearing completion (Reixach, 1996). The cost of this project was shared with the U.S. Army Corps of Engineers.

Intermodal access to and from the Port of Freeport is supported by eight trucking firms, four barge lines utilizing the Gulf Intracoastal Waterway, and one railroad, the Union Pacific Railroad. The port has direct access to FM 1495, which connects to State Highways 36 and 288 that lead to the Houston (Boske and Harrison, 1995b).

3.1.5 Port of Galveston

The Port of Galveston is the oldest commercial enterprise in Texas as well as the oldest official port in Texas. Starting in 1825, it was designated by an act of the Congress of Mexico as a provisional port and customs entry point, and it remained the principal port of Texas from 1836 to 1916 when the Houston Ship Channel was completed. As the principal port of Texas, the Port

of Galveston enabled the city of Galveston to be the commercial, banking, cultural center, and largest city of Texas until 1885.

The Port of Galveston complex consists of the public facilities owned and operated by the city of Galveston known as the Galveston Wharves, as well as the private facilities located along the Galveston channel. The Galveston Wharves are located on Galveston Island, which is about 50 miles south of Houston and 2 miles off the Texas Coast in the Gulf of Mexico. These facilities are on the north end of Galveston Island, on the adjacent Pelican Island, and are 9.3 miles from the open sea, which allows shippers to be at sea within 30 minutes (Galveston Wharves, 1996).

Between 10 and 12 million tons yearly pass through the Port of Galveston. In 1994, the port attained the following rankings (U.S. Army Corps of Engineers, 1996b):

- 28th in export tonnage in the U.S.,
- 37th in foreign tonnage in the U.S.,
- 40th in import tonnage in the U.S., and
- 53rd in total tonnage in the U.S.

In 1994, the Port of Galveston's major exports were

- machinery ($326 million),
- grain ($218 million),
- chemicals and related products ($197 million),
- petroleum and petroleum products ($39 million), and
- primary non-ferrous material ($37 million).

For 1994, the port's major imports were

- machinery ($311 million),
- petroleum and petroleum products ($275 million),
- bananas ($68 million),
- alcoholic beverages ($44 million), and
- chemicals and related products ($29 million).

The Port of Galveston has 30 piers, wharves, and docks having depths that range from 33 to 42 feet. Break-bulk facilities comprise 20 berths having approximately 1.8 million square feet of warehouse space. Ten open-dock ship berths with more than 3 million square feet of paved area are available for heavy lift and all-weather cargo. And, the Port of Galveston is the site for Foreign Trade Zone No. 36.

The Pier 10 container terminal is a two-berth dock that is 1,346 feet long with a depth of 40 feet. It consists of 55 acres of open, paved, lighted storage space, two rail yards, and has four container cranes that can handle containers of up to 40 feet in length at rates of about 25-on and 25-off per hour. An all-weather, six lane interchange station and truck scale are available at the container truck entrance. The container terminal also has on-terminal rail facilities for rail-to-ship intermodal transfer. Additionally, a 40-ton rubber-tired traveling gantry crane and ten 40-ton lift trucks with adjustable 20/40-foot container spread attachments are available for cargo transfer from both rail cars and trucks, as well as storage.

Pier 16/18 is a two-berth import banana terminal. It has 59,750 square feet of refrigerated storage, over eight paved acres for truck staging and parking, 40 truck loading spots, and a truck scale. Del Monte Fresh Fruit Co. of Guatemala and Turbana Corporation of Colombia use this terminal.

Tourist and leisure activities are located on Piers 19, 21-23, and 25. Pier 19 berths small boats, three fish houses, and a restaurant. Piers 21-23 offer 7.3 acres of shops, restaurants, art galleries, a bed-and-breakfast style inn, a national historic landmark, and the Texas Seaport Museum; all are located where banana boasts and cargo ships once docked in the late 1800s. Lastly, Pier 25 is home to a cruise ship terminal that occupies 26,000 square feet of the second floor of the historic Mallory Lines Building. From this terminal, tourists can go on extended cruises to foreign destinations.

Pier 27 is a bagging and bag-handling terminal developed by ABT Management, Incorporated. It will have automated bagging, rail car unloading, warehousing, and ship loading operations.

Export grain elevators are located on Piers 28 and 30-32. Pier 28 has an 850-foot loading berth with a 40 foot depth and houses the Port of Galveston operated export grain elevator that has a 5.2 million bushel storage capacity. Also available for grain handling are rail unloading facilities, a rail yard, truck scale and truck unloading facilities. Farmland Industries leases the grain facilities on Piers 30-32, which has grain handling and loading equipment, 3 million bushel storage, rail tracks, rail car and truck unloading facilities, a warehouse, ship facilities, and a 1,000 foot loading berth with a depth of 40 feet.

Pier 24 is a marine construction facility operated by Galveston Marine Services. It can service vessels and offshore rigs and has one ship berth with 5 acres of land and a 44,000 square foot warehouse.

Pier 35 is a bulk, raw-sugar terminal leased to Imperial-Holly Corporation. It has a 642-foot berth and a 30,000 ton storage warehouse served by two gantry cranes.

Specialty cargoes such as automobiles, agricultural, and construction equipment are handled by Wallenius Lines who operate the Pier 37 vehicle transportation terminal. It has 8 acres of marshaling area and 75,000 square foot warehouse served by both truck and rail.

Pelican Island is the location for a bulk liquid terminal leased to Galveston Terminals, Inc., who supply bunker and diesel fuel to deep-draft vessels, ocean-going and intracoastal barges, and a marine repair facility, operated by PMB/Bechtel, which comprises nine ship berths and 1,340,000 square feet of warehouse space.

The Port of Galveston has access to four railroads via the Galveston Railroad, L.P., which operates the port authority's terminal railway system. It provides terminal connections to the Atchison, Topeka and Santa Fe Railway Company, Burlington Northern Railroad, Southern Pacific Lines, and the Union Pacific Railroad. Trucks have access to the highway system via State Highway 275, State Highway 87, and Interstate 45 (Galveston Wharves, 1996).

3.1.6 Port of Houston

The Port of Houston comprises the public and private wharves, docks, and terminals located along the 50 mile Houston Ship Channel, which is 400 feet wide and 40 feet deep. The channel traverses Galveston Bay from Bolivar Road to Morgan's Point, then turns up the San Jacinto River to the Buffalo Bayou mouth at Lynchburg, and runs from Buffalo Bayou to the Turning Basin. This incorporates the Bayport Ship Channel, Greens Bayou, and Carpenters Bayou.

The Port of Houston Authority (PHA) was established in 1909 by the voters of Harris County as the Houston County Houston Ship Channel Navigation District. It's current name--Port of Houston Authority--was designated in 1971 by the Texas Legislature, which expanded its powers for fire and safety protection along the Houston Ship Channel. A board of seven commissioners, appointed by local government officials serving the Houston Ship Channel community, govern the PHA (Boske and Harrison, 1995b).

The Port of Houston holds a number of distinctions (Kornegay, 1996; U.S. Army Corps of Engineers, 1996 b) including the following:

- ranked 1st in the U.S. in petrochemical tonnage,

- ranked 2nd in the U.S. in foreign tonnage,
- ranked 2nd in the U.S. in total tonnage,
- ranked 8th in the world in tonnage,
- ranked 10th in the U.S. in containers handled,
- over $33 billion in goods moved in foreign trade,
- over 5,000 vessel calls each year,
- over 50,000 barge calls each year,
- over 100 steamship lines serve 250 national and international ports, and
- over 150 countries are trading partners.

The PHA owns a massive complex: 43 general cargo wharves, six container wharves, five liquid bulk wharves and five dry bulk wharves are available for public hire. The facilities also include:

- Turning Basin, where almost 3 miles of wharves, transit sheds, and warehouses can be located along its banks;
- Houston Public Elevator, which has a 6 million bushel capacity;
- Woodhouse Terminal;
- Bulk Materials Handling Plant, a dry-bulk terminal capable of handling a wide range of bulk material;
- Fentress Bracewell Barbours Cut Container Terminal, an intermodal terminal for container, roll on-roll off vessels, and other cargo having five 1,000 feet container berths, 20 yard cranes, 10 container cranes, marshaling areas capable of handling over 21,500 TEUs, and 24 exit lanes for trucks;
- Jacintoport Terminal, a 125-acre facility having three berths, 1,835 feet of reinforced landing space, 7.5 acres of marshaling area, and a 300,000 square foot transit shed; and
- Care Terminal, a 34-acre complex with a 500-foot landing space and 46,000-square foot transit shed.

The Malcolm Baldridge Foreign Trade Zone, which includes sites throughout Harris County, is also operated by the PHA.

The Port of Houston handles between 140-150 million tons of goods annually, and has experienced an annual compound growth rate in tonnage of about 3% from 1990 to 1995 (U.S. Army Corps of Engineers, 1996a). The leading export goods on a dollar value basis in 1995 were (Summit Information Services, 1996)

- organic chemicals ($5.1 billion),
- specialized industrial machinery ($2.4 billion),
- general industrial equipment and machinery ($1.3 billion),
- plastics in primary form ($1.3 billion), and
- cereal and cereal preparations ($1.2 billion).

The leading import goods on a dollar basis in 1995 were

- petroleum and petroleum products ($4.1 billion),
- iron and steel ($ 1.3 billion),
- crude fertilizers and crude minerals ($ 1.2 billion),
- organic chemicals ($ 0.9 billion), and
- nonmetallic mineral manufactures ($ 0.6 billion).

Several projects have been earmarked to improve the port's efficiency. They are as follows:

- Expansion of Barbours Cut Terminal intermodal capability by expanding existing rail-ramp facilities and construction of 2 miles of mainline tracks;
- Addition of a sixth 1,000 foot long container berth, and 8 new yard cranes;
- Renovation of the Manchester Dock 3, with a mobile-equipment washdown facility; and
- Widening the channel from 400 to 530 feet and deepening it from 40 feet to 45 feet.

The Port of Houston is served by five railroads: Atchison, Topeka, and Santa Fe Railway; Southern Pacific Lines; Union Pacific Railroad; Burlington Northern Railroad; and Houston Belt and Terminal Railroad Company. The port has direct access to the following roadways: Navigation Street, State Highway 225, Clinton Drive, U.S. 90 Alt., and Interstates 10 and 45 (Boske and Harrison, 1995b).

3.1.7 Port of Orange

The Port of Orange is a deep-draft port located on the Sabine River Channel 42 miles from the Gulf of Mexico and 19 miles from open water via the Gulf Intracoastal Waterway. The port is 100 miles east of Houston and 45 miles west of Lake Charles, Louisiana. The Port of Orange has a channel depth of 30 feet. The port was created in 1957 and is governed by an elected board of commissioners. The Orange County Navigation and Port District has two objectives: to serve as the port authority in charge of the Port of Orange, and to serve as the industrial development authority for the county.

Port facilities include four berths with a total of 2,300 feet of docking space. Eight warehouses ranging from 27,000 to 90,000 square feet provide a total of 354,400 square feet of storage area. A grain elevator and bagging facility are located 9 miles from the port docks. In addition, there is an open surface storage area behind the Alabama Street terminal. The port is neither equipped to handle containers, nor does it have a liquid-cargo dock.

The Port of Orange specializes in agricultural bagged goods. In 1995, over 174,000 tons of cargo were shipped through the Port of Orange. Primary commodities transported through the port include bulgar wheat (75,217 tons), flour (51,526 tons), and rice (10,111 tons). Dry lentils and dry peas are also shipped by the port.

The port is currently completing a new strategic plan with Trotter and Associates.

The Port of Orange is served by the following railroads: Union Pacific, Southern Pacific Lines, Sabine River, and Northern. All warehouses have covered rail service and allow up to 60 cars to be unloaded simultaneously. The port is served directly by Alabama Street, which provides access to Interstate 10. U.S. Highways 90 and 87 are also accessible via Alabama Street.

3.1.8 Port of Port Arthur

The Port of Port Arthur is located 19 miles northwest of the Gulf of Mexico on the Sabine Neches Channel and about 70 miles east of Houston. The port complex consists of the public facilities owned and operated by the Port of Port Arthur Navigation District of Jefferson

County and the ten private terminals mainly owned by petrochemical companies (Port of Port Arthur Navigation District, 1996).

In 1994, the Port of Port Arthur complex shipped and received 45.6 million tons of cargo, of which over 41 million tons was petroleum and petroleum related. Total tonnage for the combine public and private facilities has increased at a compound rate of almost 8% from 1989-94 (U.S. Army Corps of Engineers, 1996a). In 1994, the port complex at Port Arthur attained the following U.S. rankings (U.S. Army Corps of Engineers, 1996b):

- 4th in import tonnage,
- 6th in foreign tonnage,
- 14th in total tonnage, and
- 21st in export tonnage.

The top exports in terms of value in 1994 were

- chemicals and related products ($448 million),
- petroleum and related products ($341 million),
- forest and wood products ($277 million),
- wheat ($152 million), and
- processed flour ($25 million).

The top imports in terms of value in 1994 were the following:

- petroleum and related products ($ 3.6 billion),
- iron and steel ($ 120 million),
- animal feed ($ 66 million),
- chemicals and related products ($ 24 million), and
- crude material ($ 1 million).

The Port of Port Arthur is also an international port having trading relationships with the United Kingdom, Western Europe, the Mediterranean countries, the Canary Islands, Brazil, Mexico, and the Caribbean nations.

The public port is one of the smaller ports in Texas, accounting for almost 500,000 cargo tons out of the 45 million tons of cargo moved through the total port complex. The public port has only two berths; however, in terms of berth throughput, the public port can rightfully claim that it is the "busiest two-berth port in the United States," having a berth throughput of nearly four times the national average (i.e., 250,000 tons vs. 66,000 tons). Foreign Trade Zone (FTZ) No. 116, which comprises three sites throughout the city of Port Arthur, has a 6.12 acre site located near the port's Public Ocean Terminal and Public Docks 1 and 2. The other two FTZ sites have easy access to direct water, rail, and highway facilities.

The public port's facilities consist of the following:

- 1,200 feet of berthing space with 40-foot depths,
- 194,000 square foot transit shed,
- 130,000 square feet of open surface storage area,
- Port railroad storage yard with a 140-car capacity,
- 3 railroad tracks with 70-car total capacity, and
- 100 foot x 1,200 foot apron with 800 lb. per square foot capacity.

A 75-ton gantry crane, known as "Big Arthur," offers versatile and efficient heavy lift capability and serves both berths.

The port authority plans to invest $34 million in increasing the capacity of the public port from two berths to five berths. This will increase the berthing space from 1,200 feet to over 3,000 feet, and increase the inside transit shed space to over 400,000 square feet. Opened deck storage will be increased to 200,000 square feet.

The port is served by two railroads: the Kansas City Southern Railroad and the Southern Pacific Railroad. Truck access is directly served by Houston and Proctor Streets, which provide access to SH 73, SH 69, SH 96, SH 287, and SH 87. Interstate Highway 10 can be reached via SH 87 (Port of Port Arthur Navigation District, 1996).

3.1.9 Port of Port Isabel

The San Benito Navigation District was created in 1929. The Port of Port Isabel was originally formed to serve a local refinery, but today over 25 companies make use of the ports facilities. The deep-draft port has a depth of 36 feet and connects with the Gulf Intracoastal Waterway. The port is located at the southern tip of Texas, 29 miles north of the Rio Grande and 3 miles from the Brazos-Santiago Pass.

The primary cargo docks of Port Isabel are located on the west side of the turning basin. The north cargo dock provides 546 feet of steel bulkhead and a 35 foot wide concrete paved surface. This dock can accommodate large tugs and 700-foot cargo vessels. The south cargo dock is 600 feet. The north and south cargo docks are separated by a 300-foot developed storage area. In addition to the primary facilities of the port, Port Isabel provides 1,690 feet of trawler dock, which is leased on a long-term basis.

Port Isabel leases two covered storage facilities. The main transit warehouse, adjacent to the northern cargo dock, encloses 32,000 square feet and is leased by the Southpoint Marine company. The western warehouse provides 20,000 square feet of covered area and has no adjacent wharfage. In addition, cool- and cold-storage facilities are located near the transit sheds and the main cargo dock.

Port Isabel has several fishing / shrimping and industrial customers. The port provides services to the shrimp fleets through subsidized docks. Fifteen shrimp operators with a fleet of over 160 boats operate out of the port. The Texas Pack Company, located on port property, processes nearly 40% of all Texas-caught shrimp. Lone Star Shrimp Hatchery provides larval shrimp for South Texas' Hung Shrimp Farms. The Southpoint Marine Company operates a yacht-repair and service business, which includes electronic and engine repair. Memory Cruise Lines provides six weekly cruises for tourists to Mexico and has operated out of the port since 1988. Another developing port business is an orange juice blending and packaging plant. In 1994, over 4,800 tons of concentrated orange juice was moved through the port. In 1996, a ferry will start a RO/RO operation to Honduras for the transport of concentrated orange juice.

Port Isabel is planning a $1.5 million modernization of the main cargo dock. In 1995, the District was awarded a grant from the USDA that will provide 80% of the funding required to rehabilitate and upgrade the dock. Goldston Engineering Co. was contracted to provide engineering services for the project.

The port is located 20 miles from U.S. 77 on SH 100. The port has no rail service. The closest rail connection is located several miles from the port in Los Fresnos.

3.1.10 Port of Port Lavaca-Point Comfort

The Port of Port Lavaca-Point Comfort is located in the heart of the Texas mid-coast area on the eastern shore of Lavaca Bay approximately 100 miles southwest of Houston and 200 miles north of Matamoros, Mexico. The port complex comprises the private and public terminals along the 24-mile Matagorda Ship Channel, which has operating depths of 36 feet. The public port facilities are owned and operated by the Calhoun County Navigation District and are

managed by an elected board of commissioners, a port director, and staff (Calhoun County Navigation District, 1996).

Over 7 million tons of cargo was handled by the port in 1994. From 1989-94, cargo tonnage increased at an annual compound rate of over 9% (U.S. Army Corps of Engineers, 1996a). In 1994, the Port of Port Lavaca-Point Comfort ranked as follows in U.S. tonnage:

- 32nd in import tonnage,
- 39th in foreign tonnage, and
- 67th in total tonnage.

Major exports for the port in 1994 were

- inorganic chemicals ($293 million),
- metal salts ($49 million),
- other chemical products ($39 million), and
- machinery ($14 million).

Major imports in 1994 were

- ores, slag, ash ($130 million),
- mineral fuel ($33 million),
- non-metal minerals ($10 million), and
- fertilizers ($5 million).

The public facilities of the port have undergone a major modernization and expansion. The facilities consist of

- general cargo facilities,
- liquid cargo ship terminal,
- liquid cargo barge terminal, and
- multi-purpose dock.

The General Cargo handling facilities include

- ship dock that accommodates vessels of 750 feet or less and has a draft of 36 feet,
- 25,000 square foot warehouse and transit shed,
- double shipside railroad tracks for direct discharge and loading,
- cargo handling equipment,
- open storage areas, and
- barge dock with outloading conveyor.

The Liquid Cargo Ship Terminal is a new facility and consists of a 1,100 foot pier and two ship berths with positions for 12 marine liquid loading arms. It is equipped with many safety features: pipe rack capabilities, remote control fire fighting system, closed-circuit television monitoring, hazardous materials containment system, and storm water collection system with temporary storage for contaminated storm water. The ship berths operate at 36-foot depths, but the pier was constructed so that the berths can be dredged to 45 feet with no need for modifications to the structure .

The Liquid Cargo Barge Terminal includes six barge slips and is equipped with 18 marine loading and unloading arms. It has a pipe rack capabilities on the dock and landside area. The barge berths have 14-foot operating depths and a dock height of 12 feet. This facility also has full fire fighting capabilities, curbed spill containment areas, and a storm water collection system.

The Multi-Purpose Dock can handle project cargo, heavy equipment, containers, roll-on/roll-off, and dry bulk shipments. It has a current operating depth of 16 feet, but is constructed to accommodate a 30-foot depth. It is 711 feet long with 50-ton mooring bollars along the dock face. A concrete cargo marshaling area of 22,800 square feet is located behind the bulkhead and has a live load capacity of 1,500 lbs. per square foot.

Site 1 of Foreign Trade Zone No. 155 is located at the public port. This site is composed of docks, warehouse space, and open storage areas. It is also served by the ship channel, spurs of the Point Comfort Northern Railroad, as well as highways.

Landside access to the Port of Port Lavaca-Point Comfort is by U.S. 87, FM 1593, SH 35, U.S. 77, and U.S. 59. Rail access to the port is via the Point Comfort Northern Railroad, which joins the Union Pacific 14 miles to the north and connects to the Southern Pacific some 20 miles to the west (Calhoun County Navigation District, 1996).

3.1.11 Port of Sabine Pass Harbor

The Sabine Pass Port Authority was created in 1973. The port authority does not operate in waterborne commerce, but as a marina for recreational purposes. The methodology of the U. S. Army Corps of Engineers in counting cargo tonnage involves quantifying cargo going to or from a given area of the Gulf Intracoastal Waterway. The amount of cargo going through a particular area is then attributed to the local port in that area. Due to the many local refineries surrounding the port area, all commerce tonnage is attributed to the port.

The facilities at Sabine Pass include dock space for 60 vessels that are 100 feet or shorter. Although Sabine Pass operates primarily as a marina for recreational purposes and sport fishers, in 1994 the port moved 296,000 tons of cargo through the nearby waterway. The major cargoes included petroleum and petroleum products (158,000 tons), machinery (69,000 tons), and food and farm products (35,000 tons).

3.1.12 Port of Texas City

The Port of Texas City is unique among Texas ports. It is the only port in Texas that is a totally private facility, owned and operated by the Texas City Railway Terminal Company (TCT). Founded in 1893 for the purpose of establishing a private port and railroad, TCT built a port facility, brought in industrial jobs, and established what is now known as Texas City. The port became a deep-draft facility when channel dredging was completed in 1905. Today, the port is a major petrochemical and liquid bulk distribution center for major companies such as Amoco Oil, Amoco Chemical, Sterling Chemical, and Union Carbide (Texas City Terminal Railway Company, 1996).

The port is located approximately 40 miles southeast of Houston and 2 miles northwest of open sea. It's channel has a depth of 40 feet, with authorization to deepen to 45 feet, and the harbor has been expanded to handle supertankers.

According to the U.S. Army Corps of Engineers (1996a) , over 44 million tons of cargo went through the Port of Texas City in 1994, growing at an annual compound rate of 1.4%. In the U.S., the Port of Texas City ranks as follows for 1994 (U.S. Army Corps of Engineers , 1996b):

- 8th in import tonnage,
- 14th in foreign tonnage,
- 16th in total tonnage, and

- 44th in export tonnage.

Major exports in 1994 were

- fertilizers ($160 million),
- organic compounds ($105 million),
- nitrogen function compounds ($79 million), and
- other hydrocarbons ($66 million).

Major imports in 1994 were

- petroleum and related products ($2529 million),
- acyclic hydrocarbons ($64 million), and
- alcohols ($45 million).

The port's facilities include 3.2 miles of waterfront, 43 docks (19 of which are owned by TCT), the Texas City Dike, which reduces shoaling and the concomitant channel dredging, and warehouse space of 110,000 square feet. To support a high level of productivity, the port has three MP 1500 horsepower locomotives, over 32 miles of modern trackage, and a state-of-the-art railroad track scale. Hazardous materials are handled by a reliable and conscientious port crew, who earned for the port the Texas Safety Association's Award of Honor (Texas City Terminal Railway Company, 1996).

In early 1996, the port completed a five-year $20 million modernization program. Fourteen docks were reconstructed using state-of-the-art engineering technology. This effort will also prevent dockside water pollution.

3.2 SHALLOW-DRAFT PORTS

The shallow-draft ports that have commercial cargo entering its docks and terminals are presented in this section. According to the U.S. Army Corps of Engineers (1996a), the ports of Annauhac, Fulton, Liberty, Palacious, Sweeney, and Rockport had no commercial cargo for 1994. Hence, they were excluded from this particular study. This does not mean that these ports have no economic value; they are primarily recreational facilities and analysis regarding recreational facilities was beyond the scope of this study. Also not included are the ports of Aransas Pass,

Port Aransas, and Ingleside. Their respective commercial cargo volume was included in the Corpus Christi calculations.

3.2.1 Port of Bay City

The Port of Bay City Authority has two ports under its jurisdiction: the Port of Bay City and Matagorda Harbor. The Port of Bay City is a shallow-draft channel with a depth of 12 feet, located about 15 miles from the GIWW 100 miles southwest of Houston. Matagorda Harbor is located 20 miles south of Bay City on Matagorda Bay. It was opened in 1990 and has a depth of 15 feet.

The Port of Bay City has only one major customer utilizing its public facilities. Way Energy imports petroleum, which it pumps directly from barges to storage tanks located near the port. Matagorda Harbor is primarily a recreational facility and is used for boating and fishing. The Port of Bay City Authority is concentrating on the harbor for its economic development efforts and is currently expanding the facilities. A recreational vehicle (RV) park is currently under construction, and plans are underway to continually add new boat slips to the 120 that are presently in place (Boske and Harrison, 1995b).

3.2.2 Port of Harlingen

The Port of Harlingen is a shallow-draft port located along the Arroyo Colorado River, four miles east of the City of Harlingen and 25 miles west of mile marker 646 on the Gulf Intracoastal Waterway. The port has a channel depth of 12 feet and a width of 125 feet. The Port of Harlingen Authority was created in 1927 and became operational in 1954. The port is operated by three commissioners.

The Port of Harlingen Authority operates a 650-ft concrete general dry cargo wharf, a 100-ft dry-bulk wharf and five wharves measuring 50 ft by 25 ft near the turning basin. The port also manages 234 open storage areas.

In 1994, 335 barges transported over 870,000 tons of commerce through the Port of Harlingen. The primary commodities transported through the port include petroleum and petroleum products (580,954 tons), sugar (146,043 tons), sand and cement (66,591 tons).

Cotton, cottonseed, and liquid and dry fertilizer are also transported via barge through the port. During the 1994 fiscal year, the port had charges for sales and services to Diamond Shamrock and the Rio Grande Valley Sugar Cooperative that totaled 50% and 26% of the operating revenues, respectively.

The Port of Harlingen estimates that nearly $4 million in capital expenses will be needed for port improvements during the next 5 years. In 1995, the port spent $1.3 million to restore a general purpose cargo dock. The port is also planning on replacing several dock cranes.

The Port of Harlingen Authority is served primarily by the Southern Pacific Railroad Company and the Sunbelt Trucking Company. The port has direct highway access to FM 106 and access to U.S. 77.

3.2.3 Port of Port Mansfield

The Port of Port Mansfield is a shallow-draft port located along the Gulf Intracoastal Waterway in southern Texas, 20 miles east of Raymondville. Initially the port was dependent on the offshore drilling industry with some 60 to 70 drilling rigs located off the port. Today, recreation is the primary industry of the port. In 1995, the small-craft basin was 80% leased while the industrial basin was 80% vacant. In 1948, the Willacy County Navigation District was created. Port Mansfield operates as a town or city with the navigation board functioning as the town's governing body. Decisions regarding the operation and improvements of the port are made by the Board of Directors. Port Mansfield currently leases residential property to roughly 450 residents of Port Mansfield.

Port Mansfield is a 16-foot deep shallow-draft port. The industrial dock space is 1,500 ft by 400 ft. The marina has a total of 144 covered and open boat stalls.

The industrial basin currently has one customer, M.I. Drilling Fluids. Approximately 20,000 tons of ferox drilling mud is loaded on barges at the port and shipped throughout the Rio Grande Valley and Mexico. The primary users of the marina are sport fishers.

A port master plan is being completed at this time. The plan is designed to attract a market of recreational users. Extensive renovation of Port Mansfield's public airfield and the development of a golf course are also being considered as a means of improving the recreational facilities of the area and attracting tourists.

The port has no rail service. It is located 20 miles from U.S. 77 on SH 186.

3.2.4 Channel to Victoria

The Victoria Barge Canal extends 36 miles from the Gulf Intracoastal Waterway in San Antonio Bay to a point about 15 miles from Victoria. It is utilized by the oil and gas petrochemical industries, which are the region's main industries. The canal's biggest customers include Fordyce Sand/Gravel, Precon Structures, and Willard Fertilizer. Commodities moved on

the canal are primarily sand and gravel, petrochemical products, and industrial chemicals. In 1994, 3.9 million tons of cargo went through the canal.

In an effort to increase the canal's utilization and marketability, plans are currently underway to widen and deepen the canal. The $32.5 million project will expand the canal's dimensions from 9 feet deep and 100 feet wide to 12 feet deep and 125 feet wide. This expansion will extend the canal's dimensions equivalent to the Gulf Intracoastal Waterway's dimensions. This project is expected to be completed in 1998 (Boske and Harrison, 1995b).

CHAPTER 4
ECONOMIC IMPACTS OF TEXAS PORTS

4.0 INTRODUCTION

Economic impacts of the Texas ports are estimated in this chapter. Section 4.1 presents definitions of the port industry, port users, and port capital spending. Section 4.2 estimates the employment, personal income, business sales, and taxes due to Texas ports. Section 4.3 provides an estimate of these impacts on the non-coastal areas of the state, in terms of the value of goods exported and imported. In Section 4.4, the value of goods imported and exported by state of destination and state of origin are shown. Section 4.5 concludes this chapter and provides an estimate of the economic impacts due to NAFTA.

4.1 DEFINITIONS

The analysis of economic impacts is concerned with three groups that comprise the port system: the port industry, port users, and port capital spending. The port industry is concerned with the movement of cargo through the port. This includes those services that enable the cargo to be moved from its point of origin to the vessel or from the vessel to its destination. These services are the following:

- Inland transportation: railways, trucking firms, barge firms, or pipeline firms;
- Navigational services;
- Governmental agencies;
- Chandlers;
- Suppliers of bunkers;
- Minor ship/boat repair services;
- Stevedoring firms;
- Longshoremen;
- Equipment rental services;
- Container services;
- Terminal operators;

- Storage and warehouse services;
- Wharfage and drayage operations;
- Export packing operations;
- Agency operations;
- Freight forwarders;
- Custom house brokers;
- Crew services;
- Banking and insurance services; and
- Other professional services.

Port users, on the other hand, are not directly required to move goods through the port. They include

- shipbuilding and major repair services,
- shipping companies,
- government installations (e.g., coast guard),
- industries dependent on the port in the sense that the port's existence was a major factor in the firms location decision.

Thus, enterprises that are physically located at the port would thus qualify. For example, export-oriented shippers located within the port study area such as wood products industries, agricultural product industries, coal and other mineral products, and manufacturing industries would qualify as port users. Importers such as petroleum refiners and others whose economic activity is closely tied to the port would qualify as well; however, consumer goods importers such as department store chains are not dependent industries because they are likely to have a national distribution system, and not be located within the port county due to the port.

Port capital spending is primarily concerned with new port construction, enlargement, or rehabilitation projects, all of which would involve local area construction firms and their employees who work on the various port-related projects.

4.2 ECONOMIC IMPACTS OF TEXAS PORTS

This section provides an estimate of the total employment, personal income, business sales, local, state, and federal taxes attributable to Texas ports. These estimates are dichotomized by component of the port system (i.e., port industry, port user, port capital spending), as well as the type of effect each component contributes to the economic impact (i.e., direct, indirect, induced).

Table 4.1 shows the employment attributable to Texas ports in 1994. **Nearly 1 million (942,883) people in Texas could attribute their employment to the Texas ports.** The port industry directly contributed 29,372 jobs to Texans, and the indirect and induced effects of the port industry contributed another 23,514 for a total of over 52,000 jobs due to the port industry. Port users produced 133,343 jobs and 755,116 indirect and induced jobs, resulting in 888,459 jobs for Texas that were attributed to Texas port users, while port capital spending accounted for 880 direct jobs and 1,539 jobs in total.

Table 4.1 Employment Attributable to Texas Ports, 1994

	Direct	Indirect and Induced	Total
Port Industry	29,372	23,514	52,885
Port Users	133,343	755,116	888,459
Port Capital Spending	880	658	1,539
Totals	163,595	779,288	942,883

The 942,883 people employed **earned over $30 billion** in 1994, according to Table 4.2. This is an average of over $32,000 per year, over 20% more than the average Texan for 1994. The port industry directly earned $806.5 million, and $880.4 million was earned from jobs that were a result of indirect and induced employment. Port users employees directly earned over $5.7 billion; an additional $22.7 billion of personal income was the result of indirect and induced employment. Capital spending at the Texas ports provided construction workers $15.4 million in direct earnings; indirect and induced earnings were $19.1 million due to this activity.

Table 4.2 Personal Income (in $ Millions)
Attributable to Texas Ports, 1994

	Direct	Indirect and Induced	Total
Port Industry	806.5	880.4	1,687.0
Port Users	5,730.3	22,744.8	28,475.1
Port Capital Spending	15.4	19.1	34.5
Totals	6,552.2	23,644.3	30,196.6

Table 4.3 presents the business sales attributed to Texas ports in 1994. Direct business sales were over $68 billion. Of this amount, the port industry contributed over $2 billion, while port users and direct capital spending at Texas ports contributed $66.6 billion and $39.3 million of direct business sales, respectively. Total indirect and induced business sales from the port system was over $109 billion, and when added to the direct effects, **business sales totaled over $178 billion in 1994.**

Table 4.3 Business Sales (in $ Millions)
Attributable to Texas Ports, 1994

	Direct	Indirect and Induced	Total
Port Industry	2,176.0	4,502.6	6,678.7
Port Users	66,564.7	104,647.8	171,212.5
Port Capital Spending	39.3	90.4	129.7
Totals	68,780.0	109,240.8	178,020.9

The Texas Input-Output Model estimates Gross State Product (GSP) at 48.96% of total business sales. Hence, the **total contribution of Texas ports to the Texas GSP was $87.2 billion or 18.6% of the Texas GSP in 1994.**

Table 4.4 Local Taxes (in $ Millions)
Attributable to Texas Ports, 1994

	Direct	Indirect and Induced	Total
Port Industry	25.2	52.2	77.4
Port Users	772.3	1,214.0	1,986.3
Port Capital Spending	0.3	1.2	1.5
Totals	797.8	1,267.4	2,065.2

Table 4.4 reveals that the Texas port system contributed over $2 billion in local taxes to the coastal county economies of Texas in 1994. Almost $0.8 billion was estimated to be direct effects, and over $1.2 billion was estimated to be due to indirect and induced effects.

Table 4.5 shows that the Texas ports also contributed over $2.8 billion in state taxes; $ 1.1 billion directly and over $1.7 billion due to indirect and induced effects. Adapting data provided by the U.S. Bureau of Census[4] (1995), **the nearly $2.9 billion in state taxes attributable to Texas ports in 1994 supported approximately 18,400 state jobs in Texas at an average annual wage of almost $30,000.**

Table 4.5 State Taxes (in $ Millions) Attributable to Texas Ports, 1994

	Direct	Indirect and Induced	Total
Port Industry	35.1	72.5	107.6
Port Users	1,071.7	1,684.8	2,756.6
Port Capital Spending	0.5	1.5	2.0
Totals	1,107.3	1,758.8	2,866.2

The federal taxes attributed to Texas ports is shown in Table 4.6. The direct, indirect, and induced contributions of Texas ports were over $9 billion in federal taxes in 1994. According to the U.S. Bureau of Census (1995), $1 million of receipts supported 1.7828 federal jobs in 1994, and 7.35% of total receipts went for wages of federal employees. **Using these statistics, the federal jobs generated by the federal taxes attributed to Texas ports would have been 16,536 with a combined personal income of $681.7 million or $41,225 annual personal income per job, which is over 50% more than the average Texan earned in 1994.**

Table 4.6 Federal Taxes (in $ Millions) Attributable to Texas Ports, 1994

	Direct	Indirect and Induced	Total
Port Industry	113.4	234.6	348.0
Port Users	3,468.1	5,452.2	8,920.3
Port Capital Spending	2.0	4.9	6.8
Totals	3,583.5	5,691.7	9,275.1

[4] Approximately 24% of Texas Revenues go to wages and benefits, fringe benefits amount to about 25% of wages

In total, the **Texas ports were responsible for generating over $14 billion in local, state, and federal taxes.**

Table 4.7 presents a summary of the economic impacts of Texas ports on a tonnage basis. In 1994, the total jobs attributed to Texas ports was 2,507 per million tons. Personal income due to Texas ports amounted to $81 per ton, while business sales due to Texas port activities were $473 per ton. The total taxes were $38 per ton.

Table 4.7 Summary of Economic Impacts of Texas Ports-Tonnage Basis

Category	Total effects
Jobs per million tons:	2507
Personal income $ per ton:	81
Business sales $ per ton:	473
Federal, state, local taxes $ per ton:	38

4.3 VALUE OF TEXAS PORTS TO NON-COASTAL TEXAS

It is an extremely difficult task to gage the economic impacts, in terms of employment, personal income, business sales, and taxes, on non-coastal areas of Texas. First and foremost, the input-output multipliers do not give geographic information other than that they are applicable to the state of Texas. We can assume, with a certain amount of confidence, that the majority of the direct economic effects are within the county where the ports are located, but the indirect and induced effects may or may not include the non-coastal areas. However, we can demonstrate that the Texas ports have an economic effect on the other communities of Texas by estimating the value of goods that are imported to and from these communities, as well as naming the communities themselves.

There is a misconception among many Texans that the ports just benefit the coastal region of Texas. As Table 4.8 points out, over 30 cities located in the non-coastal regions[5] of Texas imported goods valued at almost $580 million. Dallas received over $280 million of goods via Texas ports, followed by Laredo at almost $100 million, and San Antonio at over $90 million.

Table 4.9 shows that 48 non-coastal Texas cities exported over $3.1 billion worth of goods via the Texas ports in 1995. The leading export cities were: Three Rivers with over $1.6

[5] The coastal region is defined in this report to be the county of the port plus one county west of the port.

billion, Dallas with almost $1.1 billion, Lufkin with about $55 million, and Texarkana with almost $50 million. The value of exports from non-coastal cities are over five times the value of imports.

The trade passing through Texas Ports affects 67 non-coastal cities in Texas[6] and encompasses all regions of Texas. Trade via Texas ports goes from El Paso in West Texas to Bon Wier in East Texas, as far north as Borger in the Panhandle and Wichita Falls in North Texas, to Austin in Central Texas and Laredo in South Texas. **Total trade affecting the non-coastal regions of Texas via the Texas ports in 1995 amounted to almost $3.7 billion.**

Table 4.8 Value of Goods Imported Via Texas Ports by Non-Coastal Texas Cities, 1995

Non-Coastal Texas City	Value in $Millions	Non-Coastal Texas City	Value in $Millions
Dallas	280.48	Subtotal	570.26
Laredo	99.89	Sunnyvale	1.99
San Antonio	90.22	Jacksonville	1.83
El Paso	18.88	Hempstead	1.66
Ft. Worth	14.19	Palestine	1.03
Irving	13.24	Crockett	1.00
Carrollton	11.28	Waco	0.80
Grapevine	9.50	Nacogdoches	0.48
Bellaire	7.00	Ballinger	0.35
Round Rock	5.35	Tyler	0.08
Longview	5.27	Greeneville	0.03
Austin	4.55	Center	0.01
Brownwood	4.28	Hearn	0.01
Wylie	3.52	Other cities*	0.01
Wichita Falls	2.61		
Subtotal	570.26	Total	579.82

*Bon Wier, Hamilton, Clifton, Pineland

[6] The 67 cities consist of the cities listed on Tables 4.8 and 4.9. Some cities, such as Austin, both import and export and are on both lists.

Table 4.9 Value of Goods Exported Via Texas Ports by Non-Coastal Texas Cities, 1995

Non-Coastal Texas City	Value in $Millions	Non-Coastal Texas City	Value in $Millions
Three Rivers	1631.20	Subtotal	3,071.81
Dallas	1096.30	Laredo	2.95
Lufkin	54.71	Corrigan	2.78
Texarkana	49.96	Wimberley	2.20
Plano	31.79	Richardson	2.03
Lubbock	27.89	Corsicana	1.99
Arlington	22.43	Camden	1.89
El Paso	19.99	Midlothian	1.67
Irving	17.11	New Waverly	1.48
San Antonio	16.34	Mineral Wells	1.43
Gorman	13.66	Pineland	1.39
Odessa	12.21	Shamrock	1.35
Jasper	10.98	Mason	1.19
Red Oak	8.61	Nacagdoches	1.19
Ft. Worth	7.70	Kaufman	1.15
Diboll	6.85	Monroe	1.07
Plainview	6.44	Hereford	1.05
Llano	6.35	Bon Wier	0.75
Austin	5.54	Borger, Palestine	0.67
Garland	4.80	Wichita Falls	0.67
Catarina	4.52	Palestine	0.60
Lone Star	4.34	Brady	0.56
Abilene	4.21	Gonzales	0.33
Grapevine	3.99	Kosse	0.16
Caldwell	3.89		
	3,071.81	Total	3,102.39

4.4 VALUE OF TEXAS PORTS TO THE NATION

The same approach used in Section 4.3 was employed to determine the value of Texas Ports to the nation. The Texas ports have a trade relationship with all states of the United States, except Alaska and Nebraska, as well as the District of Columbia.

The value of goods imported by states other than Texas is displayed in Table 4.10. Almost $4.2 billion of goods from Texas ports was imported by states other than Texas in 1995. Leading state importers via Texas ports were: New York, $843.8 million; California, $416.5 million; Illinois, $399.9 million; Maryland, $264.0 million; and, Connecticut, $252.3 million.

Table 4.10 Value of Goods Imported Via Texas Ports by the Nation, 1995

State	Value in $Millions	State	Value in $Millions
New York	843.8	Subtotal	4,046.0
California	416.5	Tennessee	25.0
Illinois	399.9	Oregon	23.0
Maryland	264.0	Utah	15.5
Connecticut	252.3	Virginia	12.0
Michigan	243.7	Indiana	11.3
New Jersey	242.8	Nevada	10.5
Missouri	201.3	New Mexico	10.3
Florida	192.4	Mississippi	9.3
Ohio	183.6	Delaware	7.9
Pennsylvania	152.0	Hawaii	5.1
Louisiana	109.1	Alabama	4.1
Colorado	83.0	West Virginia	3.6
Oklahoma	77.9	New Hampshire	3.3
Wisconsin	48.5	Kentucky	3.1
Massachusetts	45.9	Wyoming	2.1
Washington	45.9	Vermont	2.0
North Carolina	45.4	Iowa	1.2
Kansas	38.9	Rhode Island	0.3
South Carolina	35.2	Maine	0.2
Georgia	34.1	South Dakota	0.2
Arkansas	30.7	District of Columbia	0.1
Arizona	29.6	Idaho	0.1
Minnesota	29.5		
Subtotal	4,046.0	Total	4,196.4

The export value of goods from states other than Texas via the Texas Ports was almost $10.1 billion in 1995. The top 5 states were: New York, $1.154 billion; California, $1.139 billion; New Jersey, $962 million; Ohio, $680 million; and, Pennsylvania, $651 million. **Over $14.2 billion in total trade with states other than Texas was accomplished via the Texas ports.**

Table 4.11 Value of Goods Exported Via Texas Ports by the Nation, 1995

State	Value in $Millions	State	Value in $Millions
New York	1153.5	Subtotal	9,491.0
California	1138.5	Arizona	77.0
New Jersey	961.9	Mississippi	71.7
Ohio	679.7	District of Columbia	67.9
Pennsylvania	651.1	Indiana	64.1
Tennessee	536.1	Alabama	47.1
Illinois	514.0	Maryland	45.4
Connecticut	481.3	Nevada	43.7
Florida	468.8	Oregon	43.0
Oklahoma	403.4	Iowa	39.8
Louisiana	375.1	North Carolina	31.8
Missouri	320.5	Utah	14.4
Delaware	269.0	New Mexico	12.9
Arkansas	259.3	South Carolina	11.4
Kansas	215.7	Kentucky	10.4
Georgia	172.9	Idaho	9.7
Minnesota	156.4	Rhode Island	5.0
Washington	153.8	Hawaii	3.0
Michigan	140.2	Montana	1.3
Colorado	136.4	Wyoming	0.9
Wisconsin	133.9	North Dakota	0.7
Virginia	86.2	Maine	0.4
Massachusetts	83.6		
Subtotal	9,491.0	Total	10,092.4

4.5 ECONOMIC IMPACTS OF TEXAS PORTS DUE TO NAFTA TRADE

From 1986 to 1994, the value of U.S. exports to Mexico have grown at a compound annual rate of 17.45%, in real dollar terms; imports from Mexico have grown at a compound real annual rate of 11.33% over this same period. However, the value of trade exported to Mexico via sea and waterways is only 4.1% of total export trade. In contrast, the value of imports from Mexico by water is over three times the export rate--13.2% (Boske and Harrison, 1995a).

Table 4.12 shows the projected tonnage attributable to Mexican (NAFTA) trade at Texas ports for the years 1994-2004. As reported by Boske and Harrison (1995a), the value of Texas exports to Mexico was $17.389 million in 1992, while the value of imports from Mexico to Texas amounted to $12.838 million. In constructing Table 4.12, the following was assumed.

• Texas export and import growth rate in value replicated the U.S. rates of 17.45% and 11.33%, respectively.

• Texas export and imports percentage via water is the same as the U.S. at 4.1% and 13.1%, respectively.

• Value of export and import tonnage for Texas ports is estimated by Port of Houston experience in 1995 of $660 per export-ton and $263 per import-ton.

Table 4.12 projects that tonnage due to NAFTA will grow from 10.72 million in 1995 to 30.39 million in 2004.

Table 4.12 Tonnage at Texas Ports Due to NAFTA, 1994-2004

Year	Export Value ($Billions)	Import Value ($Billions)	Exports via Water ($Billions)	Imports via Water ($Billions)	Estimated NAFTA Total Tonnage (Millions)
1992	17.389	12.838			
1993	20	14			
1994	23	16			
1995	27	18	1	2	10.72
1996	32	20	1	3	12.03
1997	38	22	2	3	13.41
1998	45	24	2	3	14.85
1999	53	27	2	4	16.85
2000	62	30	3	4	18.92
2001	73	33	3	4	21.11
2002	86	37	4	5	23.92
2003	101	41	4	5	26.87
2004	119	46	5	6	30.49

Table 4.13 projects the economic impacts on Texas attributable to NAFTA trade via Texas ports. The table was constructed based on the tonnage data contained in Table 4.12 and on the impact per ton summary of Table 4.7. According to the table, employment attributable to NAFTA trade via Texas ports will increase from almost 27,000 in 1995 to over 76,000 in 2004. Personal income will increase from almost $900 million in 1995 to over $2.4 billion in 2004, while business sales will increase from $5.1 billion to over $14.4 billion for the same period. Total taxes will increase from over $400 million to almost $1.2 billion for the 1995-2004 period.

Table 4.13 Projected Economic Impacts of NAFTA via Texas Ports

Year	Employment	Personal Income ($Millions)	Business Sales ($Millions)	Total Taxes ($Millions)
1995	26,870	868	5,070	407
1996	30,167	975	5,692	457
1997	33,619	1,086	6,343	510
1998	37,227	1,203	7,024	564
1999	42,250	1,365	7,971	640
2000	47,429	1,532	8,949	719
2001	52,919	1,710	9,984	802
2002	59,980	1,938	11,316	909
2003	67,352	2,176	12,707	1,021
2004	76,450	2,470	14,424	1,159

CHAPTER 5
SUMMARY AND CONCLUSIONS

5.0 STATE IMPACTS

The Texas ports are a valuable economic resource for the state, as well as the nation. The Texas port system acts as an economic catalyst. Collectively, the Texas ports contribute significantly to Texas in employment, personal income, business sales, in Gross State Product (GSP), and in generating local, state, and federal taxes.

In 1994, almost one million Texans were employed due to the ports of Texas. Over 163,000 jobs were due to the direct activities of the Texas ports, while almost 780,000 jobs are due to indirect and induced expenditures. These Texan job holders earned over $30 billion dollars, or approximately $32,000 per year. This is approximately 20% higher earnings than the average Texan. The direct effects of the Texas ports on business sales exceeded $68 billion, while the indirect and induced effects added over $109 billion. In terms of Gross State Product (GSP), Texas ports contributed, directly and indirectly, almost 19% to Texas GSP. Activities related to Texas ports contributed over $2 billion in local taxes, almost $3 billion in state taxes, which supported approximately 18,400 state employees.

In addition, the economic impacts of Texas ports are felt beyond the Texas coastal area. Over 30 non-coastal Texas cities received goods valued at almost $580 million via Texas ports in 1995, while 48 non-coastal Texas cities exported over $3.1 billion via Texas ports. The total trade affecting the non-coastal areas of Texas via the Texas ports in 1995 amounted to almost $3.7 billion.

5.1 NATIONAL IMPACTS

The nation as a whole also benefits from using Texas ports. In 1995, almost $4.2 billion of imports to other states went through Texas ports. Over $10 billion of exported goods from other states came through Texas ports. Over $14.2 billion in total trade with states other than Texas was accomplished via the Texas ports in 1995.

The Texas ports also facilitate the contributions of NAFTA to the Texas economy. Via the Texas ports, NAFTA is projected to contribute over 76,000 jobs in 2004, with personal income of almost $2.5 billion, business sales of over $14 billion, and total taxes of almost $1.2 billion.

The nation benefits from the Texas ports in other ways.

- Texas ports provide efficient access to Mexican and South American markets for business firms located in other states.

- The Texas port system generates over $9 billion in federal taxes.

- Over 16,500 federal jobs are supported by federal taxes generated by the Texas port system.

- Average annual wage of federal job holders supported by Texas port federal taxes is over $41,000.

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APPENDIX A: ECONOMIC IMPACTS OF INDIVIDUAL PORTS

Port of Beaumont

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		922	987	1,909
Port Users		4,835	20,071	24,906
Construction		13	22	35
	Totals	5,770	21,080	26,850

INCOME ():		Direct	Indirect and Induced	Total
Port Industry		31.9	32.7	64.6
Port Users		219.8	787.0	1,006.8
Construction		0.3	0.4	0.7
	Totals	252.1	820.1	1,072.2

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		75.8	168.3	244.1
Port Users		1,785.4	2,917.3	4,702.7
Construction		0.9	2.1	3.0
	Totals	1,862.1	3,087.7	4,949.8

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.88	2.00	2.80
Port Users		20.71	33.80	54.60
Construction		0.01	0.00	0.00
	Totals	21.60	35.80	57.40

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1.22	2.70	3.90
Port Users		28.70	47.00	75.70
Construction		0.00	0.00	0.00
	Totals	29.92	49.70	79.60

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		3.95	8.77	12.72
Port Users		93.02	151.99	245.01
Construction		0.05	0.11	0.16
	Totals	97.02	160.87	257.89

Port of Brownsville

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		243	253	496
Port Users		2,458	2,169	4,627
Construction		49	33	82
	Totals	2,750	2,455	5,205

INCOME ($MIn):		Direct	Indirect and Induced	Total
Port Industry		5.7	6.6	12.3
Port Users		42.4	68.1	110.5
Construction		0.5	0.7	1.1
	Totals	48.6	75.3	123.9

SALES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		15.0	32.5	47.5
Port Users		163.2	326.2	489.4
Construction		1.4	3.2	4.6
	Totals	179.5	361.9	541.5

LOCAL TAXES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		0.2	0.4	0.6
Port Users		1.9	3.8	5.7
Construction		0.0	0.0	0.1
	Totals	2.1	4.2	6.4

STATE TAXES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		0.2	0.5	0.8
Port Users		2.6	5.3	7.9
Construction		0.0	0.1	0.1
	Totals	2.8	5.9	8.8

FEDERAL TAXES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		0.8	1.7	2.5
Port Users		8.5	17.0	25.5
Construction		0.1	0.2	0.2
	Totals	9.4	18.9	28.2

Port of Corpus Christi

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		2,588	1,620	4,208
Port Users		7,687	43,152	50,839
Construction		12	8	20
	Totals	10,287	44,780	55,067

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		63.7	71.6	135.3
Port Users		347.9	1,297.3	1,645.2
Construction		0.3	0.4	0.6
	Totals	411.8	1,369.3	1,781.1

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		176.2	361.9	538.1
Port Users		3,728.6	6,045.0	9,773.6
Construction		0.5	1.2	1.7
	Totals	3,905.3	6,408.1	10,313.4

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		2.0	4.2	6.2
Port Users		43.3	70.1	113.4
Construction		0.0	0.0	0.0
	Totals	45.3	74.3	119.6

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		2.8	5.8	8.7
Port Users		60.0	97.3	157.4
Construction		0.0	0.0	0.0
	Totals	62.8	103.1	166.1

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		9.2	18.9	28.0
Port Users		194.3	314.9	509.2
Construction		0.0	0.1	0.1
	Totals	203.5	333.9	537.3

Port of Freeport

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		451	517	968
Port Users		5,133	32,142	37,275
Construction		14	30	44
	Totals	5,598	32,689	38,287

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		13.2	6.9	20.1
Port Users		266.7	923.5	1,190.3
Construction		0.4	0.5	0.9
	Totals	280.3	931.0	1,211.3

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		42.7	79.5	122.2
Port Users		2,530.2	4,392.1	6,922.3
Construction		1.1	2.6	3.7
	Totals	2,574.0	4,474.2	7,048.2

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.5	0.9	1.4
Port Users		29.4	50.9	80.3
Construction		0.0	0.0	0.0
	Totals	29.9	51.8	81.7

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.7	1.3	2.0
Port Users		40.7	70.7	111.4
Construction		0.0	0.0	0.1
	Totals	41.4	72.0	113.5

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		2.2	4.1	6.4
Port Users		131.8	228.8	360.7
Construction		0.1	0.1	0.2
	Totals	134.1	233.0	367.3

Port of Galveston

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		3,241	2,350	5,591
Port Users		579	1,159	1,738
Construction		26	37	63
	Totals	3,846	3,546	7,392

INCOME ($Mln)::		Direct	Indirect and Induced	Total
Port Industry		84.9	95.6	180.4
Port Users		13.2	30.9	44.1
Construction		0.5	0.8	1.3
	Totals	98.6	127.3	225.8

SALES ($Mln)::		Direct	Indirect and Induced	Total
Port Industry		228.2	481.2	709.4
Port Users		83.5	143.5	227.1
Construction		1.6	3.7	5.3
	Totals	313.4	628.4	941.8

LOCAL TAXES ($Mln)::		Direct	Indirect and Induced	Total
Port Industry		2.6	5.6	8.2
Port Users		1.0	1.7	2.6
Construction		0.0	0.0	0.1
	Totals	3.6	7.3	10.9

STATE TAXES ($Mln)::		Direct	Indirect and Induced	Total
Port Industry		3.7	7.7	11.4
Port Users		1.3	2.3	3.7
Construction		0.0	0.1	0.1
	Totals	5.0	10.1	15.2

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		11.9	25.1	37.0
Port Users		4.4	7.5	11.8
Construction		0.1	0.2	0.3
	Totals	16.4	32.8	49.1

Port of Houston

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		17,021	12,953	29,974
Port Users		99,616	563,078	662,694
Construction		446	300	746
	Totals	117,083	576,330	693,413

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		463.8	503.3	967.0
Port Users		4,226.1	17,081.0	21,307.1
Construction		6.4	9.3	15.7
	Totals	4,696.3	17,593.6	22,289.9

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1,230.8	2,554.7	3,785.5
Port Users		50,432.9	78,193.8	128,626.8
Construction		19.1	44.0	63.2
	Totals	51,682.9	80,792.5	132,475.4

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		14.3	29.6	43.9
Port Users		585.0	907.0	1,492.1
Construction		0.2	0.5	0.7
	Totals	599.5	937.1	1,536.7

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		19.8	41.1	60.9
Port Users		812.0	1,258.9	2,070.9
Construction		0.3	0.7	1.0
	Totals	832.1	1,300.7	2,132.8

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		64.1	133.1	197.2
Port Users		2,627.6	4,073.9	6,701.5
Construction		1.0	2.3	3.3
	Totals	2,692.7	4,209.3	6,902.0

Port of Orange

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		323	225	548
Port Users		550	506	1,056
Construction		17	24	41
	Totals	890	755	1,645

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		9.1	9.5	18.6
Port Users		13.7	16.2	29.9
Construction		0.4	0.5	0.9
	Totals	23.2	26.2	49.4

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		21.8	48.7	70.5
Port Users		37.2	79.3	116.5
Construction		1.0	2.4	3.5
	Totals	60.1	130.4	190.5

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.25	0.60	0.80
Port Users		0.43	0.90	1.40
Construction		0.01	0.00	0.00
	Totals	0.70	1.50	2.20

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.35	0.80	1.10
Port Users		0.60	1.30	1.90
Construction		0.00	0.00	0.10
	Totals	0.95	2.10	3.10

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1.14	2.54	3.68
Port Users		1.94	4.13	6.07
Construction		0.05	0.13	0.18
	Totals	3.13	6.80	9.93

Port of Port Arthur

			Indirect	
Port Industry		1,931	2,231	4,162
Port Users		5,161	35,015	40,176
Construction		109	74	183
	Totals	7,201	37,320	44,521

			Indirect	
INCOME ($Mln):		Direct	and Induced	Total
Port Industry		65.1	71.0	136.1
Port Users		250.8	1,047.1	1,297.9
Construction		2.5	1.5	4.1
	Totals	318.4	1,119.6	1,438.0

			Indirect	
SALES ($Mln):		Direct	and Induced	Total
Port Industry		171.0	360.4	531.4
Port Users		3,040.8	4,853.3	7,894.1
Construction		4.7	10.8	15.5
	Totals	3,216.5	5,224.5	8,441.0

			Indirect	
LOCAL TAXES ($Mln):		Direct	and Induced	Total
Port Industry		2.0	4.2	6.2
Port Users		35.3	56.3	91.6
Construction		0.1	0.1	0.2
	Totals	37.4	60.6	98.0

			Indirect	
STATE TAXES ($Mln):		Direct	and Induced	Total
Port Industry		2.8	5.8	8.6
Port Users		49.0	78.1	127.1
Construction		0.1	0.2	0.2
	Totals	51.9	84.1	135.9

			Indirect	
FEDERAL TAXES ($Mln):		Direct	and Induced	Total
Port Industry		8.9	18.8	27.7
Port Users		158.4	252.9	411.3
Construction		0.2	0.6	0.8
	Totals	167.5	272.3	439.8

Port of Port Isabel

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		15	15	30
Port Users		149	132	281
Construction		3	2	5
	Totals	167	149	316

INCOME ($MIn):		Direct	Indirect and Induced	Total
Port Industry		0.35	0.40	0.75
Port Users		2.57	4.13	6.70
Construction		0.03	0.04	0.07
	Totals	2.9	4.6	7.5

SALES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		0.91	1.97	2.88
Port Users		9.90	19.79	29.69
Construction		0.08	0.19	0.28
	Totals	10.9	22.0	32.8

LOCAL TAXES ($MIn):	Direct	Indirect and Induced	Total
Port Industry	0.011	0.023	0.033
Port Users	0.115	0.230	0.344
Construction	0.000	0.000	0.000
	0.126	0.253	0.377

STATE TAXES ($MIn):	Direct	Indirect and Induced	Total
Port Industry	0.02	0.03	0.05
Port Users	0.16	0.32	0.48
Construction	0.00	0.00	0.00
	0.17	0.35	0.53

FEDERAL TAXES ($MIn):	Direct	Indirect and Induced	Total
Port Industry	0.05	0.10	0.15
Port Users	0.52	1.03	1.55
Construction	0.00	0.01	0.01
	0.57	1.14	1.71

Port of Port Lavaca-Pt. Comfort

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		154	138	292
Port Users		3,139	16,070	19,209
Construction		80	83	163
	Totals	3,373	16,291	19,664

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		3.6	4.9	8.5
Port Users		150.2	464.6	614.8
Construction		1.9	2.7	4.5
	Totals	155.7	472.2	627.9

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		13.4	23.9	37.3
Port Users		1,223.0	2,249.5	3,472.5
Construction		4.2	9.6	13.8
	Totals	1,240.5	2,283.1	3,523.6

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.2	0.3	0.4
Port Users		14.2	26.1	40.3
Construction		0.0	0.1	0.2
	Totals	14.4	26.5	40.9

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.2	0.4	0.6
Port Users		19.7	36.2	55.9
Construction		0.1	0.2	0.2
	Totals	20.0	36.8	56.7

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.7	1.2	1.9
Port Users		63.7	117.2	180.9
Construction		0.2	0.5	0.7
	Totals	64.6	118.9	183.5

Port of Sabine Pass

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		159	190	349
Port Users		140	442	582
Construction		6	6	12
	Totals	305	638	943

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		5.3	5.5	10.7
Port Users		4.3	13.2	17.4
Construction		0.1	0.2	0.3
	Totals	9.7	18.8	28.5

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		12.6	28.1	40.7
Port Users		34.6	61.1	95.7
Construction		0.4	1.0	1.4
	Totals	47.6	90.2	137.8

LOCAL TAXES ($Mln):	Direct	Indirect and Induced	Total
Port Industry	0.1	0.3	0.5
Port Users	0.4	0.7	1.1
Construction	0.0	0.0	0.0
	0.5	1.0	1.6

STATE TAXES ($Mln):	Direct	Indirect and Induced	Total
Port Industry	0.2	0.5	0.7
Port Users	0.6	1.0	1.5
Construction	0.0	0.0	0.0
	0.8	1.5	2.2

FEDERAL TAXES ($Mln):	Direct	Indirect and Induced	Total
Port Industry	0.7	1.5	2.1
Port Users	1.8	3.2	5.0
Construction	0.0	0.0	0.1
	2.5	4.7	7.2

Port of Texas City

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		1,803	1,586	3,389
Port Users		4,267	33,149	37,416
Construction		34	23	57
	Totals	6,104	34,758	40,862

INCOME ($MIn):		Direct	Indirect and Induced	Total
Port Industry		47.7	57.1	104.9
Port Users		214.7	995.5	1,210.2
Construction		0.7	1.0	1.7
	Totals	263.2	1,053.6	1,316.8

SALES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		147.1	284.9	432.0
Port Users		2,942.5	4,570.5	7,513.0
Construction		1.5	3.4	4.9
	Totals	3,091.0	4,858.8	7,949.8

LOCAL TAXES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		1.7	3.3	5.0
Port Users		34.1	53.0	87.2
Construction		0.0	0.0	0.1
	Totals	35.8	56.3	92.3

STATE TAXES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		2.4	4.6	7.0
Port Users		47.4	73.6	121.0
Construction		0.0	0.1	0.1
	Totals	49.8	78.3	128.1

FEDERAL TAXES ($MIn):		Direct	Indirect and Induced	Total
Port Industry		7.7	14.8	22.5
Port Users		153.3	238.1	391.4
Construction		0.1	0.2	0.3
	Totals	161.1	253.1	414.2

Port of Bay City

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		50	40	89
Port Users		225	1,274	1,499
Construction		1	1	3
	Totals	276	1,315	1,591

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1	1	3
Port Users		10	38	48
Construction		0	0	0
	Totals	11.1	39.9	51.0

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		4	8	11
Port Users		112	177	289
Construction		0	0	0
	Totals	116.1	184.4	300.4

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.0	0.1	0.1
Port Users		1.3	2.0	3.4
Construction		0.0	0.0	0.0
	Totals	1.3	2.1	3.5

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.1	0.1	0.2
Port Users		1.8	2.8	4.7
Construction		0.0	0.0	0.0
	Totals	1.9	2.9	4.9

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.2	0.4	0.6
Port Users		5.9	9.2	15.1
Construction		0.0	0.0	0.0
	Totals	6.1	9.6	15.7

Port of Harlingen

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		104	122	226
Port Users		215	373	588
Construction		19	20	39
	Totals	338	515	853

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1.9	2.0	3.8
Port Users		2.2	3.3	5.4
Construction		0.3	0.4	0.7
	Totals	4.3	5.6	9.9

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		4.5	10.1	14.6
Port Users		7.9	15.9	23.9
Construction		0.8	1.8	2.6
	Totals	13.2	27.8	41.1

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.1	0.1	0.2
Port Users		0.1	0.2	0.3
Construction		0.0	0.0	0.0
	Totals	0.2	0.3	0.5

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.1	0.2	0.2
Port Users		0.1	0.3	0.4
Construction		0.0	0.0	0.0
	Totals	0.2	0.5	0.6

FEDERAL TAXES ($Mln):	Direct	Indirect and Induced	Total
Port Industry	0.2	0.5	0.8
Port Users	0.4	0.8	1.2
Construction	0.0	0.1	0.1
	0.6	1.4	2.1

Port of Port Mansfield

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		37	21	58
Port Users		15	5	20
Construction		3	2	5
	Totals	55	28	83

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1.0	1.0	2.0
Port Users		0.2	0.4	0.6
Construction		0.0	0.1	0.1
	Totals	1.3	1.4	2.7

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		2.3	5.2	7.6
Port Users		0.9	1.7	2.7
Construction		0.1	0.3	0.4
	Totals	3.4	7.2	10.6

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.03	0.10	0.10
Port Users		0.01	0.00	0.00
Construction		0.00	0.00	0.00
	Totals	0.04	0.10	0.10

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.04	0.10	0.10
Port Users		0.00	0.00	0.00
Construction		0.00	0.00	0.00
	Totals	0.04	0.10	0.10

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.12	0.27	0.39
Port Users		0.05	0.09	0.14
Construction		0.01	0.01	0.02
	Totals	0.18	0.37	0.55

Port of Victoria

EMPLOYMENT:		Direct	Indirect and Induced	Total
Port Industry		354	284	638
Port Users		1,608	9,108	10,717
Construction		11	8	19
	Totals	1,973	9,400	11,373

INCOME ($Mln):		Direct	Indirect and Induced	Total
Port Industry		10	11	20
Port Users		69	274	343
Construction		0	0	0
	Totals	79.0	285.2	364.2

SALES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		26	54	81
Port Users		803	1,262	2,065
Construction		0	1	2
	Totals	829.6	1,317.7	2,147.3

LOCAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.3	0.6	0.9
Port Users		9.3	14.6	24.0
Construction		0.0	0.0	0.0
	Totals	9.6	15.2	24.9

STATE TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		0.4	0.9	1.3
Port Users		12.9	20.3	33.2
Construction		0.0	0.0	0.0
	Totals	13.3	21.2	34.5

FEDERAL TAXES ($Mln):		Direct	Indirect and Induced	Total
Port Industry		1.4	2.8	4.2
Port Users		41.8	65.8	107.6
Construction		0.0	0.1	0.1
	Totals	43.2	68.7	111.9

APPENDIX B: SURVEY INSTRUMENT

PORT USER SURVEY

1. Does your company either import or export raw material or finished goods through the Port of _____?

Yes_____No_____

IF YOU ANSWERED YES , PLEASE CONTINUE. IF YOU SAID NO, THERE IS NO NEED TO CONTINUE THIS SURVEY.

IN EITHER CASE, AFTER FINISHING THIS SURVEY **PLEASE FAX THIS FORM** BACK TO **FAX NUMBER: 409/845-9761**

THANK YOU.

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2. During "normal" economic conditions, **approximately what percentage** of your sales is import/export related? (If you import, **approximately what percentage** of your company's business volume was dependent on the receipt of raw materials or salable finished products?)

_____%

3. How many employees does your company have in this county? _____

4. If you could not receive/ship through the Port of _____, would your transportation costs significantly increase?

Yes_____No_____

5. Please fill out the following information:

a. Raw material or finished product shipped or received:

_____

_____

_____

b. Company name_____

If you have any questions or if you need further information, please call Mr. Zane Goff at 409/845-9958