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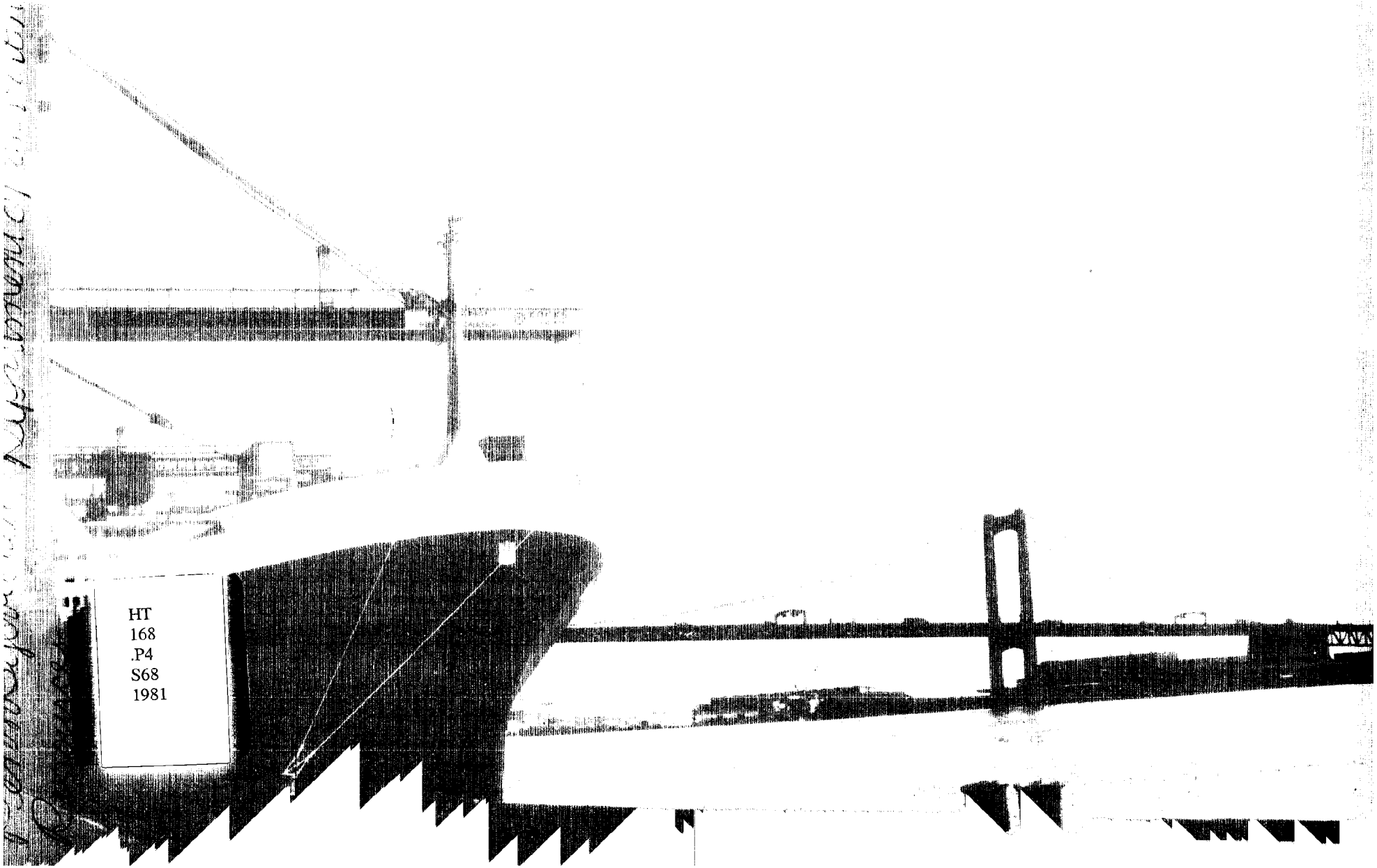
# SOUTH DELAWARE WATERFRONT DISTRICT PLAN



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# SOUTH DELAWARE WATERFRONT DISTRICT PLAN

## Philadelphia City Planning Commission

Pennsylvania, Department of Environmental Resources
HT168.P4S68 1981
#12096145

**City of Philadelphia**

William J. Green, Mayor

COLUMBUS AMERICA
HAMBURG

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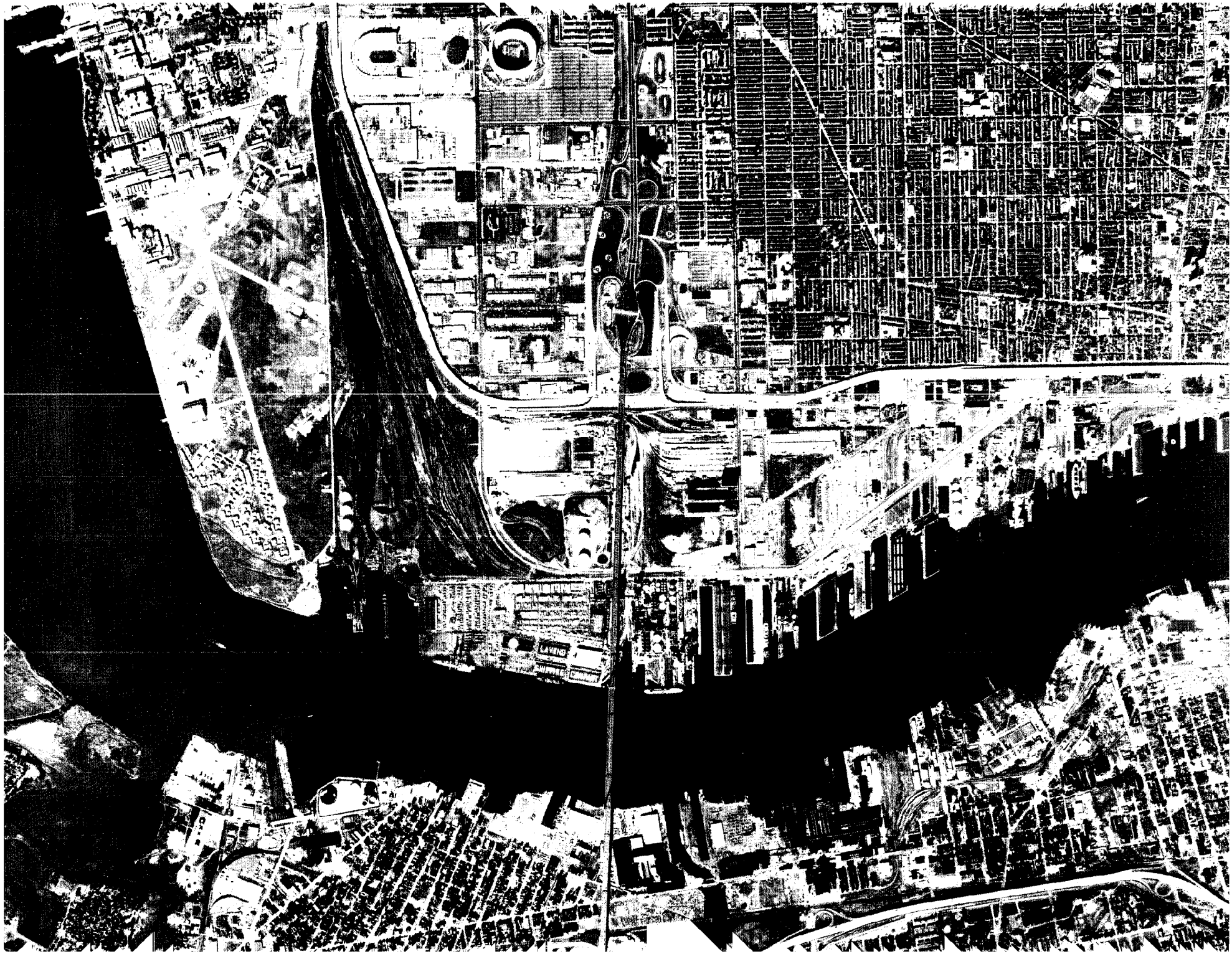


# Introduction

The Delaware and Schuylkill Rivers have shaped the urban form of Philadelphia for three centuries. These rivers have also shaped the City's economic growth by enabling Philadelphia to develop into one of the largest ports in the world, and have thus enabled the City to become a center for commerce, trade and manufacturing. Philadelphia could not have grown as it has without the Delaware and Schuylkill Rivers, and today the rivers are important to both the local economy and to the life style of Philadelphians. The rivers are an important source of employment and recreation for many residents, and the rivers themselves are a dominant feature of numerous neighborhoods.

The rivers and the waterfront constitute a major resource for the continued development of Philadelphia. Because of the need to manage this resource wisely, the Philadelphia City Planning Commission with the assistance of other agencies, groups and individuals has been preparing a comprehensive plan for the Philadelphia riverfront. This plan will influence the use of riverfront land and will also have a significant impact on the shape and form of Philadelphia for the next century. The South Delaware Waterfront District Plan is a part of this comprehensive planning effort.

## The Riverfront Plan

The Planning Commission has long been concerned about the development of the riverfront and its importance to the City. The development of Penn's Landing was a recommendation of the 1960 Comprehensive Plan and has always been regarded as essential to the future development of Center City. In 1975 the staff of the Planning Commission conducted an inventory of riverfront land and a survey of riverfront users. This study found that approximately 1000 acres of riverfront land would become available for development during the next decade and that a major percentage of the riverfront land was controlled by the City and a few major users. It further determined that, because of the port's significance to the City, it was essential to assess future port facility needs before a comprehensive riverfront plan could be prepared.

In 1978 the *Port Facilities Study* was completed. This was a joint effort of the Departments of Commerce and Finance, the Port Corporation, the Philadelphia Industrial Development Corporation and the Planning Commission. This study evaluated existing port facilities, projected future traffic through Philadelphia and made recommendations on new port facilities. The study recommended the expansion of both Packer Avenue and Tioga Marine Terminals. The study also recommended the retention and improvement of certain existing finger piers and evaluated five potential sites for a third container terminal that might be needed by the 1990s. The *Port Facilities Study* projected port needs for the next two decades and is being used to schedule capital improvements.

A year ago the Planning Commission began a comprehensive effort to develop policies and recommendations for the riverfront. The focus of this work is to balance the demand for the many uses competing for riverfront land. These include port facilities, industry, utilities, recreation, housing, retailing and transportation. It is believed that this balance can be achieved. Since decisions regarding riverfront land use have long term implications, these decisions must be carefully and completely considered.

Several goals have been established to guide the preparation of the riverfront plan. They are:

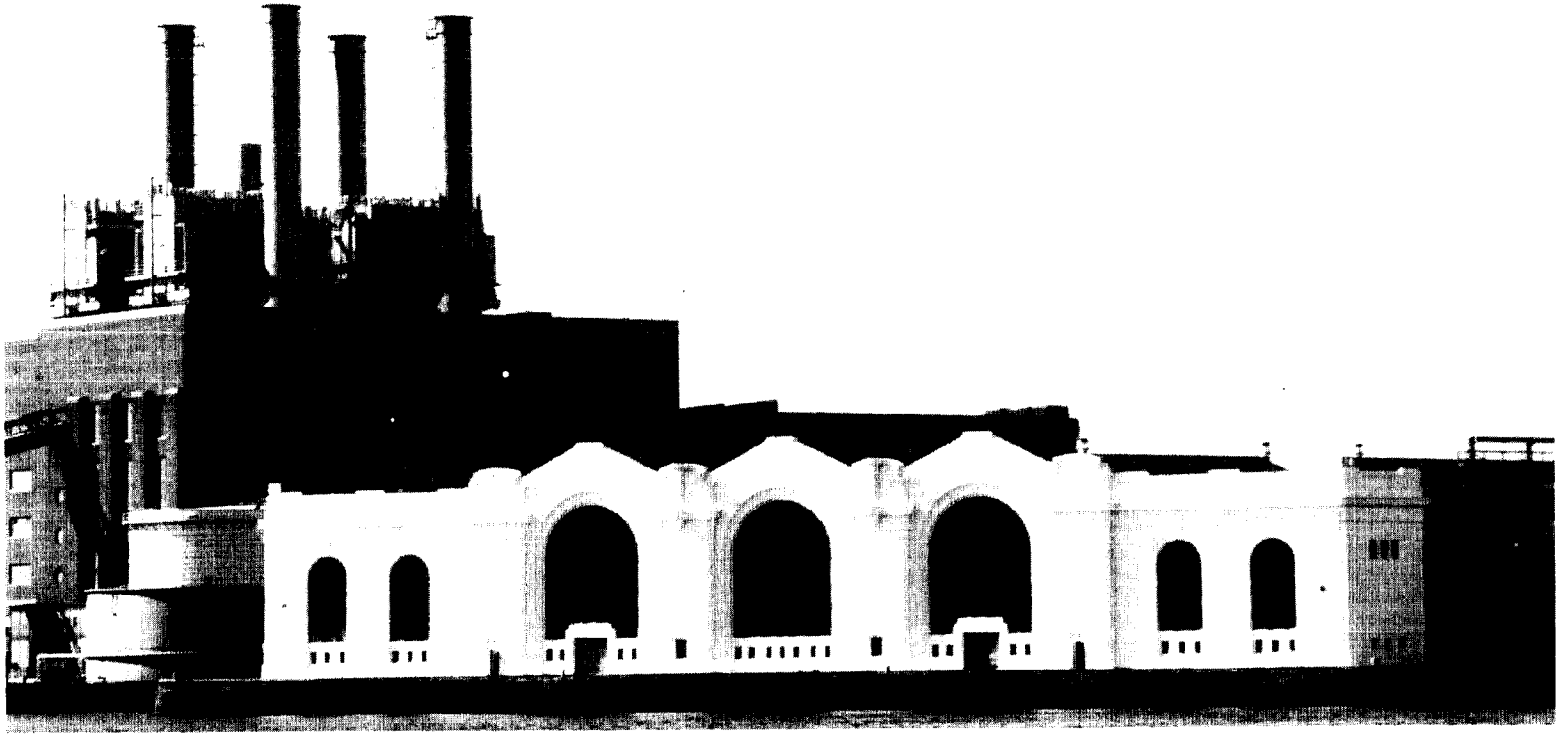
*Promote port development.* Port activity is directly or indirectly responsible for the employment of 34,000 workers and provides annual economic benefits of $1.5 billion to the local economy. The Port has shaped the economy of Philadelphia, and the maintenance of modern, competitive port facilities is essential to the continued strength of the local economy. The City must give priority to providing for and promoting the development of port and port related uses.

*Evaluate development opportunities for non-port related uses.* At one time the Delaware and Schuylkill River waterfronts were almost entirely devoted to port and port related uses.

Today, while a substantial portion of the waterfront remains in these uses, a significant amount of land is either supporting industries that no longer need to be on the river or is available for development. The riverfront plan will evaluate the opportunities along the river for non-port related uses. The City must continue to support these non-port related industries since these industries constitute a substantial part of Philadelphia's economic base. The City, through the riverfront plan, should encourage the development on the waterfront of other non-port related uses where this does not conflict with the needs of the port.

*Foster residential use and recreational access.* In the past several decades, the quality of the water in both the Schuylkill and Delaware Rivers has improved substantially and will continue to improve over time. This has heightened the demand for recreational access to the rivers and has opened up new opportunities for residential development. Where appropriate, the City should encourage both of these uses as a way to continue to support the development of alternative housing forms and to provide adequate and diverse recreational facilities.

*Enhance the aesthetic and environmental qualities of the Delaware and Schuylkill Rivers.* The rivers and their edges are among Philadelphia's most important natural resources. The City is committed to the maintenance of those river areas which continue to have environmental importance and to the restoration of environmentally degraded river areas where possible. The rivers are a dramatically aesthetic feature of Philadelphia, and the City should encourage the maintenance and enhancement of this aesthetic quality.

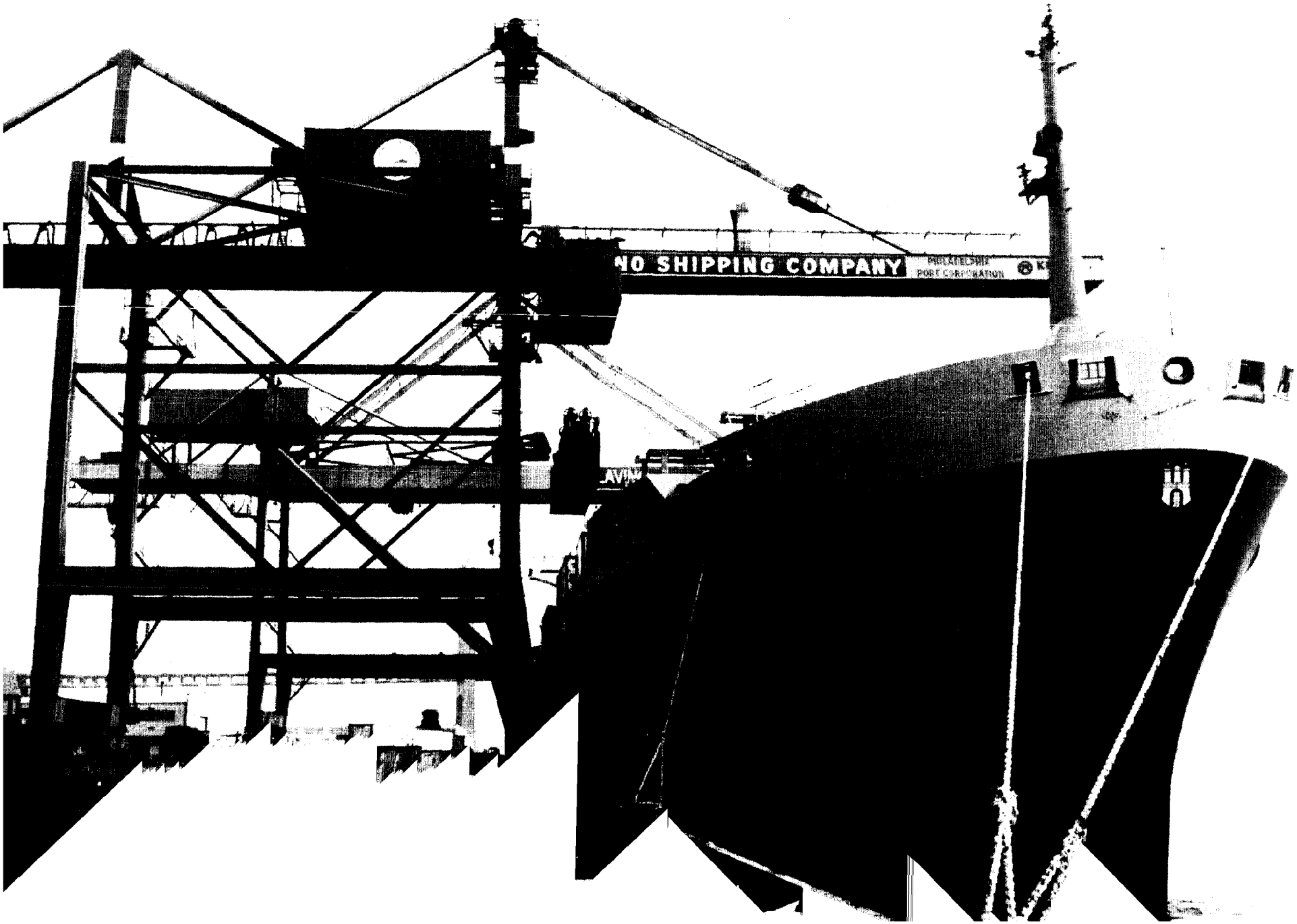


The planning process now underway for the riverfront has been proceeding on three levels. On the first of these levels, studies and functional plans are being developed to look at individual facets of the riverfront along the entire length of the Delaware and Schuylkill Rivers in Philadelphia. The *Port Facilities Study* which analyzed the City's future port needs is an example of a functional plan. Other functional plans include Riverfront Industry Analysis, Environmentally Sensitive Areas, Legal Implications for Development and Port Residential Zoning District. The second level of planning, incorporating the analysis and recommendations of the plans, are the district plans. For each of five waterfront districts, a detailed development plan will be prepared. Each plan will make recommendations on land use, zoning, urban design, transportation and other physical improvements for individual parcels of land. This report on the South Delaware Waterfront District is the first district plan to be completed. The third level of planning is directed at key sites or opportunity areas. The most important of these currently being planned for are Penn's Landing and the foot of Washington Avenue. Other plans include North Bridge, Riverwalk, Cramp Shipyard-Port Richmond Area, Ft. Mifflin-Airport Area, and 30th Street Station Area. For these sites detailed development alternatives will be evaluated in order to make specific recommendations on reuse and development.

In Table 1, the functional plans and the district plans comprising the riverfront planning effort are listed along with their scheduled completion dates. Upon completion of the functional and district plans a comprehensive plan encompassing the entire riverfront will be prepared.

## TABLE 1: RIVERFRONT PLAN

| | |
|---|---|
| **Studies and Functional Plans** | |
| Port Facilities Study | 1978 |
| Riverfront Industry Analysis | 1981 |
| Environmentally Sensitive Areas | 1981 |
| Legal Implications for Development | 1981 |
| Port Residential Zoning District | 1981 |
| **District Plans** | |
| South Delaware Waterfront | 1981 |
| Central Riverfront | 1981 |
| North Delaware Waterfront | 1982 |
| Lower Schuylkill Waterfront | 1982 |
| Upper Schuylkill Waterfront | 1982 |
| **Special Development Plans** | |
| Foot of Washington Avenue | 1981 |
| Penn's Landing | 1981 |
| North Bridge | 1981 |
| Riverwalk | 1982 |
| Cramp Shipyard — Port Richmond Area | 1982 |
| Ft. Mifflin — Airport Area | 1982 |
| 30th Street Station Area | 1982 |
| **Comprehensive Riverfront Plan** | 1982 |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# Summary

The South Delaware Waterfront District is an important center for maritime trade and industrial activity within Philadelphia. Extending from Center City to the Navy Base, the district contains a significant portion of the region's port facilities.

The Packer Avenue Marine Terminal, one of the two municipal container terminals in Philadelphia, is located here. Conrail operates the region's major coal and ore terminals at their Greenwich Yard located at the southern boundary of the South Delaware Waterfront District. The Philadelphia Port Corporation owns a number of modern finger piers in this district, providing the principal facilities in the City for the handling of break-bulk cargo.

Major industrial users in the District include Publicker Industries and the Amstar Corporation, each of which have private port facilities. Other major employers are United Parcel Service, Crown Paper Board, Brite Star, Inolex, Friel Bernheim and United Nesco. In all, over 5,100 workers are employed here.

The South Delaware Waterfront District has direct access to the region's highway system and is served by both Conrail and the Chessie System. Greenwich Rail Yard is Conrail's principal railyard in the region, and the Chessie *Piggyback* Yard on Weccacoe Avenue is the northern terminus of the entire Chessie System.

The plan for the South Delaware Waterfront District is intended to serve two purposes. First, it is to convey to the citizens of Philadelphia a vision of what the future of the district should be and second, it is to outline how this vision can be achieved. Strategically, the plan consists of a set of policies meant to guide future development in a manner that is consistent with overall City goals.

The overriding goal for the South Delaware Waterfront is to maintain and encourage maritime and other viable business activities in the district. This plan acknowledges the critical role played by the port in the economic health of the City and the region and the importance of the South Delaware Waterfront District to that role.

There are three major policies which follow directly from that primary goal:

1. Port and industrial zoning must be maintained in the area of the district south of Reed Street.
2. The resources of the City will be directed toward improving conditions in the area in order to support the retention and growth of industry and the port.
3. The City will provide direct development assistance, where it is needed, to the industrial and port-related firms locating in the South Delaware Waterfront District.

The South Delaware Waterfront District Plan includes a number of specific recommendations designed to achieve these policies.

In order to maintain and strengthen this district as a center for maritime trade, port facilities must be improved and port activity increased.

The Packer Avenue Marine Terminal should be converted entirely to container handling by removing a dockside transit shed and by installing another container crane, acquiring additional land for container storage and relocating existing break-bulk cargo handling to Piers 82 and 84.

As the enlarged container handling capacity at the Packer Avenue Marine Terminal becomes fully utilized, the feasibility of developing two new container berths at the present site of Piers 96, 98 and 100 should be considered. These berths would have to function as an annex to the Packer Avenue Marine Terminal and would probably not be needed before 1990.

Piers in poor condition should be demolished, and the City should work with the private sector to improve bulk terminal port facilities.

Increasing port activity will require a sustained effort to market the port in the region and overseas. Labor-intensive kinds of port traffic should be actively pursued. The City must continue to support development of the Coast Guard's Marine Safety Office in the South Delaware Waterfront District. Efforts to increase coal traffic through the port should be intensified.

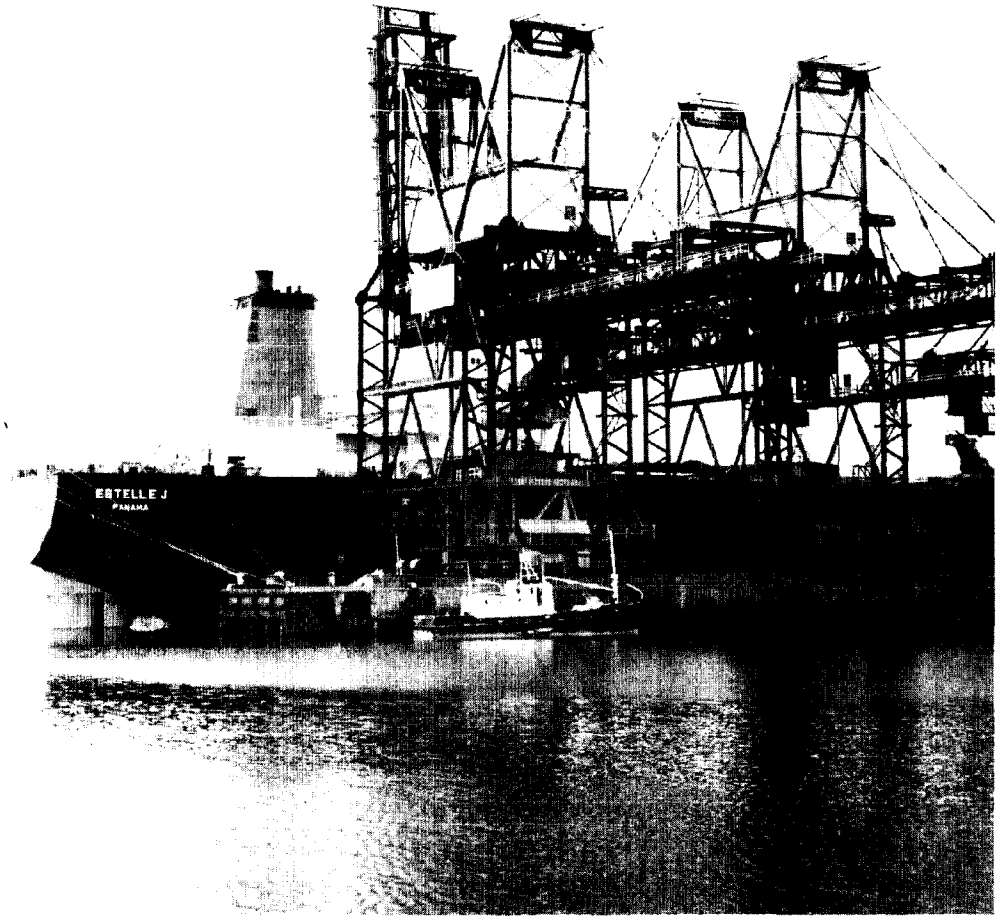
The South Delaware Waterfront District is an important center of employment and industrial activity in Philadelphia. The

City should make every effort to retain manufacturing employment, encourage firms to expand, and attract new industrial and port related development to the district. Industrial zoning south of Reed Street must be retained and development assistance made available to firms wanting to expand. Additional employee parking space should be provided, and the provision of public services should be targeted and coordinated within the South Delaware Waterfront District.

The City should seek to attract new industrial and port related development by ensuring the availability of developable land. By acquiring the Kerr-McGee site and surrounding vacant industrial properties, the City could develop a 35 acre port industrial park. A second port industrial park of 50 acres could also be developed on the present site of the Chessie System *Piggyback* facility if that use is relocated. The Chessie System is considering whether to retain this facility or to develop a new *Piggyback* yard elsewhere in Philadelphia.

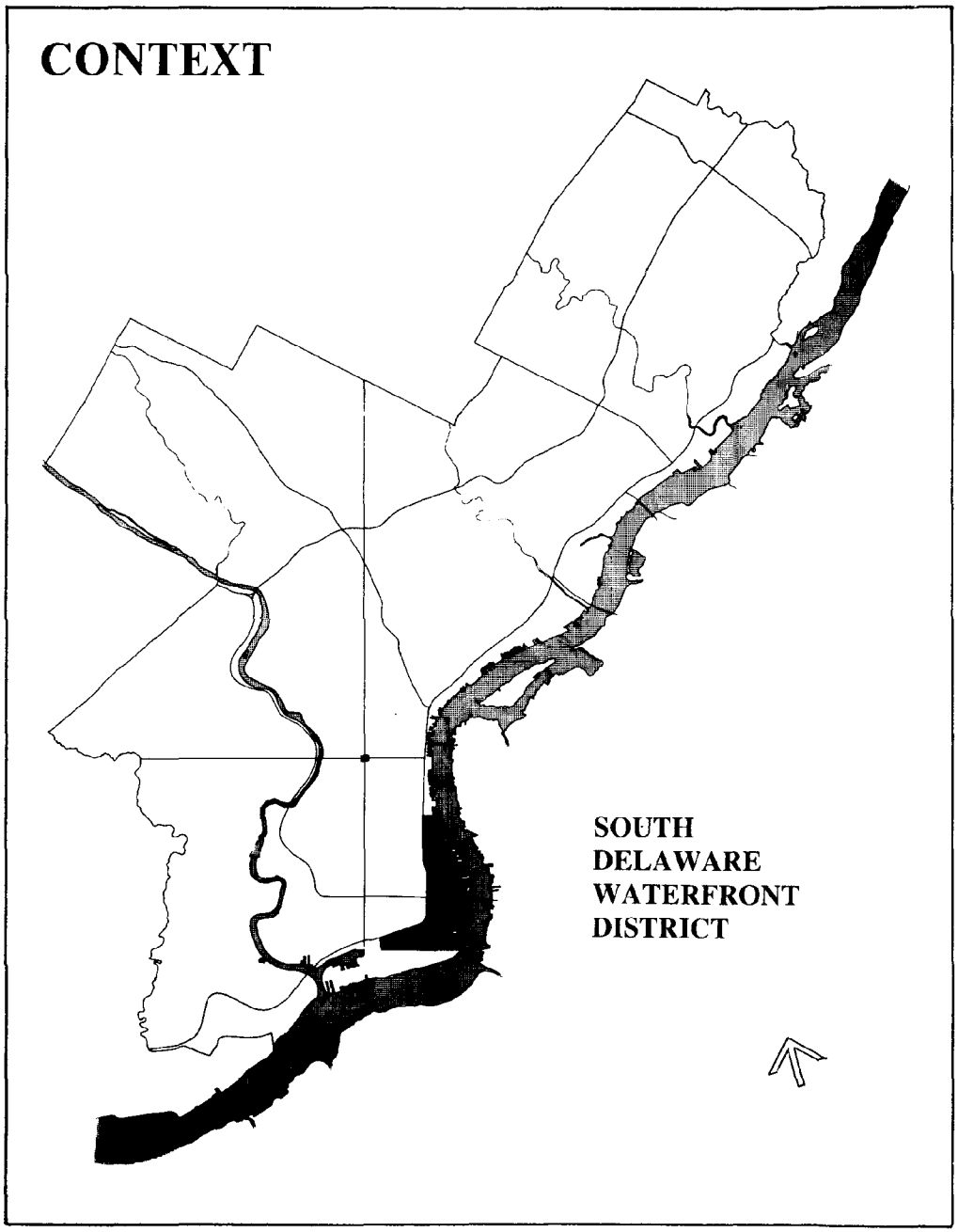
The acquisition of this site could only occur if and when the Chessie System decides to relocate this facility from the South Delaware Waterfront. Other vacant land is available in the district, and the City should actively work to support private development proposals.

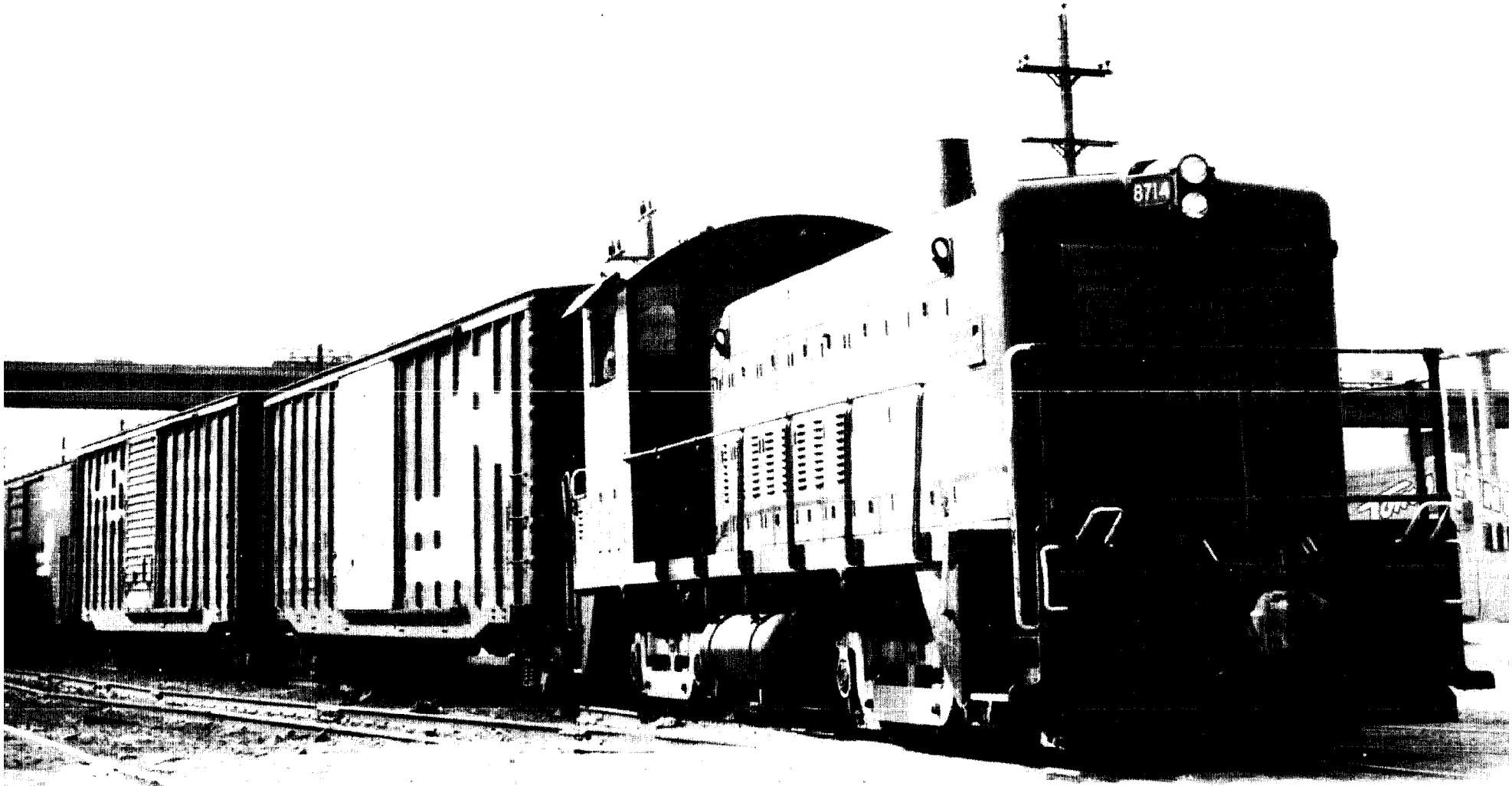
The South Delaware Waterfront District presents other opportunities for development in addition to port and industrial uses. The City should foster commercial and residential development where appropriate in the district. This opportunity exists only north of Reed Street where there is a substantial area of obsolete piers and vacant or underutilized railyards. This area can no longer be effectively used for port facilities, and



today the railyards exist only to serve the Amstar Corporation south of this area at Reed Street. The City should encourage the residential and commercial development of this area as part of the rebirth of the riverfront as a place to live and enjoy. The development of this area for these uses can and should be properly planned and carefully managed so as not to adversely impact the Amstar Corporation and other industrial and port uses in the vicinity.

The City must act to improve highway access to the South Delaware Waterfront and to improve traffic circulation within the District. Improved transportation access is essential if this district is to continue as a center of port and industrial activity. Interstate 95 must be completed and its southbound entry ramp at Morris Street opened for use. Delaware Avenue must be reconstructed and local streets repaired. Washington Avenue should be extended east of Delaware Avenue to serve new development and the Coast Guard Marine Safety Office. Finally, the City should work with the railroads to improve rail clearance and curvature limitations for high and wide cargo using the district's port facilities.

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# Existing Conditions

The South Delaware Waterfront District extends along the river's edge for approximately three miles from the northern border of the Navy Yard to Catharine Street. The district extends inland from the Delaware River to I-95 a distance of from 1¾ miles at its widest point at Greenwich Terminal to only 600 feet at its narrowest point at Catharine Street.

The South Delaware Waterfront District plays a central role in the regional port and economy. This chapter presents information on how this district has developed over time, its current land use and ownership, economic activity, transportation system and environmental conditions. It is within this framework that the development issues of the South Delaware Waterfront District can be better framed and understood.

## History of the South Delaware Waterfront

The South Delaware Waterfront District's history is unusual in that it was one of the first areas of the City to be settled, yet one of the last to be fully developed.

Historical records indicate that the earliest permanent European settlers in this area were the Swedes, who began to establish themselves here as early as the 1650s. The names of Queen, Christian and Swanson Streets here recall the gift by Sweden's Queen Christina to Sven Schute and his heirs in 1653 of the right to purchase lands from Indians in this general area. Gloria Dei (Old Swedes') Church was constructed originally as a fort in 1669 and was turned into a house of worship six years later. Hollander's Creek, a stream that once flowed through this area but which has since been channelled and covered, was named for the second governor of Sweden's colonial experiment on the Delaware.

The Swedish settlement prospered and grew under the English jurisdiction that later arrived with William Penn. In 1762, the Pennsylvania General Assembly created a municipality here, named Southwark after a suburb of London. As the population of Southwark Township expanded beyond its borders, the townships of Moyamensing and Passyunk were incorporated, and the entire area became part of the City of Philadelphia at the time of consolidation in 1854.

The southern boundary of early Philadelphia's waterfront was South Street, a few blocks north of Old Swedes' Church. To protect the waterfront from attack during the European wars of the 1740s, a fortress known as the *Association Battery* was constructed in 1748 at the foot of today's Washington Avenue. This fortress was later dismantled and the *site was turned into a shipyard which* became Philadelphia's first Navy Yard in 1800. The Navy Yard's presence stimulated the development of Southwark as a residential area for the Yard's craftsmen, mechanics and tradesmen.

In the 1830s railroad development began in Philadelphia, and in 1861 one of the principal rail lines running to the Port of Philadelphia was constructed in the bed of Washington Avenue by the Pennsylvania Railroad. The Railroad constructed wharves at the end of this line between South Street and the Navy Yard. By the Civil War the volume of cargo being transported to and from these piers had far exceeded their capacity, while Navy Yard activities had grown to a level that made the Washington Avenue site inefficient.

The City of Philadelphia acted to correct both Navy Yard and port congestion problems by providing the Navy with its present site at League Island at nominal cost, thus allowing the Navy to sell the foot of Washington Avenue site to the Railroad. The Pennsylvania Railroad developed on this site at the river's edge Piers 46, 48, 53, 55, 56 and 57 adjoining the Reed Street Rail Yard. West of Delaware Avenue they developed the

Federal Street Yard and adjoining freight house. The Railroad's presence here attracted manufacturing firms such as the McCahan Sugar Refinery and the Baugh fertilizer factory.

Throughout most of the nineteenth century, development within the South Delaware Waterfront was generally confined to the land above Moore Street. South of Moore Street was an area known as *The Neck,* a thinly settled, marshy area of meadows, truck farms, riverfront cottages and country taverns extending between the Delaware and Schuylkill Rivers. The marshy areas of *The Neck* down by Greenwich and League Islands and along Hollander Creek were well known to hunters for their duck and pheasant.

The character of this area began to change in the 1880s after the arrival of the Baltimore and Ohio Railroad. At this time the railroad was extended from the east side of the Schuylkill River into this area east along Oregon Avenue and then north to the foot of Dickinson Street via Vandalia Street. By 1913, the South Delaware Waterfront District's shoreline was occupied as far south as Packer Avenue with rail-served bulk processing and transshipment facilities.

The area at the foot of Washington Avenue was at that time the Pennsylvania Railroad's principal center for transshipping waterborne merchandise cargo, fulfilling a role similar to that of today's container terminal. South of it were two sugar refineries, a box factory and the Baugh fertilizer factory. The Baltimore & Ohio Railroad maintained a coal export terminal at the foot of Snyder Avenue, and the Pennsylvania Railroad operated an extensive bulk marine terminal and rail tie creosoting plant at the foot of Packer Avenue.

The land to the west of Delaware Avenue remained largely undeveloped at that time. Development in this area was deterred by the heavily used grade level railroad tracks crossing the district from

east to west along Oregon and Packer Avenues.

In 1913, the City of Philadelphia faced serious issues relating to South Philadelphia's future development. These included the obsolescence of the City's piers and wharves, designed for the age of sail and wood hull ships, and rail traffic congestion in increasingly populous areas. The City had already reorganized its port governance structure in 1907 to facilitate construction of modern piers. However, the Center City waterfront did not meet the space needs for cargo marshalling yards nor did it have bulkhead to pierhead distances sufficient to accommodate modern piers.

The City looked to the South Delaware Waterfront District as the logical area to develop these new piers and adjoining cargo and equipment marshalling yards.

From 1890 to 1920 the City and the railroads negotiated what are known as the South Philadelphia Agreements to resolve development problems and traffic congestion. The City acquired the B & O coal pier and lands along the riverfront extending north and south of Snyder Avenue and developed Piers 78, 80, 82 and 84 which are in active use today. The B & O was provided with lands on Greenwich Island to develop a new coal terminal. This terminal was never built, and these lands were eventually acquired by the Navy for construction of Mustin Air Field. The Pennsylvania Railroad relocated its bulk terminal from the foot of Packer Avenue south to Greenwich in 1929, building there Pier 124.

The federal government also participated in the development of the district's waterfront at this time by constructing its U.S. Army Quartermaster Piers 96, 98 and 100 beginning in 1919.

Development of the land side of Delaware Avenue in *The Neck* was slower and less intense than along the shoreline. This inland area was used by the City for refuse disposal and remained largely vacant until the 1920s. At that time, Philadelphia began to experience difficulties in the handling of the City's perishable fruit and vegetable traffic due to the increased congestion of the Dock Street market and the problems of getting this cargo from the rail yards to the market in a timely manner.

In 1927, the B & O Railroad and the Reading Railroad jointly built a refrigerated warehouse, auction house and perishable products rail terminal at the foot of Jackson Street. The Pennsylvania Railroad followed with construction of its own perishables terminal and refrigerated warehouse nearby on Oregon Avenue after the B & O's tracks had been removed from the street bed.

Construction of the City's Food Distribution Center west of this District in the late 1950s acknowledged that the Dock Street market had then become inefficient for the increasing truck traffic carrying perishable goods. The Railroad converted its terminal at the foot of Jackson Street into a trailer-on-flatcar *Piggyback* yard, and the Pennsylvania Railroad converted their terminal into a bulk chemical tank car *Flexi-Flo* transfer yard. Their refrigerated warehouses remain in use.

Considerable interior acreage within the district had been used over time for City trash disposal. One former trash dump on Pattison Avenue east of Front Street has been the site for construction to upgrade the Southeast Sewage Treatment Plant, the newest and most expensive development in the district. Other former trash dump sites along Weccacoe Avenue remain in undeveloped states.

Publicker Industries Incorporated has had a singular impact on land use in the district. At the height of its activity in the 1950's, this firm and its subsidiaries occupied more than a dozen City blocks with distilleries and warehouses and attracted barrel makers and other satellite industries to the district. Since then, many of the distillery properties west of Delaware Avenue became vacant, were demolished or were sold for conversion to other uses.

Philadelphia Electric Company constructed its Southwark Generating Station on the former site of a chemical plant in 1946, and the Schuylkill Expressway and Walt Whitman Bridge were built in the 1950s. In the late 1960s, the Philadelphia Port Corporation constructed Packer Avenue Marine Terminal for handling containerized merchandise cargo. This development completed the bulkheading of the district's entire waterfront. Finally, the construction of I-95 was completed in the district in 1974.

# Land Use Analysis

The South Delaware Waterfront District, bounded by the Philadelphia Navy Base, I-95, Catharine Street and the Delaware River, consists of 189 separate parcels of land totalling 1,051 acres. In addition there are 366 acres of streets and highways.

Recognizing the need for a comprehensive data base from which analysis and planning could proceed, the City Planning Commission has compiled a computerized parcel-based inventory of riverfront land. For each parcel in the district, information has been compiled on its zoning, land use, ownership, tax status, title date, census tract and block, acreage and river frontage. The analysis which follows uses this information to assess existing conditions throughout the South Delaware Waterfront District and to profile those parcels which front directly on the Delaware River.

**TABLE 2: LAND USE**

| Land Use[1] | Acres | % Total | # Parcels | % Total | Acres Per Parcel |
|---|---|---|---|---|---|
| Manufacturing | 130 | 12.4 | 27 | 14.3 | 4.8 |
| Transportation | 490 | 46.6 | 38 | 20.1 | 12.9 |
| Port | 190 | 18.1 | 14 | 7.4 | 13.6 |
| Utilities | 86 | 8.1 | 5 | 2.6 | 17.2 |
| Retail | 21 | 2.2 | 18 | 9.5 | 1.2 |
| Wholesaling & Warehousing | 36 | 3.4 | 27 | 14.3 | 1.3 |
| Recreational | 3 | 0.3 | 8 | 4.2 | 0.4 |
| Institutional | 1 | 0.1 | 1 | 0.5 | 1.0 |
| Residential | 2 | 0.2 | 8 | 4.2 | 0.2 |
| Vacant Land | 48 | 4.6 | 34 | 18.0 | 1.4 |
| Vacant Structures | 44 | 3.9 | 9 | 4.8 | 4.6 |
| TOTALS | 1,051 | 100.0 | 189 | 100.0 | 5.6 |

NOTE: 1. The table as well as this category excludes streets and highways and therefore represents net land use.
SOURCE: Philadelphia City Planning Commission

A review of existing zoning and land use shows that the South Delaware Waterfront is almost exclusively a port and port related industrial district. Of the total 1,051 acres, 850 acres are zoned General or Least Restricted Industrial, 197 acres are in the Port Industrial category and only 4 acres are zoned Residential or Institutional.

As shown in Table 2, there are three dominant land uses in the South Delaware Waterfront: transportation, port and manufacturing. A closer analysis reveals an underlying interdependence among these uses.

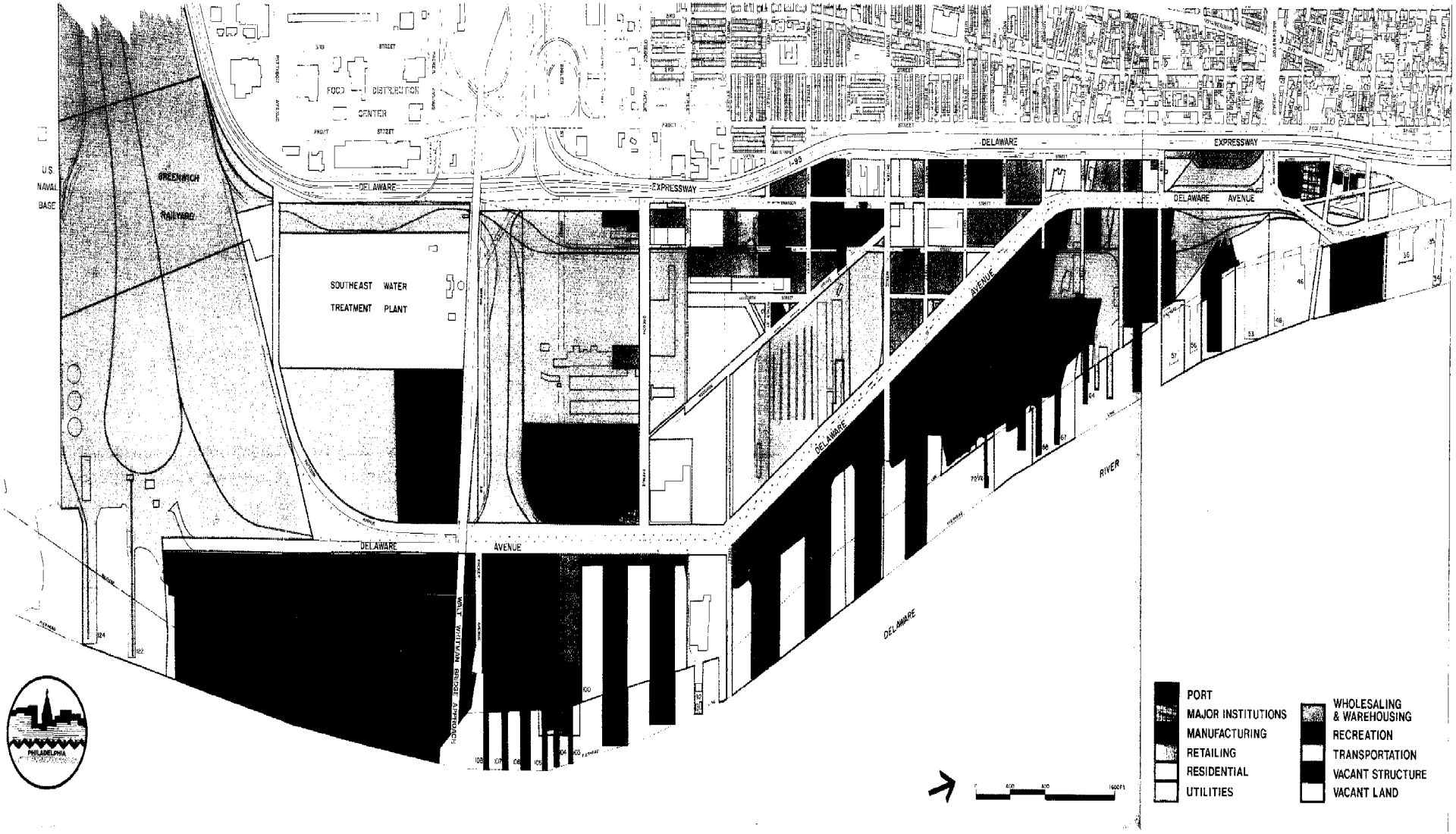
In terms of acreage, rail freight handling is the major land use, accounting for 467 acres, or 44.4 percent of the total. The rail facilities in the South Delaware Waterfront include Conrail's Greenwich (264 acres) and Reed Street (9.4 acres) Yards and the Chessie (CSX) System's, *Piggyback* Yard on Weccacoe Avenue (49 acres). Rail freight in the area was built primarily to provide service to the port as well as major water dependent industries located in the district.

The remaining acres in transportation are devoted to motor freight transport. Included is the United Parcel Service facility on Oregon Avenue and several small truck operators who chiefly serve the port.

Marine transport is represented by three types of port activity. Bulk cargo, specifically ore and coal, is handled at Piers 122 and 124, operated by Conrail. There are six active finger piers handling break-bulk cargo in the South Delaware Waterfront. Together these piers cover 79.8 acres. The City-owned Packer Avenue Marine Terminal (67.3 acres) is one of two major container shipping facilities in Philadelphia.

The port uses described above make the South Delaware Waterfront the center of port activity in the Delaware Valley, and serve to define and dominate the character of the entire district. Though port activity accounts for only 18 percent of the acreage, it represents more than half of the assessed property value of the district (see Table 3).

# EXISTING LAND USE



## TABLE 3: TOTAL ASSESSMENT BY LAND USE CATEGORY

| Land Use | Total Assessment ($ in Millions) | % Total | Assessment Per Acre ($ Thousands) |
|---|---|---|---|
| Manufacturing | 7.3 | 10.5 | 56.2 |
| Transportation | 10.2 | 14.7 | 20.8 |
| Port | 36.1 | 52.2 | 190.0 |
| Utilities | 5.3 | 7.7 | 61.6 |
| Retail | 1.9 | 2.7 | 91.4 |
| Wholesale & Warehousing | 3.2 | 4.6 | 88.8 |
| Recreational | 0.4 | 0.6 | 133.0 |
| Institutional | 0.1 | 0.1 | 100.0 |
| Residential | 0.2 | 0.3 | 100.0 |
| Vacant Land | 1.7 | 2.4 | 35.4 |
| Vacant Structures | 2.8 | 4.0 | 68.3 |
| TOTALS | 69.2 | 100.0 | 65.8 |

SOURCE: Philadelphia City Planning Commission

The importance of the port is further demonstrated by the assessed value of port land which is almost triple the average assessed value of all the land in the district ($190,000 versus $65,800 per acre).

Manufacturing in the South Delaware Waterfront is directly or indirectly related to the presence of the Delaware River. Publicker Industries (85 acres) must draw large quantities of water in order to sustain its production of alcohol. All of the raw sugar cane for the Amstar Corporation sugar refinery (24 acres) is brought in on ships which dock directly at the factory. The fabricated metal industry in the district consists of two barrel producers who supply Publicker exclusively.

Other industries also developed here as a result of the presence of the port. Cold storage warehousing (17 acres) provides an important and direct service to all marine terminals.

The 40 acre PECO Southwark Generating Station is the most notable utility in the district. At one time coal was bought in on barges which docked at the plant. This facility has recently switched to oil and is operating at 20 percent capacity.

There is less than one acre devoted to retail trade in the South Delaware Waterfront. Wholesale trade accounts for 12 acres and includes several scrap yards, a liquor wholesaler and a lumber yard.

A pocket of non-industrial land use is located in the northern portion of the district and includes Old Swedes' Church, 41 recently completed townhouse units and 83 units under construction.

Vacant land and vacant industrial structures account for 92 acres, or 8.5 percent of the land exclusive of streets and highways. For the most part, vacant parcels are former industrial properties whose structures either have been demolished or await port or industrial reuse. These parcels represent a valuable asset for the potential expansion of nearby industries or for new development.

### Parcels With River Frontage

In the South Delaware Waterfront District, 31 of the 189 parcels have river frontage. These parcels comprise 424 acres, or 40 percent of the district total, and are assessed at $44.8 million, which is over 65 percent of total assessments. This reflects the higher market value for land with river frontage.

Port and water dependent industries are the only uses which front the river (see Table 4). Marine transport alone accounts for 59.1 percent of river frontage. Manufacturers include Publicker Industries and the Amstar Corporation. The other two uses are the PECO Southwark Generating Station and J.E. Brenneman Company, a marine construction industry requiring a waterfront location to dock its crane carrying barges.

## TABLE 4: RIVER FRONTAGE BY LAND USE CATEGORY

| Land Use | Frontage (Feet) | % Total |
|---|---|---|
| Port | 8,929 | 59.1 |
| Manufacturing | 3,288 | 21.7 |
| Vacant Land | 1,491 | 9.9 |
| Vacant Structures | 940 | 6.2 |
| Utilities | 470 | 3.1 |
| TOTALS | 15,118 | 100.0 |

SOURCE: Philadelphia City Planning Commission

It is clear from the above discussion that the actual waterfront users are there because of a direct need to have a location on the river. They are also willing to pay a significantly higher land price to be located at the water's edge, where the average assessed value is $105,000 per acre as compared to $33,000 per acre for parcels without river frontage.

## Ownership

Over 90 percent of the land in the South Delaware Waterfront District is held by Philadelphia individuals, corporations or the City. Three owners dominate this group: Conrail which controls 409 acres; the City of Philadelphia, title holder of 262 acres; and Publicker Industries whose 18 parcels total 85 acres. There are 5 other major land owners who each own 20 or more acres from among the 75 who own land in the district. Taken as a group, these 8 owners account for 87 percent (914 acres) of all property and 85 percent ($58.7 million) of total assessments (see Table 5). In addition, the average size of a parcel belonging to the major land owners is 12.7 acres, substantially larger than the average 1.2 acre size of parcels for all other owners.

The land value of City-owned property, all of which front the Delaware River, has a higher value of $150,000 per acre compared to only $14,200 per acre for Conrail's rail freight yards and $48,600 per acre for Publicker's properties.

The district's average land value of $65,000 per acre is exceeded by two other major landowners, PECO and Amstar. Almost all of the sites owned by these corporations have river frontage. This underscores the general pattern that properties with river frontage are more highly valued than other land in the district.

Table 6 identifies all owners of these kinds of properties and their respective river frontages. Most notably, the City of Philadelphia owns 54 percent of the 3 mile frontage in the South Delaware Waterfront District.

**TABLE 5: MAJOR LAND OWNERS**

| Name | Land Acres | Total Assessment ($ Millions) | Land Value ($ Thousands/ Acre) | Parcels | Ave. Parcels Size (Acres) |
|---|---|---|---|---|---|
| Conrail | 409 | 5.8 | 14.2 | 13 | 31.5 |
| City | 262 | 39.5 | 150.8 | 24 | 10.9 |
| Publicker | 85 | 4.1 | 48.2 | 18 | 4.7 |
| Chessie (CSX) | 49 | 1.6 | 32.6 | 5 | 9.8 |
| PECO | 40 | 3.6 | 90.0 | 4 | 10.0 |
| Amstar | 24 | 2.1 | 87.5 | 5 | 4.8 |
| SAF | 23 | 1.1 | 47.8 | 1 | 23.0 |
| Baugh Co. | 22 | 0.9 | 40.9 | 2 | 11.0 |
| Sub-Total | 914 | 58.7 | 64.2 | 72 | 12.7 |
| All Others | 137 | 10.5 | 76.6 | 117 | 1.2 |
| TOTALS | 1,051 | 69.2 | 65.8 | 189 | 5.6 |

SOURCE: Philadelphia City Planning Commission

# OWNERSHIP


FOOD DISTRIBUTION CENTER
U.S. NAVAL BASE
DELAWARE EXPRESSWAY
I-95
DELAWARE AVENUE
DELAWARE
AVENUE
DELAWARE
RIVER
DELAWARE
AVENUE
WEST WASHINGTON STREET APPROACH
PECO
PUBLICKER
CITY
CHESSIE
CONRAIL

**TABLE 6: OWNERS OF PARCELS WITH RIVER FRONTAGE**

| Name | Frontage (Linear Feet) | % Total |
|---|---|---|
| City of Philadelphia | 8,199 | 54.2 |
| Publicker Industries | 1,780 | 11.8 |
| Conrail | 1,110 | 7.3 |
| Independent Pier Co. | 951 | 6.3 |
| Amstar | 776 | 5.1 |
| U.S. Coast Guard | 600 | 4.0 |
| Intercontinental Inc. | 532 | 3.6 |
| Baugh Co. | 500 | 3.3 |
| PECO | 470 | 3.1 |
| Brenneman Construction Co. | 200 | 1.3 |
| TOTALS | 15,118 | 100.0 |

SOURCE: Philadelphia City Planning Commission

A review of Table 7 shows that the real estate market is relatively stable in this area. Only 108 out of 1,051 acres have changed hands in the past five years. Almost 60 percent of all land continues to be held by the owner who held it in 1950, and the current titles for 330 acres actually predate 1900.

**TABLE 7: MOST RECENT CHANGES IN OWNERSHIP**

| Title Year | Acres | % Total |
|---|---|---|
| 1976-80 | 108 | 10.3 |
| 1970-75 | 71 | 6.7 |
| 1960-69 | 199 | 18.9 |
| 1950-59 | 49 | 4.7 |
| 1900-49 | 294 | 28.0 |
| Pre 1900 | 330 | 31.4 |
| TOTALS | 1,051 | 100.0 |

SOURCE: Philadelphia City Planning Commission

# Economic Activity

The South Delaware Waterfront District is a major center for port activity and employment. The district is a regional maritime center, with most of the types of cargo handling facilities in the Delaware Valley Region represented here. With approximately 5,200 jobs, the district is also a significant employment center.

The district's port-related activities are essential components of the operations of the Ports of Philadelphia. Table 8 shows that all five types of the Regional Port's freight transportation terminals are represented in the district. The kinds of port activities occuring in the district are the handling of bulk cargos such as coal, ore and raw sugar, the handling of merchandise cargo, either by gangs of longshoremen or in containers, and the warehousing, storing, packing and land transporting of these cargos. Highly port-dependent activities are also in the district such as the manufacture of sweeteners and marine construction. Particularly significant to the Port is the district's participation in container, coal and ore shipping, since these activities generate a major share of port-related economic benefits in the Delaware Valley Region.

## TABLE 8: FREIGHT TRANSPORTATION TERMINALS IN THE PORTS OF PHILADELPHIA

| Operating Facilities | Region | City | District |
|---|---|---|---|
| Public Use Piggyback Terminal | 3 | 3 | 1 |
| Coal Export Marine Terminal | 3 | 1 | 1 |
| Container Terminal | 2 | 2 | 1 |
| Ore Import Terminal | 5 | 3 | 1 |
| Main Rail Classification Yard | 2 | 2 | 1 |

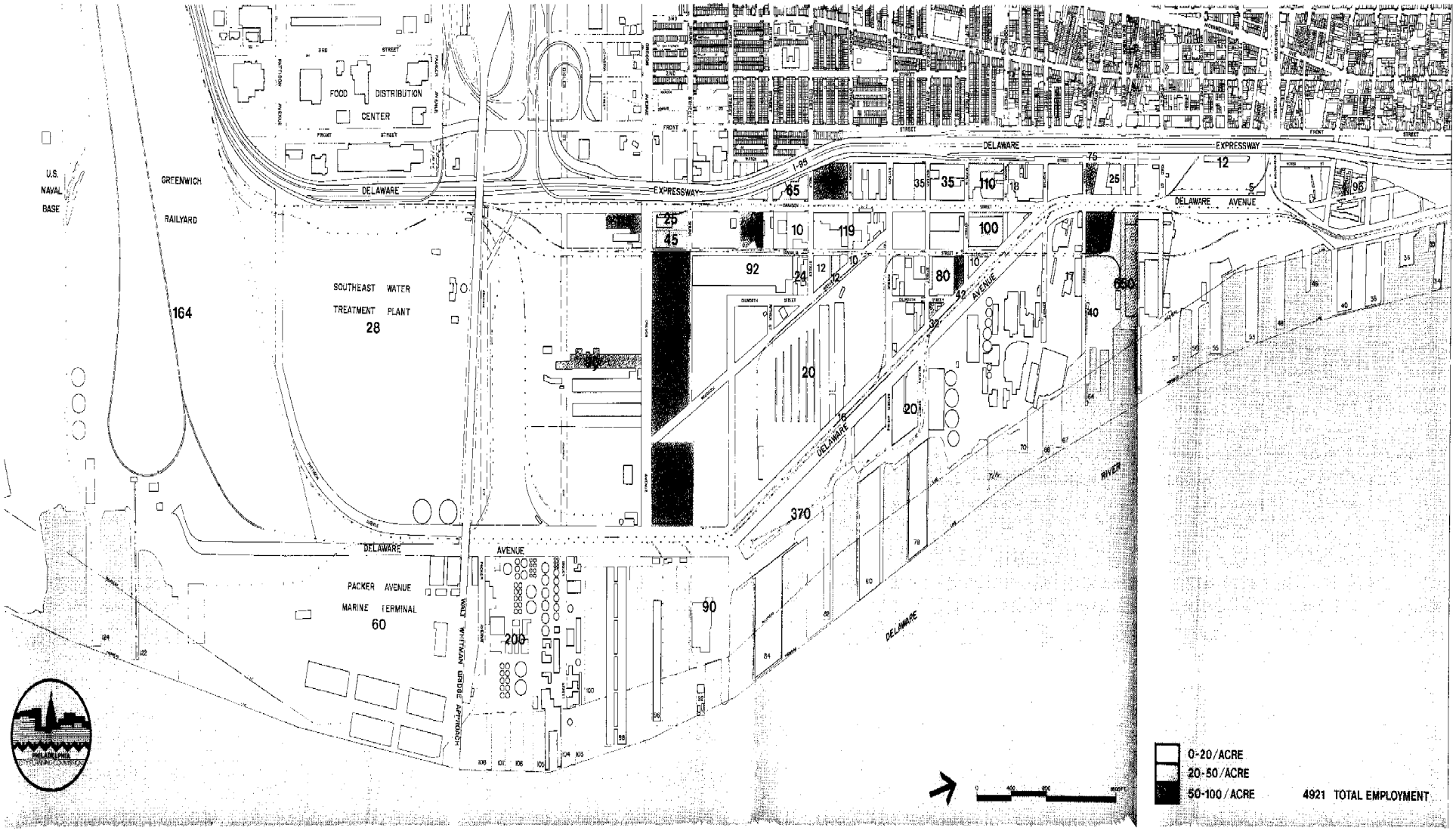
SOURCE: Philadelphia City Planning Commission

## TABLE 9: EMPLOYMENT BY INDUSTRY GROUP

| Standard Industrial Classification Code | Industry | 1980 Employment |
|---|---|---|
| 42 | Warehousing & Motor Freight Transportation | 1,264 |
| 49 | Electric, Gas & Santiary Services | 1,013 |
| 20 | Food & Kindred Products | 875 |
| 44 | Water Transportation | 500 |
| 26 | Paper & Allied Product | 260 |
| 40 | Railroads | 184 |
| 51 | Wholesale Trade — Non-Durable Goods | 177 |
| 73 | Business Services | 150 |
| 34 | Fabricated Metal Products | 145 |
| 76 | Misc. Repair Services | 132 |
| 30 | Rubber & Miscellaneous Plastics | 125 |
| 28 | Chemicals | 119 |
| 25 | Furniture & Fixtures | 115 |
| 48 | Telephone Communications | 45 |
| 16 | Construction, General Contractors | 40 |
| 50 | Whole Trade — Durable Goods | 18 |
| 58 | Eating & Drinking Establishments | 15 |
| 52 | Building Materials | 10 |
| TOTAL EMPLOYMENT | | 5,187 |

SOURCE: Philadelphia City Planning Commission *1981 Survey of Firms*

The South Delaware Waterfront District is a major employment center. Approximately 5,200 jobs were provided in 1980 by businesses located in the district. Table 9 presents employment by Standard Industrial Classification Code classes, with business activities ranked according to number of employees. Close to three-quarters of this employment is in SIC classes 20 through 44, encompassing manufacturing and port-related activities. The several utilities, including electricity generation, telephone services and waste treatment, provide employment for 1,013 persons. Wholesale trade employs close to 200 person, and business services provide 150 jobs.




# EMPLOYMENT 1980

## Port Conditions

Waterborne commerce is very active in the lower portion of the district but gradually diminishes to the north as one approaches Center City. The piers closest to Center City either have become inactive or have been converted to other uses, such as tennis courts.

This pattern of varying intensity levels along the district's waterfront is related to recent changes in shipping technology that have made smaller piers functionally obsolete. Today much of the cargo that was formerly handled by smaller piers is containerized and shipped from specialized facilities such as Packer Avenue Marine Terminal. In addition, the explosive growth in American steam coal exports that has occurred since 1979 has made Conrail's Pier 124 at the southern end of the district once again a focal point of shipping activity. The volume of general cargo handled in the district during 1980 is presented with related information in Table 10.

There is also considerable variation in the condition of the piers and wharves in the district. Except for Piers 38-40, the piers north of Reed Street are technologically obsolete for their original use. They are in poor condition, too narrow, or lack sufficient cargo marshalling area to be reactivated in waterborne commerce. Practically, these piers can only be used for other purposes, such as tugboat and barge mooring or warehousing. And in fact, none of these other piers were recommended for retention in the 1978 *Port Facilities Study*.

South of Reed Street, all public use merchandise cargo piers and wharves are owned by the City of Philadelphia. These piers are of sufficient size to handle modern vessels, and pier conditions range from fair to good. The ownership, use, dimensions and conditions of the various piers and wharves that line the bulkhead of the South Delaware Waterfront District are summarized in Table 11 from north to south.

**TABLE 10: 1980 DISTRICT PORT ACTIVITY**

| Piers | Berths | General Cargo Handled (1000 tons) | Vessel Calls | Trucks Served | Railcars Served |
|---|---|---|---|---|---|
| 38-40 | 3 | 25 | 55 | 1,912 | 22 |
| 80 | 4 | 201 | 125 | 9,100 | 278 |
| 82 | 3 | 183 | 52 | 10,000 | 75 |
| 96, 98, 100 | 10 | 39 | 53 | 2,500 | 300 |
| PACKER AVENUE MARINE TERMINAL | Transit Shed Berths | 98 | 146 | 18,742 | 300 |
| | Container Berths | 807 | 228 | 60,373 | 400 |
| | RO-RO Berth | 159 | 41 | 8,600 | 100 |
| TOTALS | | 1,512 | 700 | 111,227 | 1,475 |

SOURCE: Philadelphia Port Corporation

## TABLE 11: PIER CONDITIONS

| Pier | Owner[1] | Use[2] | Plan Dimensions (Feet) North Side | Face | South Side | Comments |
|---|---|---|---|---|---|---|
| 38-40 | City/PPC | Vacant | 554 | 620 | 551 | 2 sheds total 357,000 s.f. Useful life through 1990. |
| 46 & 48 | U.S. Coast Guard | Under Development | — | — | — | Site for new U.S. Coast Guard Marine Safety Office |
| 53 | City/PPC | Vacant | — | — | — | Pier partially collapsed. |
| 55 | Independent Pier Co. | Vacant | 675 | 150 | 500 | Shed has 111,000 s.f. Owner interested in alternative use. |
| 56 | Independent Pier Co. | Vacant | 385 | 90 | 402 | Shed has 111,000 s.f. Owner interested in alternative use. |
| 57 | Independent Pier Co. | Vacant | 470 | 100 | 500 | Shed has 111,000 s.f. Owner interested in alternative use. |
| 60 | Amstar Corp. | Receiving sugar & fuel oil | 568 | 97 | 543 | See Recommendations. |
| 64 | Brenneman Co./Hudson Engineers | Marine construction materials equipment & handling | Irregular | 25 | 445 | |
| 67 | Inter- Continental Automated Warehouse | Vacant | 500 | 61 | 445 | Property available with other adjoining parcels. |
| 68 | Inter- Continental Automated Warehouse | Vacant | 501 | 65 | 464 | Property available with other adjoining parcels. |
| 70 | Kerr-McGee Corp. | Vacant | 352 | 92 | 200 | Property available. |
| 72½ | Publicker Industries | Vacant | Irregular | 30 | 425 | |
| 78 | City/PPC | Warehousing in foreign trade | 900 | 250 | 854 | 2-story shed has 364,000 s.f. with truck access to both floors. Useful life through 1990. |
| 80 | City/PPC | General cargo handling in foreign trade | 994 | 309 | 1,165 | 2-story shed has 456,000 s.f. Pier adjoins 5½ acre cargo marshalling yard. Useful life through 1990. |
| 82 | City/PPC | General cargo & steel products handling in foreign trade | 1,139 | 300 | 855 | 1-story shed has 78,000 s.f. Useful life through 1990. |
| 84 | City/PPC | Receiving general cargo & newsprint | 855 | 336 | 855 | 2-story shed has 503,000 s.f. with truck access to both floors. Pier adjoins 7 acre cargo marshalling yard. Useful life through 1990. |

*Continued, p. 27*

# ACTIVE PORT FACILITIES

**TABLE 11 (CONT'D)**

| Pier | Owner[1] | Use[2] | Plan Dimensions (Feet) North Side | Face | South Side | Comments |
|---|---|---|---|---|---|---|
| 96 | City/PPC | Vacant | 1,320 | 290 | 1,320 | 1-story shed has 92,000 s.f. plus 130,000 s.f. open storage. Useful life through 1990. |
| 98 | City/PPC | Vacant, under lease | 1,500 | 290 | 1,500 | 2, 3 story sheds total 894,000 s.f. Useful life through 1983. Planned for cocoa bean handling. |
| 100 | City/PPC | Vacant, under lease, in FTZ | 1,140 | 60 | 1,140 | See Recommendations. |
| 103 | Publicker Industries | Alcohol Distillery | 470 | 40 | 220 | Planned conversion to *gasahol* plant. |
| 106 | Publicker Industries | Alcohol Distillery | 510 | Irregular | 510 | Planned conversion to *gasahol* plant. |
| 108 | Publicker Industries | Alcohol Distillery | 225 | 60 | 530 | Planned conversion to *gasahol* plant. |
| Packer Avenue Marine Terminal | City/PPC | Handling of containerized, break-bulk general, steel and RO-RO cargo | — | — | — | See Note 3 below for dimensions and discussion. Also see Recommendations. |
| 122 | Conrail | Receiving metallic ore | 850 | 76 | 1,300 | See Recommendations. |
| 124 | Conrail | Coal Shipment | 1,015 | 168 | 1,015 | State-financed renovation to increase capacity to 10 million tons per year by 1983. Served by 2 tracks to the Greenwich Rail Yard. |

NOTES: 1. City/PPC piers are owned by the City of Philadelphia and managed by the Philadelphia Port Corporation.

2. FTZ is Foreign Trade Zone.

3. The 104 acre Packer Avenue Marine Terminal is operated by the Delaware Operating Company. It has a 3,101 foot long marginal wharf along the Delaware River and an 817 foot long *RO-RO* berth on its south side. In addition, this terminal provides 3 container ship and 2 break-bulk berths. Its buildings include a RO-RO shed (90,000 s.f.), 2 break-bulk sheds (90,000 s.f. each), 2 warehouses (100,000 s.f. each) and a refrigerated warehouse (1,500,000 c.f.) There are also about 64 acres of open storage space.

SOURCE: 1978 *Port Facilities Study* and *The Ports of Philadelphia, Pa., Camden, N.J., Wilmington, Del., and Ports on Delaware River,* U.S. Army Corps of Engineers (1978)

## Industrial Conditions

The South Delaware Waterfront District provided industrial employment for 3,587 persons in 1980, or about 0.5 percent of the jobs in Philadelphia. Major industrial activities include manufacturing, motor freight transportation, and warehousing and distribution.

There are 31 industrial firms in the district. Eight of these firms employ over 100 persons each. The largest employer is United Parcel Service many of whose 900 workers are truck drivers who are dispatched from its facility on Oregon Avenue. The second largest firm is Amstar Corporation, a sugar refiner employing 650 persons at Washington Avenue and Reed Streets. There are 6 other manufacturing firms that each employ between 100 and 200 persons: Publicker Industries, Crown Paper Board, Brite Star, Inolex, Friel Bernheim and United Nesco.

Warehousing and distribution are other major activities that depend on the district's port and readily accessible rail and highway facilities. In addition to United Parcel Service, there are cold storage warehousing, general purpose warehousing, and paper and produce distribution firms operating in the district. The unusual availability of both Conrail and Chessie rail service in the South Delaware Waterfront District has provided for competitive rail freight service and thereby has benefitted these kinds of activities as well as manufacturing.

Employment growth trends are very positive for firms in the South Delaware Waterfront District. Firms responding to the Planning Commission's 1980 survey reported a 64 percent increase in employment from 1970 to 1980. Similarly, ten firms involved in recent PIDC transactions have projected an average employment growth of 63 percent and a total of 1,100 new workers as a result of capital improvements undertaken.

## Current Development Activities

Since 1977, 10 out of the 40 firms in the district have participated in PIDC transactions totalling $27 million. Although this participation rate and level of investment are quite substantial, PIDC transactions involve only a small proportion of the current and proposed capital investment in the South Delaware Waterfront District (see *Capital Investment* map). In fact, 8 projects discussed below total over $340 million in other current public and private capital investment in the district. This includes over $106 million in private capital investment as well as $12.5 million in public economic development investment.

In addition, the City's $222 million Southeast Sewage Treatment Plant is the single largest capital project in the South Delaware Waterfront District.

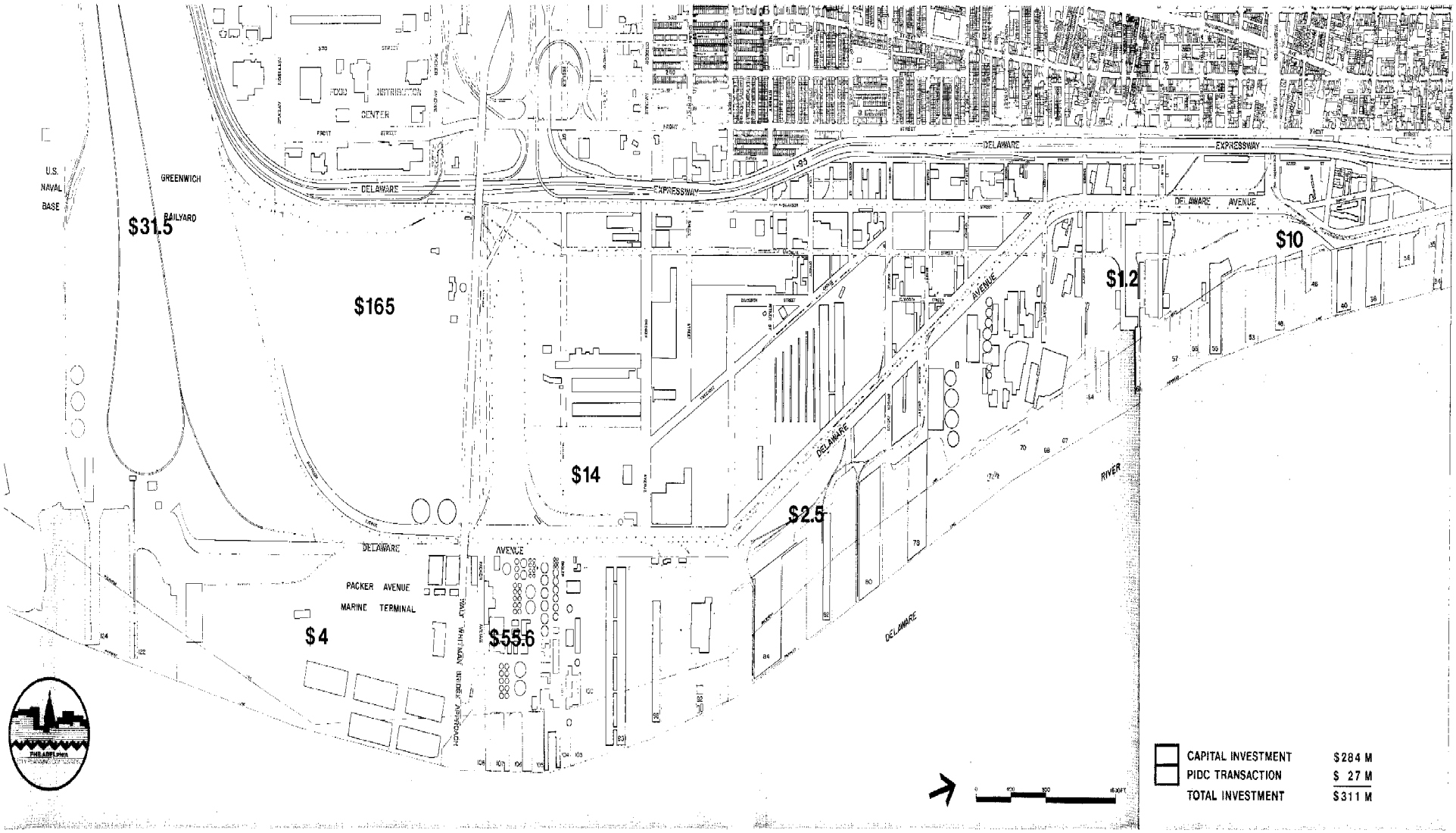
*Pier 124: $31.5 million.* Beginning in 1979 and growing rapidly thereafter, foreign purchase orders began arriving in the United States for the export of steam coal for electricity generation and industrial processes. Responding to rapidly escalating demand for coal originating on its system, Conrail initiated a $5 million improvement program to reactivate Pier 124's north side and to rehabilitate the pier's substructure. In July 1980, Conrail and the Commonwealth of Pennsylvania jointly announced a $26.5 million project to triple the pier's annual export capacity from 3.5 million tons to approximately 10 million tons of coal. This project is now funded, and its completion is expected by 1982.

*Packer Avenue Marine Terminal — $4 million.* Agreements between the Philadelphia Port Corporation and Delaware Operating Company, the operator of this terminal, call for leasing and improving 27 acres of adjacent land for container storage. Implementation of this project is dependent upon securing long term lease of this property from Conrail, which uses portions of it for open storage of ores imported through nearby Pier 122. This is scheduled as a financially self-sustaining project in the City's Capital Program for Fiscal Year 1983.

*Piers 103, 106 and 108: $55.6 million.* In December 1980, Publicker Industries was awarded the right to negotiate the terms of a loan from the United States Department of Energy up to $25 million. This loan will be applied to the $55.6 million cost of refitting its South Delaware Avenue plant to produce sixty million gallons of fuel grade alcohol from corn each year, using coal to fuel the process. This new operation will double the plant's work force to about 500 by the end of 1982, when fuel alcohol production is expected to begin. The Publicker development proposal is currently before a Department of Energy review panel, which will decide upon the loan agreement by Autumn, 1981.

*Piers 78, 80, 82 and 84: $2.5 million.* These large, well-constructed piers are likely to remain in active use through the end of the century. As Packer Avenue and Tioga Marine Terminals gradually shift more of their operations to container handling, these piers will absorb the necessary shift of break-bulk handling, as recommended in the 1978 *Port*

# CAPITAL INVESTMENT



*Facilities Study.* Since 1977, the City of Philadelphia has used $500,000 in Economic Development Administration counter-cyclical assistance to make necessary sanitation improvements to Piers 78, 82 and 84, and $1.8 million of EDA Local Public Works and City Capital Program funds to substantially rehabilitate Piers 78 and 80. An additional $150,000 has been spent by Philadelphia Port Corporation on street and rail improvements in the vicinity of these piers. The 7 acre Municipal Car Storage Yard, an unused City-owned railyard, has been converted for use as a back-up storage and cargo marshalling yard for Piers 82 and 84. Old warehouses also have been demolished to provide cargo space for Piers 78 and 80.

*Amstar Corporation, The Domino Sugar Refinery: $1.2 million.* Amstar announced that it would spend $1.2 million in 1979 to increase production at its Domino Sugar Refinery division at Delaware Avenue and Reed Street. Amstar is a major ocean shipper and rail user in this area, and owns and operates Pier 60.

*United States Coast Guard Marine Safety Office: $10-14 million.* In June 1980, the United State's Coast Guard announced that it would construct a Marine Safety Office in Philadelphia to consolidate office and marine inspection activities distributed around the Delaware Valley. In May 1981, the City of Philadelphia presented the Coast Guard with a site for this development at the foot of Washington Avenue formerly occupied by Piers 46 and 48. The Marine Safety Office will be multi-functional, providing administrative, operational, shop and living spaces. In return for being given this site, the Coast Guard will also provide free quarters for municipal marine fire and police units at the Marine Safety Office.

*Chessie System: $10 million (Possible).* The Chessie System's recent merger with the Seaboard Coast Line Railroad now provides, for the first time, direct single rail carrier service between the South Delaware Waterfront and Atlanta, Jacksonville and Tampa. Following the merger, Chessie announced that it planned to spend $10 million in improvements to its Delaware Valley *Piggyback* terminal facilities. Chessie's present Delaware Valley *Piggyback* terminal is located on the South Delaware Waterfront District at Delaware Avenue and Jackson Streets.

Chessie's investment decision will have important land use implications for the South Delaware Waterfront District whether or not Chessie decides to invest these funds in their existing Piggyback terminal (see Development Opportunities). No announcement has yet been made concerning the site for this investment.

*Pier 98 South Annex Foreign Trade Zone: $14 million.* S.I. LeSaffre, a French firm, has purchased the 23.7 acre Pier 98 South Annex to develop a yeast manufacturing plant. Once it opens, this plant will employ 300 workers. Development of this proposal is contingent upon satisfactory conclusion of ongoing negotiations to provide the operation with sufficient quantities of cooling water.

*Southeast Sewage Treatment Plant, City of Philadelphia: $222 million.* This public project, the largest in the South Delaware Waterfront District, is one of three sewage treatment plants being upgraded and expanded in Philadelphia in response to Federal clean water laws. Construction is expected to be completed in 1986.

# Circulation

The South Delaware Waterfront District's abundance of transportation facilities has been cited by area businesses as the district's strongest asset. The district possesses excellent connections to the Interstate Highway System with north-south and east-west routes intersecting here. The district also possesses a variety of rail freight facilities unequalled elsewhere in the Region. The chief drawbacks in this generally excellent network are evidenced by the deterioration of streets due to deferred maintenance, particularly streets in which there are railroad tracks, and the fact that certain interstate highway ramps have been constructed but never opened.

## Highway Access

The South Delaware Waterfront District is situated at the intersection of two interstate highways, the Delaware Expressway (I-95) and the Schuylkill Expressway (I-76). The district is also at the southern end of Delaware Avenue, a major arterial serving the riverfront from Greenwich Point north to Port Richmond. East-west arterials serving the South Delaware Waterfront are Oregon, Snyder and Washington Avenues. Front Street, immediately west of and parallel to I-95, provides direct access to the expressway ramps south of Oregon Avenue and also provides local access for the adjacent residential communities. The Circulation map shows the interstate access points and the arterial roads providing City or regional access to the district.

Two major factors influence traffic activity in the South Delaware Waterfront. First, I-95 ramps concentrate traffic on connecting roads, particularly Oregon

Avenue and Front Street. Second, there are three centers of employment in the South Waterfront which generate commuter traffic. These centers are along Oregon Avenue and south on Delaware Avenue, in the vicinity of Reed and Tasker Streets, and along Water Street near Moore and Mifflin Streets.

There is good access between the I-95 Expressway and the South Delaware Waterfront District. The most important connection between the district and I-95 is via the access ramps at Front Street between Oregon Avenue and the Walt Whitman Bridge. These ramps are convenient to vehicles leaving the district for north or southbound I-95 and for vehicles arriving at the district on southbound I-95.

There is one exception to this good access at Front Street and I-95. Northbound traffic exiting I-95 must take a circuitous route to the district, heading west on Packer Avenue to 7th Street, turning north to Oregon Avenue, then traveling back east to Front Street. This detour can be avoided with a U-turn across Packer Avenue from the I-95 exit ramp, but the safety and legality of this maneuver is questionable. In addition, an extension of Pattison Avenue from Front Street to Delaware Avenue has recently been completed. Although this should provide vehicles with more direct access from northbound I-95 to the district, even so this route requires a hazardous left turn from Packer Avenue onto cross streets.

There is an alternative northbound I-95 exit ramp in the vicinity of Morris Street, about one mile north of the Front Street ramp, but this exit has several deficiencies. This ramp releases traffic onto Water Street, a small street paralleling the expressway. The intersection of Water Street with Morris Street is dangerous for several reasons. Traffic exits off I-95 at high speeds and there are no stop signs at the Water Street intersection. At the same time, driver vision on both streets is obstructed by the expressway structure. In addition, traffic from Morris Street cannot travel directly east to Delaware Avenue and the district. The unit block of Morris Street, which the City's Street Department has scheduled for improvements, is in poor condition. Presently, traffic must continue at least two blocks north to Dickinson Street or an additional block to Reed Street before connecting with Delaware Avenue to gain access to industries in this district.

Although constructed, the southbound entry ramp to I-95 at Morris Street has never been opened due to community opposition. If this ramp were opened, this would provide an alternative to the southbound ramps at Front Street, the approach to which occasionally becomes congested.

I-95 ramps further north, within the Central Riverfront District, can also serve the South Delaware Waterfront District. Northbound drivers, particularly those originating from the northern section of the district, may choose to enter I-95 at

Lombard Street. Southbound vehicles on I-95 may exit at Callowhill Street and proceed south to the district along Delaware Avenue.

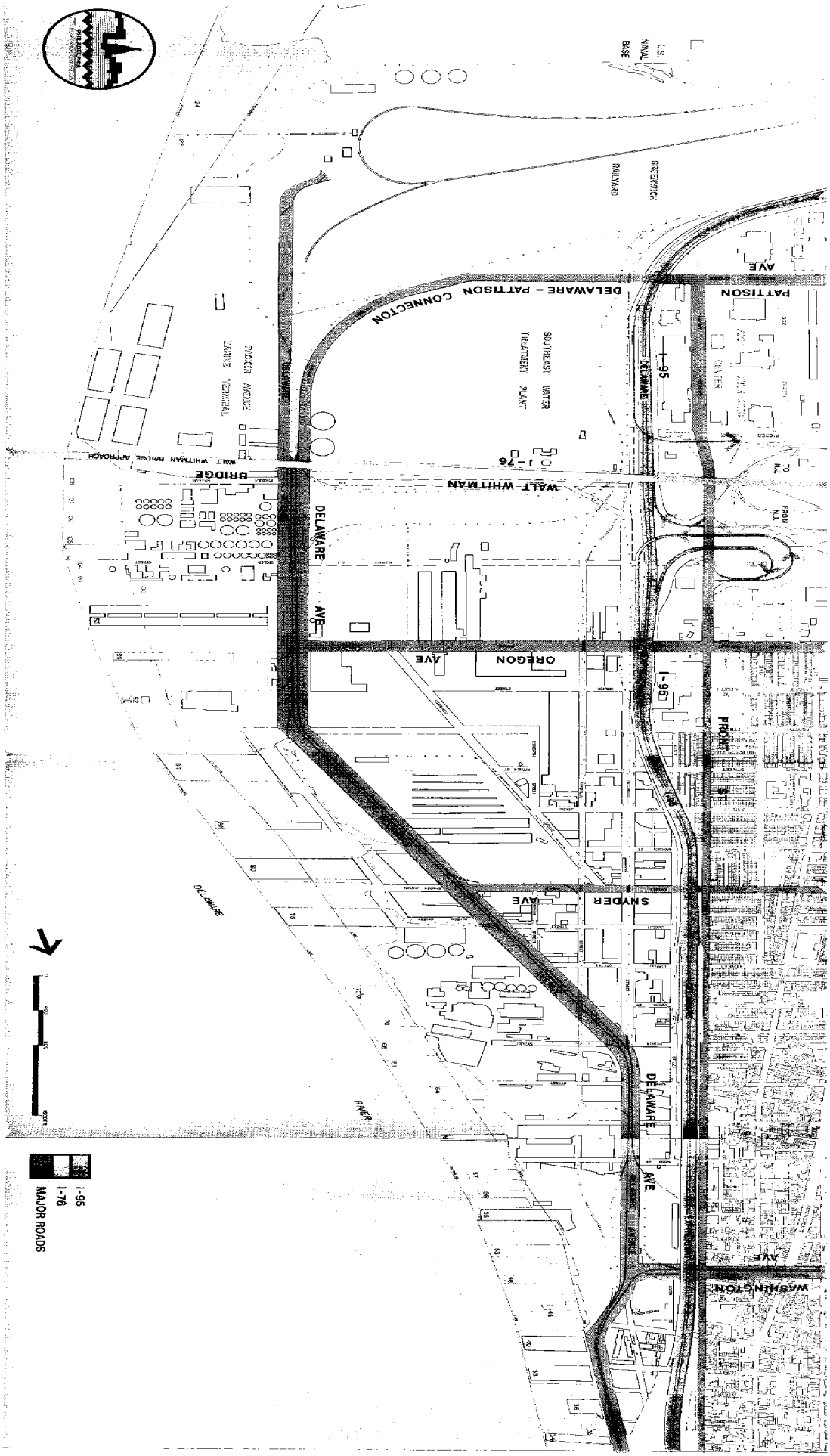
Connections between the South Delaware Waterfront District and I-76 to New Jersey are as good as the I-95 connections. Ramps to and from the Walt Whitman Bridge are located on Front Street and provide convenient access to I-295, the Atlantic City Expressway and the New Jersey Turnpike.

Ramp connections between the district and I-76 west to the Schuylkill Expressway are less convenient but adequate. Vehicles departing the district for westbound I-76 must travel to Broad Street for an available entry ramp. Vehicles eastbound on I-76 must exit in the vicinity of 8th Street and use Oregon Avenue or Pattison Avenue to get to the district.

The major arterial in the South Delaware Waterfront is Delaware Avenue. Delaware Avenue is a very wide street, generally at least 100 feet wide, and carries both vehicular and rail traffic. From two to four railroad tracks run down the middle of Delaware Avenue, with many turnouts into cross streets and private properties. The rail-embedded portions of the road are generally in very poor condition and, in many places, require vehicles crossing them to slow down considerably. The non-rail portions of the road are reasonably smooth with a few exceptions. The width of the road, together with the track turnouts crossing the pavement and a lack of striping and signalization, make Delaware Avenue a confusing road to the unfamiliar driver.

Traffic counts on Delaware Avenue, between Washington Avenue and Reed Street, showed two way traffic of approximately 1300 vehicles per hour in the peak hours of 1980. This volume is easily accommodated on Delaware Avenue, with at least two lanes available in each direction. However, the capacity of the street is sometimes reduced as a result of trucks docking at Crown Paper Board Company and the Amstar Corporation, since both companies are located relatively close to the roadway.

Oregon Avenue is the most important east-west route serving the South




# CIRCULATION

Delaware Waterfront. It feeds employee and industrial traffic to the Packer Avenue Marine Terminal, United Parcel Service, Conrail and Mrs. Paul's Kitchens. In addition to this industry-related traffic, many vehicles use Oregon Avenue and Front Street for access to the I-95 ramps. The intersection of Oregon Avenue and Front Street is used by 2300 vehicles during the evening peak hour. Backups are not unusual for the heavily used left turn from westbound Oregon Avenue to southbound Front Street (685 vehicles per hour). West of Front Street there is intensive commercial strip development on Oregon Avenue, including Pathmark, Acme, K-Mart and Penn Jersey stores, several fast food restaurants and diners, gas stations, a drive-in bank and a car wash, within a 5 block area. High traffic volumes, in addition to a car wash queue that often extends onto Oregon Avenue, lead to congestion problems, especially on Saturday mornings. The physical condition of Oregon Avenue is good, except where it crosses the railroad tracks in Vandalia and Swanson Streets.

The other two important east-west streets leading into the South Delaware Waterfront are Snyder Avenue and Washington Avenue. Both are wide streets with ample capacity at their eastern ends. Washington Avenue, however, is congested for much of its length by truck loading activity, double parking at warehouses and by spillover from the Italian Market at 9th Street. The intersection of Washington Avenue and Delaware Avenue is somewhat confusing due to concrete islands separating Washington Avenue into three sections. Two of these sections are eastbound and one is westbound. The lack of clear markings and the presence of railroad tracks make drivers uncertain about which section they should use.

**TABLE 12: TRAFFIC VOLUMES ALONG FRONT STREET**

| Segment of Front Street | AM Peak Hour | PM Peak Hour | Daily Total |
|---|---|---|---|
| Washington to Reed (2-way) | 550 | 480 | 5,400 |
| Dickinson to Tasker (1-way south) | 150 | 320 | 2,400 |
| Jackson to Wolf (1-way south) | N.A. | N.A. | 5,000 |
| Oregon to I-95 (2-way) | N.A. | N.A. | 21,200 |

NOTE: N.A. means data not available
SOURCE: City Streets Department

Front Street is important to the South Delaware Waterfront at its southern end where access ramps for I-95 and the Walt Whitman Bridge are located. South of Oregon Avenue, Front Street has two lanes of traffic in each direction, with an extra left-turn lane for to the southbound I-95 entry ramp. North of Oregon Avenue, Front Street is mostly three lanes wide with one or both sides used for parking. The section between Reed Street and Porter Street is one-way southbound; elsewhere Front Street is two-directional in the district. Daily and peak hour traffic volumes for different segments of Front Street are shown in Table 12.

The increasing volume of traffic on Front Street south of Dickinson Street reflects the accumulation of traffic headed for I-95, the Walt Whitman Bridge and the commercial uses on Oregon Avenue. This traffic volume drops between the Washington to Reed section and the Dickinson to Tasker sections because Front Street changes from two-way north of Reed to one-way south of Reed Street.

Other streets in the South Delaware Waterfront are Water, Swanson, Vandalia and Weccacoe. Water Street, directly east of I-95, is one-way northbound and provides essential links at some points. However, it is not continuous and is not a major traffic route. Swanson and Vandalia Streets both have rail service in the street bed and are impassable to vehicles in many sections. Weccacoe Avenue is a diagonal street west of Delaware Avenue between Snyder and Oregon Avenues. It was reconstructed in recent years and, although in good condition, it is not heavily used. A problem with Weccacoe is that trucks docking at Bower Paper & Packaging Company can virtually block the entire roadway.

## Transit Access

The South Delaware Waterfront has relatively good transit service for worker trips. Transit service is available to Delaware Avenue along both Oregon and Snyder Avenues, to Water Street between Tasker and Morris Streets, and to Front Street between Christian and Federal Streets. (See Existing transit routes map.) Peak hour service is generally provided every 10-15 minutes. Each of the east-west routes connects with a station on the Broad Street Subway. In addition to this east-west service, some of the Route 5 buses, which travel on 2nd and 3rd Streets, provide limited north-south service to the longshoremen's hiring hall

on Delaware Avenue under the Walt Whitman Bridge. This service was instituted when the Q bus route along Delaware Avenue was discontinued due to a lack of patronage.

Although transit service to the South Delaware Waterfront was frequently mentioned as a problem by local businesses in Planning Commission surveys, it was apparently not considered a drawback to their riverfront location. Inadequate transit access was not correlated with difficulties in attracting qualified labor. Most workers in the district apparently drive to work, taking advantage of the district's excellent highway access.

## Rail Circulation

The South Delaware Waterfront has a greater abundance and variety of rail freight service than any other area within the region, and it is also one of the few areas where competitive rail service still exists.

Railroad activity occurs within railyards of varying sizes, on piers, on City Streets, and in an intermodal *Piggyback* yard.

## Yard Activities

Conrail operates the Greenwich, Tidewater, Packer, Swanson, Reed and Federal Street Yards. The Chessie System has two yards at the foot of Snyder Avenue (see Rail System map).

Greenwich Rail Yard, with a capacity of 4,700 rail cars, lies between the Philadelphia Navy Base and the Schuylkill Expressway. It is the major railroad yard on the Conrail system in the Delaware Valley. This yard serves to classify intercity trains, switch local traffic, store cars and repair equipment. Parts of Greenwich Rail Yard provide storage for Pier 122 which imports ore and Pier 124 which exports coal. Intercity freight trains arrive and depart the Philadelphia area at this yard, and local freight trains serving smaller railyards and local industry are dispatched here.

Packer Avenue Yard, with a capacity of 253 rail cars, is located along Delaware Avenue just north of the Walt Whitman Bridge and serves Packer Avenue Marine Terminal.

Tidewater Yard, with a capacity of 320 rail cars, is just north of Packer Avenue Yard and switches traffic along Delaware Avenue as far north as Washington Avenue.

Swanson Street Yard, with a capacity of 285 rail cars, is just south of Oregon Avenue and serves Swanson Street traffic, perishable traffic for the Food Distribution Center and other produce customers in the area. Conrail also maintains a *FlexiFlo* bulk tank cargo transfer terminal east of this yard.

The Reed Street and Federal Street Yards are respectively situated on the east and west sides of Delaware Avenue, south of Washington Avenue. The volume of rail traffic using these two yards has declined drastically in recent years. In fact only a portion of these properties was transferred to Conrail when it was organized in 1976. Today, the only major rail customer using the Reed Street Yard is the Amstar Corporation, and virtually no traffic uses the small portion of the Federal Street Yard which Conrail inherited.

The Chessie System maintains a complex of yards south of Snyder Avenue at Delaware Avenue. Chessie operates a *Piggyback* yard at the foot of Jackson Street with an estimated capacity of 144 truck trailers. These trucks are driven locally on City streets, but are transported for long-distance movement on railroad flatcars.

Chessie also owns a railyard near Snyder Avenue which has been used for switching traffic on its Vandalia Street branch. This yard presently has little use for the same reasons that have affected traffic at Conrail's Federal Street Yard.

Both the Chessie System and Conrail provide *Container-On-Flat-Car* terminal service at the Packer Avenue Marine Terminal.

## Branch Line Activities

Three major railroad branch lines within the South Delaware Waterfront District lie in the beds of streets. These streets are Delaware Avenue, Swanson Street and Vandalia Street.

Tracks in Delaware Avenue from Pier 40 south to Packer Avenue are owned by Conrail, but are open to the Chessie System under the so-called Belt Line Principle, with Conrail performing the rail car switching for Chessie. Customers using the Delaware Avenue trackage include the pier users, waterfront industries and the warehouses on the west of Delaware Avenue.

The Conrail Swanson Street branch serves local industry between Oregon Avenue and Morris Street and when necessary allows the through movement of Conrail trains bypassing South Delaware Avenue south of Morris Street. Industries are located along this branch line, as are several major vacant parcels of industrially zoned ground.

U.S. NAVAL BASE
GREENWICH RAILYARD
FOOD DISTRIBUTION CENTER
SOUTHEAST WATER TREATMENT PLANT
PACKER AVENUE MARINE TERMINAL
DELAWARE EXPRESSWAY
I-95
DELAWARE AVENUE
WALT WHITMAN'S BRIDGE APPROACH
BUS ROUTE
LIMITED SERVICE
TRACKLESS TROLLEY

# TRANSIT

The Vandalia Street branch line provides the Chessie System with a bypass to the Amstar plant, its most northerly customer in the Philadelphia Region. This branch also serves active manufacturers and warehouses along its length and is the principal entrance and egress for the Chessie *Piggyback* terminal.

In places Swanson Street and Vandalia Street are more rail lines than streets. They are impassable to north-south traffic and cannot be crossed in many sections. Both streets appear to have drainage problems. However, the availability of alternate routes in the general area and the industrial nature of activities along both of these streets serve to reduce the demand for extensive renovation of these roadways.

# Environmental Conditions

The Delaware River is a vital resource for Philadelphia residents and businesses. Each day the City withdraws about 220 gallons of the River's 7500 million gallon flow, drawing and filtering the water at the Torresdale Filtration Plant 10 miles upriver from the South Delaware Waterfront District. This water is pumped through large water mains capable of supplying all industrial water needs. Even so, two industrial firms in this district withdraw water directly from the river, Publicker Industries and Amstar Corporation. PECO's Southwark Generating Station, which is operating at only 20% capacity, withdraws water for once through cooling.

Wastewater discharged within the district is treated at the City's Southeast Sewage Treatment Plant located south of the Walt Whitman Bridge. Only Publicker Industries and Amstar Corporation operate their own treatment facilities and discharge wastewater directly to the river.

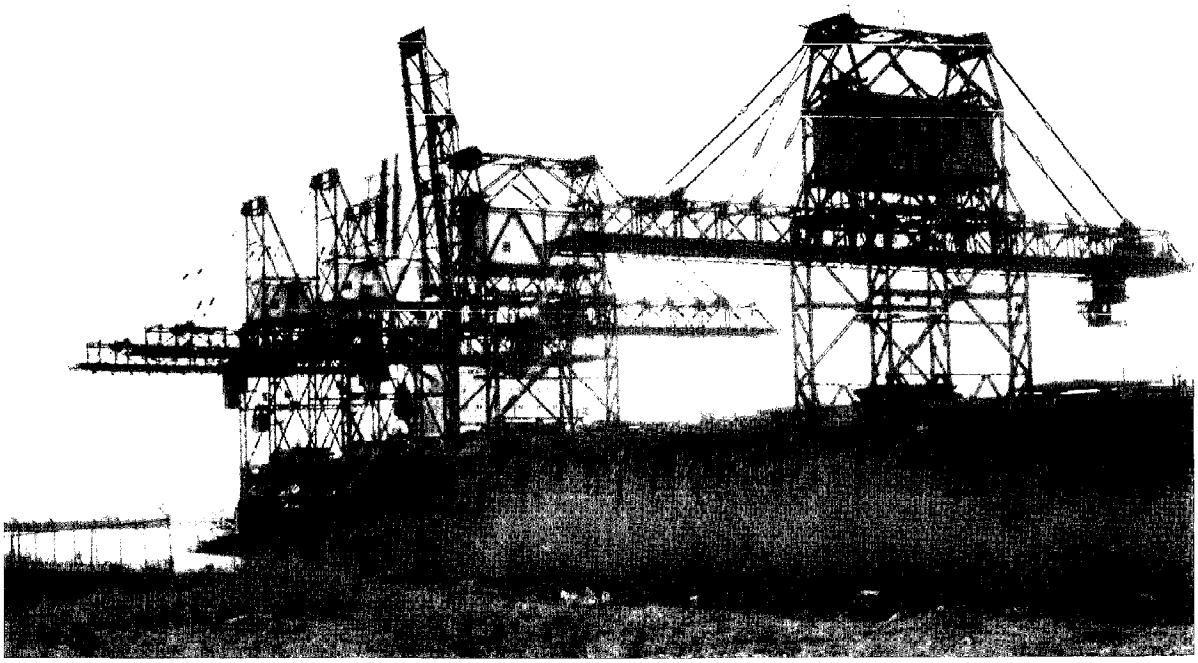
The Delaware River is seriously polluted in the vicinity of the South Delaware Waterfront. The estuary's most serious sag in dissolved oxygen occurs in this stretch of the river. In 1980, the average dissolved oxygen during the summer was 0.6 milligrams per liter (mg/1), falling to 0.1 mg/1 on several occasions. Because fish survival requires a summer average oxygen concentration of at least 4.0 mg/1, this stretch of river does not support significant fish life.

The City's $860 million pollution abatement program will create significant improvements in the Delaware River's water quality. When all three upgraded sewage treatment plants are in operation in 1986, the seasonal average of dissolved oxygen should be about 3.0 mg/1 in this stretch of river. While this will not be sufficient to support recreational fishing along the South Delaware Waterfront, the migration of shad, sturgeon, herring and other fish of commercial and recreational importance should no longer be impeded by the dissolved oxygen sag.

The U.S. Army Corps of Engineers has mapped about 30 acres of shallows along the 2500 feet of riverfront from Reed Street south to about Mifflin Street (see Environmental Factors map). Shallows, which are lands submerged below less than 10 feet of water, are usually very productive zones in the river's aquatic ecosystem. Existing and projected water quality is too poor in this district to permit shallows to function effectively as areas of fish propagation and sustenance.

The U.S. Army Corps of Engineers has also mapped riverfront areas prone to flooding, as part of the Federal Insurance Administration's Flood Insurance Program. During a flood event with a recurrence interval of 100 years, the elevation of the Delaware River would rise to 10 feet above mean sea level, which corresponds to 4.3 feet City datum. At this elevation, all of the piers in the district would be flooded, and flooding would extend from 500 to 1250 feet inland from the bulkhead line (see Environmental Factors map). Because of the breadth of the river, flooding waters would not be extraordinarily swift, and sufficient warning of potential flooding could be given to permit adequate emergency preparations.

Air quality is generally good in the South



Delaware Waterfront District. National Ambient Air Quality Standards are achieved for sulfur dioxide, carbon monoxide, nitrogen oxides and total suspended particulates. Although the ozone standard was violated only once in 1980 at the monitoring station at Front Street and Packer Avenue, there were frequent violations of the standard for nonmethane hydrocarbons, a precursor to ozone. Within the district, Amstar Corporation is the principal point source of emissions with over 1000 tons of pollutants annually. In 1978, Publicker Industries emitted 1348 tons of pollutants, but this firm has reduced its production activity and hence its pollutant emissions. Southwark Generating Station, when in full operation, emitted over 3000 tons of pollutants annually. The current emissions from this facility are probably far less than that.

There are no environmentally significant lands in the South Delaware Waterfront District, in that there are neither high quality plant communities nor important wildlife habitats. Although there are substantial open lands, most ground has been recently disturbed and supports only weeds capable of surviving on unproductive land, such as ailanthus, sweetclover, prickly lettuce, goosefoot, barren chess, wormwood and foxtail millet. This vegetative cover may support some of Philadelphia's hardier birds such as catbirds, swallows, starlings, mourning doves, house sparrows and pigeons. There may also be several mammals, notably rabbits and mice. The dumping of garbage on vacant lots in this district undoubtedly attracts the Norway rat. Aside from plantings at the Southwark Generating Station, the landscape character of the South Delaware Waterfront District is visually bleak.

Noise and odor are not serious environmental nuisances in this district. Although high speed expressway traffic is typically considered a noise generator, the I-95 expressway is elevated above residential structures in nearby communities. This serves to mitigate noise impacts on residential areas. High truck traffic and the poor roadway condition may create high noise levels along Delaware Avenue, although noise measurements have not been made in the vicinity of this arterial. The industries in the district are not regarded by Air Management Services as significant odor sources. There are only occasional odors associated with Amstar Corporation and Publicker Industries. Finally, odors may also emanate from the Delaware River during periods of very low tide, when mud encrusted pier structures and the shoreline are exposed to the air.

# Opportunities and Constraints

A variety of issues currently facing the City of Philadelphia are important to the future of the South Delaware Waterfront District. Some developmental decisions within the district are significant enough to impact issues beyond its boundaries. Because the district is a major center for maritime commerce, development decisions within it may have a disproportionate impact, relative to its size, on economic conditions in the City, region and the State. The most significant issues are:

There has been an apparent decline, manifest in 1980 trade statistics, in the Port of Philadelphia's competitive advantage *vis-a-vis* its chief competitors, the ports of Baltimore and New York.

The number of hours worked annually by members of the International Longshoremen's Association employed in the Port of Philadelphia has declined from 7 million in the early 1970s to 3.9 million in 1980.

Competitive rail service available to Philadelphia shippers and manufacturers was diminished when two of the railroads serving Philadelphia were merged into one carrier, Conrail.

Conrail's future is clouded and is the subject of various bills being drafted in the United States Senate and House of Representatives. The resolution of this issue will have major long-term implications for the economy of the Northeast United States.

Interstate 95 near the Airport is still incomplete, and plans to reconstruct Delaware Avenue are stalled. Issues which have prevented the opening of the I-95 entry ramp at Morris Street must still be resolved.

Changes in world-wide energy supply and demand are affecting the future of electric generating stations and coal piers on the waterfront.

The decline in manufacturing employment continues in the City of Philadelphia. Displacement of existing industries by residential development is a serious concern of businessmen in the district.

## Industry Needs

The primary concern of the South Delaware Waterfront planning effort has been to support the continued development of viable industrial activity in the district. To enhance this effort, opinions about industrial problems and needs have been solicited from all industrial firms, other business interests and related City agencies.

Two surveys of existing industrial firms have been undertaken, coupled with in-depth interviews with selected respondents. During the summer of 1980, survey questionnaires were mailed to 21 firms, of which 11 responded. Several of these were then interviewed during the fall of 1980. A follow-up survey was conducted in the summer of 1981, with 32 of 40 firms responding to it. The results of these survey efforts, supplemented by discussions with involved public agencies, notably the Philadelphia Port Corporation and the Philadelphia Industrial Development Corporation, led to three major findings regarding industrial development in the district.

First, firms located in the South Delaware Waterfront District value their access to its extensive transportation facilities very highly. These firms are engaged in a variety of activities ranging from warehousing and distribution to transportation-related operations such as trucking, rail, ocean-borne cargo handling, packing, brokerage and forwarding, and intermodal transfer, as well as the manufacture of sugar, chemicals

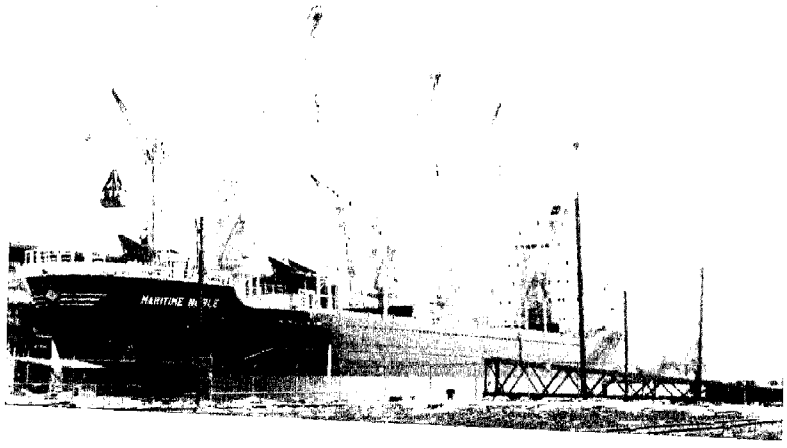
and Christmas decorations. Many utilize port facilities, especially the Packer Avenue Marine Terminal. Other firms depend on rapid access to the interstate highway system for truck shipments and deliveries and for access to a varied labor force. Still others require proximity to the Philadelphia International Airport. Finally, all of the firms benefit from the unique intermodal transfer capabilities available in the district, enabling easy water-to-highway, rail-to-highway, or rail-to-water goods transfers.

Second, many of the industrial firms located in the district primarily because they needed a river location removed from residential areas that would be disturbed by their operations. Several manufacturers are engaged in continuous flow bulk operations involving refining, chemical manufacturing and bulk transfer activities which are unsightly, occasionally noisy and odorous, and generators of constant truck and rail traffic. Any interruption of their operations would have serious consequences. These firms object to the residential development occurring nearby. They fear that any new residents moving into the area will object to the industrial activities, and that they may face expensive and impracticable changes in their operations.

Third, the firms here are very satisfied with their location. Half of the firms regard the waterfront location as essential to their operations.

Overall, the surveyed firms identified only two minor locational problems with the area. The first was the lack of adequate public transportation service and the second was the lack of an available skilled labor force. These problems did not appear to significantly impact the firms' operations. In fact, only 4 of the 32 firms had any long range plans to move.

The commitment of industrial firms to the South Delaware Waterfront is demonstrated by plans for over $100 million in private capital investment (see Economic Activity in previous chapter). The general perception held by industry is that the district lends itself to successful industrial development and that such development is in the best interests of both the private and public sector.



# Development Opportunities

There are three major waterfront areas which present development opportunities. These are areas that are presently either marginally used or inactive and vacant, and which are available for new development. The first is the site of the Piers 96, 98 and 100 at the foot of Oregon Avenue. The Kerr-McGee property and adjacent vacant parcels at the foot of Morris Street constitute the second development opportunity area. The third area, located at the foot of Washington Avenue, consists of vacant City-owned Pier 53, Independent Pier Company's Piers 55, 56 and 57 and the adjacent Conrail and Penn Central railyards.

## Piers 96, 98 and 100

These piers extend along the waterfront a distance of approximately one thousand feet and extend east of Delaware Avenue a distance of fourteen hundred to sixteen hundred feet. These piers are under lease but are infrequently used.

The *Port Facilities Study* determined that these piers are likely to have a useful life for covered storage only until 1983. For open storage, their useful life could extend beyond 1990. At that time, the study projected that Piers 96 and 100, along with Pier 82 and the Northern Shipping Company Terminal, could accommodate over 60 percent of the projected demand for open storage in the Ports of Philadelphia. Approximately 80 percent of projected 1990 demand for covered storage could be handled by piers other than these according to the study.

In 1963 the *Army Piers Redevelopment*

*Area Plan* proposed the filling of the berth between Pier 96 and the Southwark Generating Station and the berth between Pier 98 and Pier 100 to provide more cargo storage space. It also proposed retaining the berths between Pier 96 and Pier 98, where there is a drainage right of way. This plan envisioned the piers continuing to function as break-bulk merchandise cargo handling facilities. With the subsequent growth of containerization, the need for this type of facility has diminished. Changes in cargo handling technology have probably made the extensive investment proposed in the plan unattractive if only break-bulk cargo were to be handled.

## Kerr-McGee Property and Vicinity

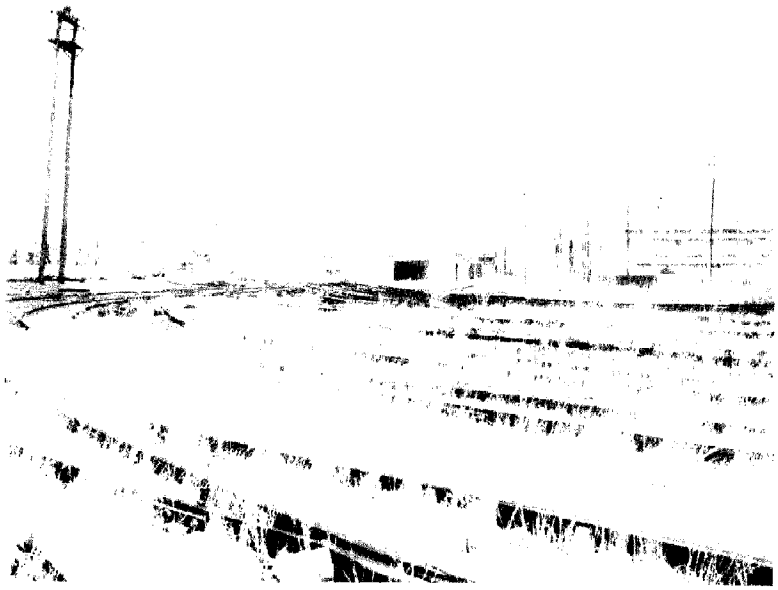
Several industrially zoned parcels of ground are presently for sale in the vicinity of Morris Street. The largest of these is the 18.7 acre Kerr-McGee site, where the former Baugh and Sons fertilizer factory is presently being demolished. This property has five hundred feet of frontage along the Delaware River and rail service available via Conrail on Delaware Avenue and the Chessie System on Vandalia Street. On its north side is an available property owned by Intercontinental Automated Warehouse, with about 535 feet of river frontage.

This parcel has about 12.3 acres of land, of which 7.2 acres are solid ground and 5.1 acres are submerged land. Also available are two smaller, adjacent properties which face Delaware Avenue. One is a 4.8 acre truck terminal. The other is a 1.8 acre parcel owned by Publicker Industries. These parcels have port-related activities to their north and south and active street rail lines to the west in Delaware Avenue.

These four parcels, although situated among port-related activities, have redevelopment potential primarily for industrial uses. Although the two larger parcels were originally developed by water-dependent industries, very few industries today need to be situated directly on the river. In addition, the site is not adequate for construction of a container-handling terminal because river frontage, about 1,040 feet, is not sufficient. Because competitive rail service is available from Conrail and Chessie, activities requiring rail access can best use this site. For these reasons, the best reuse of these parcels is for rail-dependent industrial purposes.

## Vacant or Underutilized Piers and Yards, Washington Avenue to Reed Street

Another major development opportunity is located at the northern edge of this district. In the area on either side of Delaware Avenue from Washington Avenue to Reed Street there are four major unused or marginally used properties. The largest parcel is the 9.4 acre Conrail Reed Street Rail Yard at the



southeast corner of Delaware and Washington Avenues. Across from this parcel, at the southwest corner of Delaware and Washington Avenues, is the Federal Street Rail Yard, portions of which are owned by Conrail and by the Penn Central Corporation. South of Washington Avenue, the City's Pier 53 and Independent Pier Company's Piers 55, 56 and 57, totaling 9.2 acres, are all vacant.

These major parcels are located in an area of transition between the intensely port-related South Delaware Waterfront and the area more closely identified with Penn's Landing and Center City.

Changes that have occurred since the 1960s, both in shipping technology and in the nature of the Center City waterfront, have effectively reduced the level of activity at these railyards and have made these piers surplus to the needs of maritime commerce. The piers in this area are obsolete because of unresolvable size and technological limitations. The size of new ships has increased, thus reducing the number of vessels that these small piers could service. More importantly, the acceptance and rapid growth of containerization in the handling of merchandise general cargo has resulted in the development of specialized marine terminals with container-handling cranes and large amounts of container ground storage space.

These piers cannot be redeveloped for container handling. Reconstruction of Pier 57 for container handling was considered by its owner but rejected as being operationally inefficient and financially infeasible. During preparation of the *Port Facilities Study,* this area was reviewed for its potential as a container terminal site, but was rejected because it failed to meet minimum standards for berth and ground storage area development.

Activity in the Reed Street and Federal Street yards has declined over the past several decades. This is in response not only to reductions in pier activity here but also to changes in the nature of the Center City waterfront. Center City piers, that at one time generated rail traffic for these yards, had long been obsolete when they were demolished for construction of Penn's Landing. The removal of rail-served warehouses during construction of I-95 also reduced activity in these yards. The gradual decline in the railroads serving the region hastened the change in freight handling from railroads to trucking, further reducing yard activity. By the time Conrail was created, rail traffic through the Reed Street and Federal Street yards had dropped to a point where portions of the Federal Street Yard were not even transferred to the new operator because there was no further need for them.

Although merchandise cargo handling and railroad yard activities have declined, the bulk handling and manufacturing activities of Amstar Corporation at the foot of Reed Street have remained stable. Amstar, which employs 650 workers at its plant, is dependent upon rail service provided by Conrail at the Reed Street Yard. Although most of the yard's capacity is not needed, some capacity is critical to Amstar's operations. Rail access to Amstar is provided by a system which enters the refinery at its southern side on Vandalia Street, runs through the plant and emerges on its north side on tracks in Conrail's Reed Street Yard. This system is operated separately by the Chessie System on Amstar's south side and by Conrail on the north with car switching being performed by Amstar personnel and equipment within the plant.

The City is now faced with important decisions concerning actions to encourage reuse of surplus portions of the Reed Street Yard, but in a way which maintains Amstar's rail service.

Rationalizing the rail system is a primary goal of the South Delaware Waterfront Plan. In the next chapter, preliminary recommendations for reorganizing rail service to adequately serve existing industry will be presented. These recommendations will be refined by a more detailed study currently underway. Options for the redevelopment of surplus rail lands for non-rail uses will be presented in the *Central Riverfront Plan.*

U.S.
NAVAL
BASE
GREENWICH
RAILYARD
FOOD
DISTRIBUTION
CENTER
DELAWARE
EXPRESSWAY
I-95
DELAWARE AVENUE
SOUTHEAST WATER
TREATMENT PLANT
PACKER AVENUE
MARINE TERMINAL
DELAWARE RIVER
CONRAIL
CONRAIL YARD
CHESSIE
CHESSIE YARD

# RAIL SYSTEM

# Circulation Constraints

The I-95 southbound ramp at Morris Street, although already built, has remained closed because of opposition by the adjacent residential neighborhood. This ramp would provide an alternative entrance for industrial traffic which currently uses the ramp near Oregon Avenue and Front Street, an intersection which is sometimes congested. The residential community is concerned that opening the entrance ramp at Morris Street would increase truck traffic on Front Street, a situation it considers hazardous and generally undesirable. To avoid this situation, a proposal has been made to build a new street which would link the ramp on the west side of I-95 to Delaware Avenue on the east. This proposed street, while preventing the use of Front Street for I-95 access, would require traffic to pass beneath the columns of I-95, which may be difficult for trucks. Further study is needed to determine the feasibility of this proposal.

The I-95 exit ramp at Morris Street does not provide an optimal connection to Delaware Avenue and may negatively affect neighboring communities. Exiting traffic cannot turn east on Morris Street to reach Delaware Avenue, but instead must travel two blocks north before making the connection. Local eastbound traffic on Morris Street faces a dangerous intersection at Water Street. Traffic controls at this intersection do not ensure that exiting vehicles enter this intersection at safe speeds. In addition, the adjacent community is concerned that trucks may turn west onto Tasker or Reed Streets and travel on residential streets. An improved exit ramp at Morris Street would direct exiting traffic east on Morris Street to Delaware Avenue.

Delaware Avenue is in poor condition. The central portion of this arterial containing rail tracks is deteriorated and hazardous for vehicles. There is virtually no striping on Delaware Avenue to give clear direction to the flow of traffic, and signs for the terminals and other major facilities are not provided.

Although improvements to Delaware Avenue have long been planned, serious State budgetary limitations have threatened to affect this project. The State is currently designing improvements for Delaware Avenue, but it is uncertain that funding limitations will permit reconstruction either according to plan or within the near future.

Streets with rail tracks are in poor physical condition. Swanson and Vandalia Streets are impassable to traffic in many sections due to deterioration along rail tracks. Where the tracks in these two streets cross Oregon Avenue, deterioration slows vehicular traffic and presents a safety hazard.

Several other conditions affect or possibly will affect circulation and access in the South Delaware Waterfront. The I-95 expressway remains incomplete in the vicinity of Philadelphia International Airport and causes inconvenience for some of the district's truckers. This annoyance will be corrected in several years when construction is completed. Although rail access to the district is generally exceptional, there are limitations to the size of cargo on certain routes. Recent federal legislation which permits the sale of Conrail could influence the future of service to Philadelphia terminals.

Transit access to the district is satisfactory and presents no significant constraints to businesses or their employees. Transit access does not affect businesses' ability to attract skilled employees. Bus service in the district, with its connections to other transit modes, is generally adequate. Many employees utilize the convenient automobile access to the district via I-95 and major arterials, notably Delaware, Oregon and Washington Avenues.

# Environmental Constraints

The most significant environmental constraint in the South Delaware Waterfront District arises from the potential flooding of the Delaware River. About 200 acres of riverfront land are within the floodplain of a flood event with a 100 year recurrence interval and are subject to special development controls.

In June 1979, the Philadelphia Code was amended to bring the City into conformance with federal floodplain management guidelines. The amended code requires that non-residential structures in the floodplain be flood-proofed up to a level which is one foot higher than the elevation of the 100 year flood. The regulatory flood elevation is 11 feet above mean sea level, or 5.3 feet based on City datum. The code also requires that ducts, pipes and tanks below the regulatory flood elevation be anchored and that bouyant, flammable or explosive materials may not be stored below that elevation. The City's Department of Licenses and Inspections reviews the details of all plans for structures in floodplains against national construction standards.

In addition to meeting the code, properties within the floodplain of a 100 year flood generally must obtain flood insurance. Any development project receiving federal assistance is required by federal law to obtain flood insurance, and mortgage insurance companies also require purchase of flood insurance. The City's adoption of floodplain regulations has assured the availability of flood insurance for Philadelphia properties.

Pennsylvania also reviews riverfront development proposals for their impact on flooding. The *Dam Safety and Encroachments Act of 1978, P.L. 1375, No. 325,* as amended by *Act 70,* established a procedure for issuing Water Obstruction Permits to persons building, operating, maintaining, modifying, enlarging, or abandoning any water obstruction or encroachment. Administered by the Department of Environmental Resources, the principal purpose of this permit process is to ensure that waterfront structures allow the safe passage of floodwaters and ice. Impacts on the natural environment and the safety of the facility are also evaluated by the State.

Another significant environmental control is the protection of shallow water habitat areas. The 30 acres of submerged lands shallower than 10 feet in this district are subject to federal environmental controls. The Federal Clean Water Act established a national goal of shallow water protection as a means of preserving aquatic ecosystems. This law established the Section 404 permit program, administered by the U.S. Army Corps of Engineers, to regulate fill activities and the discharge of dredged materials in navigable waters. The protection of shallows is presumed to take priority over dredging and filling activities. To receive a Section 404 permit an applicant should be proposing a water dependent use of wide public benefit. Residential development, for example, generally will not be permitted if it requires new fill in shallow water areas. Reuse or reconstruction of piers, as long as substantial modification of the river bottom is not proposed, is not considered to be a fill activity requiring a Section 404 permit. For this reason, permit applications for reuse of piers for residential development should generally be approved by regulatory agencies.

Should future development activity require the filling of shallow water areas, permit applicants should offer two items in support of their request. First, because current and future water quality is projected to be poor in this district, shallows do not function as critical aquatic habitat areas. Their disturbance, therefore, might not be regarded as a serious environmental impact. Second, applicants should propose to create artificial shallow areas at an upstream location to compensate for the downstream loss. The upstream area should be north of the Tacony-Palmyra Bridge where water is of sufficiently high quality to support fish life. Shallows restoration is feasible from both an engineering and cost perspective. Technical assistance is available from the Philadelphia District of the U.S. Army Corps of Engineers.

Water availability poses virtually no constraints for industrial development because water supply is abundant in the Delaware River. Public water supplies are available throughout this district through 8 inch or 12 inch mains beneath City streets. Waterfront industries do have the option of directly withdrawing water from the Delaware, although permits must be first obtained from the Delaware River Basin Commission, and water use fees are payable to the Commission. Only during severe drought conditions could an elevated salt content in the Delaware River possibly interfere with water usage for industrial processing. Public water supplies are not significantly curtailed during drought emergencies.

Water quality is poor in this stretch of the Delaware. Because it is too poor to support fish life, recreational fishing is not possible in this area. Although the river is suitable for pleasure boating, body contact with river water may be

# ENVIRONMENTAL FACTORS

harmful due to high bacteria levels. Even after the pollution abatement program is complete, water quality will be too poor to sustain either recreational fishing or body contact sports. Future water quality will be sufficient, however, to permit the passage of migratory fish in large enough numbers to support small-scale commercial fisheries for shad and herring upriver.

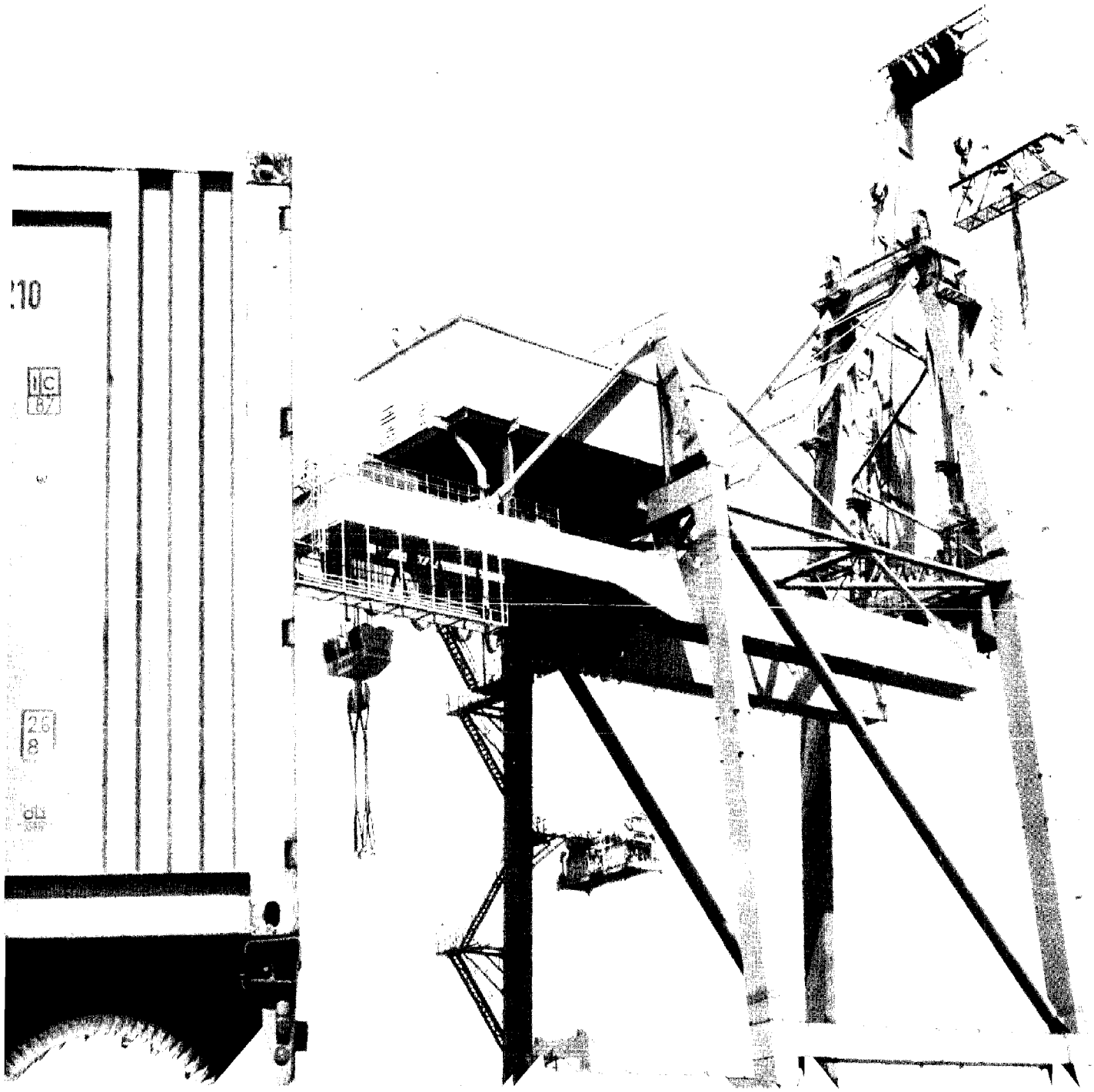
Air quality presents no significant development constraint. The City's Air Management Services (AMS) expects Philadelphia to be in compliance with most national ambient air quality standards in 1981. The exception is ozone, a pollutant violated state-wide and not controllable locally. There are, therefore, no significant health or aesthetic impacts of air pollution within the South Delaware Waterfront District.

Industrial firms must continue to comply with air pollutant emission standards. Although there has been a decline in air pollutant emissions from firms within the district, this does not affect the degree of future air pollution control requirements. Regardless of where they are located, firms installing new industrial processing facilities are required to install pollution control equipment which will meet local, state and federal emission standards.

Amstar Corporation is the most significant point source of air pollutant emissions in the South Delaware Waterfront District. Because residential development on adjacent industrialized railyards is being considered, the potential air quality impacts on such development by Amstar were analyzed by Air Management Services at the request of Planning Commission staff. The pollutant most likely to exceed ambient air quality standards is sulfur dioxide. The distribution of sulfur dioxide emanating from Amstar was simulated with an air quality model for several kinds of wind stability conditions. The AMS simulation demonstrated that, for a high rise apartment building on a nearby pier or railyard, the ambient air quality standard for sulfur dioxide would not be exceeded. When the wind is so stable as to carry sulfur dioxide in a highly concentrated plume, the pollutant would be carried above a high-rise structure. In conditions when the wind mixes the plume sufficiently to bring it down within the height of a high-rise structure, there would be enough dilution of the pollutant to reduce the concentration of sulfur dioxide to within acceptable levels.

Noise and odors, for the most part, are not significant environmental problems in the South Delaware Waterfront District. The City Code does not provide strong regulatory control over noise. The code deals with noise from garbage collection, street vendors, construction activity and motor vehicles, but not with noises arising from normal industrial activities. New noise regulations currently being drafted by Air Management Services would extend controls within commercial and residential areas, but not within industrial districts like the South Delaware Waterfront.

Under the Air Management Code, odors are an air pollution nuisance defined as any substance discharged to the air which is *offensive or objectionable, or both, to persons because of inherent chemical or physical properties,* or which *causes severe annoyance or disturbance.* The majority of odor complaints in the City come from residents living in close proximity to odor-prone industries. The South Delaware Waterfront District is well separated from residential areas, and most firms in the district are not prone to serious odor problems. Amstar, which may one day be a neighbor to new riverfront homes, occasionally releases a burnt sugar odor.



# Recommendations

The plan for the South Delaware Waterfront District is intended to serve two purposes. First, it is to convey to the citizens of Philadelphia a vision of *what* the future of the district should be, and second, the outline *how* this concept can be achieved.

When adopted by the City Planning Commission, this plan will become the basis for regulation of private development. The plan will also offer guidance to other public agencies involved in making decisions relating to waterfront development.

The nature of this plan is both physical and strategic. Physically, the plan makes specific land use and circulation recommendations. Strategically, the plan recognizes that it is not a blueprint which identities detailed development schemes, but rather a set of policies meant to guide future development in a manner that is consistent with overall City goals and objectives. The precise design and timing of actual projects, however, are left to the marketplace. When the need arises and funds become available, then implementation will occur.

There is one overall goal for the South Delaware Waterfront District, and it acknowledges that Philadelphia does not want, nor can afford, to lose its waterfront port and industrial activity. Consequently, of highest priority is the goal to maintain and encourage maritime activities and existing viable businesses in the district. The Port of Philadelphia plays a critical role in the economic health of the City and the Delaware Valley region. A substantial portion of the activity of the port occurs in the South Delaware Waterfront District, and this plan acknowledges the need to support development of port and port-related industries in the district.

There are several policies which follow from this goal. First, port and industrial zoning shall be maintained for all of the land in the district south of Reed Street. Second, the resources of the City shall be directed toward improving conditions in the South Delaware Waterfront in order to support the retention and growth of industry and the port in this area. This requires the maintenance and development of publicly owned port facilities which are necessary to the operation of the port. In addition, this requires public improvements which are necessary to create an industrial district with a climate that fosters firm retention, expansion and attraction. Third, the City shall provide direct development assistance, where it is needed, to the industrial and port related firms locating in the South Delaware Waterfront District.

The next section of this chapter summarizes the objectives and recommendations needed to carry out these policies. Following will be a discussion in more detail of specific recommendations. A Recommendations map and sketch plans are included within this chapter.

# Summary of Recommendations

## Port Development

| | |
|---|---|
| *Improve Port Facilities* | Convert the Packer Avenue Marine Terminal's marginal berths to nearly 100 percent container handling capability by removing a dockside transit shed, installing an additional container crane, and increasing container storage capacity. |
| | Expand the pier renovation program to include Piers 82 and 84. |
| | Consider the feasibility of developing two new container berths on the present site of Piers 96, 98, and 100. |
| | Demolish piers that are in poor condition. |
| | Support private sector initiatives to construct or improve bulk terminal port facilities. |
| *Increase Port Activity* | Support and sustain efforts to market the Port's competitive advantages to shippers. |
| | Target longshore labor-intensive port traffic for marketing efforts. |
| | Continue support for development of the Coast Guard Marine Safety Office. |
| | Support efforts underway to restore the Port's position as a major participant in international coal traffic. |

## Industrial Development

| | |
|---|---|
| *Retain Manufacturing Employment, and Encourage Business Expansion* | Retain industrial zoning south of Reed Street |
| | Provide development assistance to firms that wish to expand in the district. |
| | Provide additional employee parking for those areas within the district that need it. |
| | Improve, coordinate and target the provision of public services to the South Delaware Waterfront District, especially sanitation, street cleaning and police protection. |
| *Attract New and Port Related Development* | Acquire the Kerr-McGee site and surrounding vacant industrial properties and develop a port industrial park. |
| | If the Chessie System decides to construct a new *Piggyback* facility outside of the South Delaware Waterfront District, the City should acquire and develop a second port industrial park. |
| | Continue to support private development proposals for the district. |

## Other Development Opportunities

| | |
|---|---|
| *Foster Commercial and Residential Development Where Appropriate* | At the foot of Washington Avenue encourage the development of commercial and residential uses on existing obsolete piers and on the adjacent vacant or underutilized railyards. |

## Transportation

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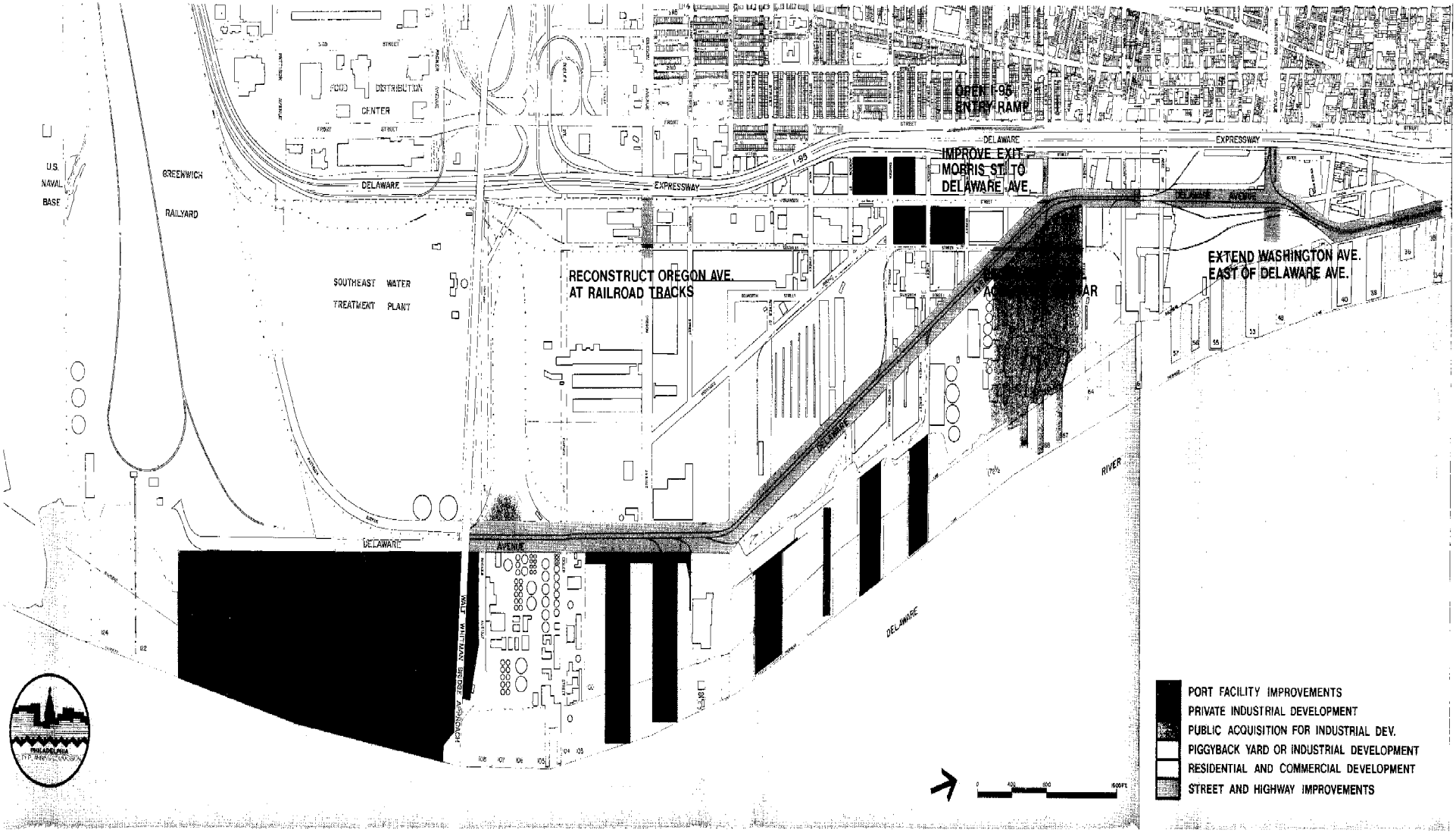
|---|---|
| *Improve Highway Access* | Complete construction of Interstate 95. Open the southbound entry ramp at Morris Street. |
| *Improve Traffic Circulation* | Reconstruct Delaware Avenue. |
| | Extend Washington Avenue east of Delaware Avenue. |
| | Repair local streets especially where the presence of railroad tracks in streets has led to deterioration of the road surface. |
| *Improve Rail Service* | Resolve rail clearance and curvature limitations on high and wide cargo. |




# RECOMMENDATIONS

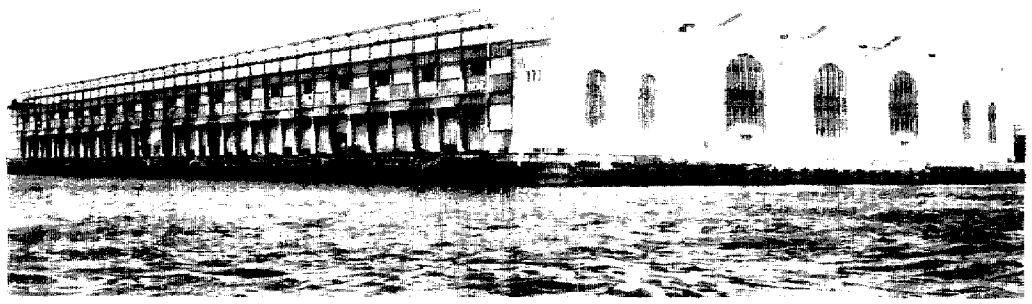
# South Delaware Waterfront District Plan

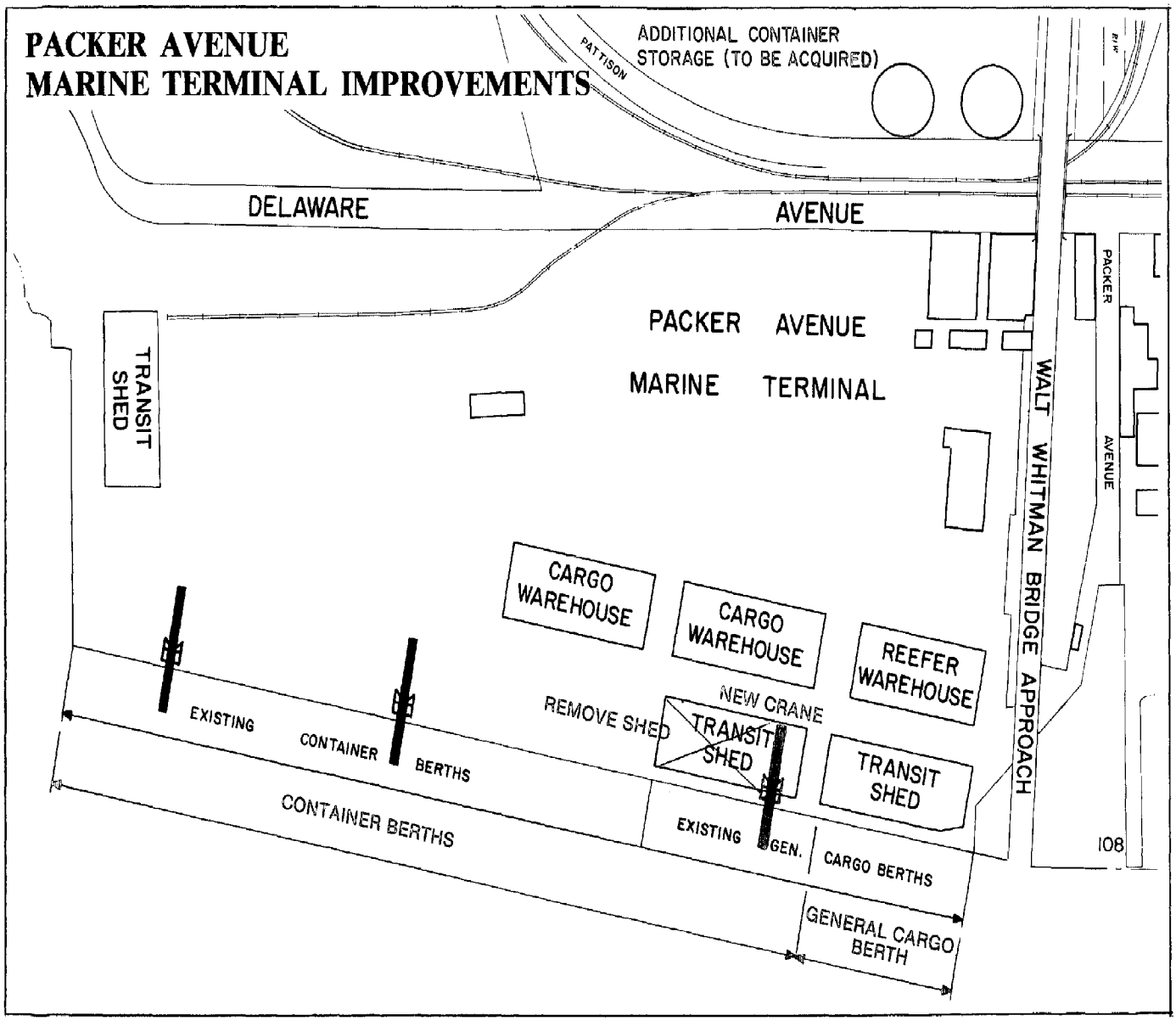
## Port Development

**Improve Port Facilities**
**Packer Avenue Marine Terminal and Pier 84.** Anticipating that merchandise cargo handling technology will continue to favor containerization, the 1978 *Port Facilities Study* had recommended that Packer Avenue Marine Terminal's existing container berths (which are presently sufficient to handle three vessels simultaneously) be extended an additional 550 feet upriver, thus allowing the handling of larger vessels in accordance with 1990 port planning criteria.

The study further recommended that a fourth container crane should be added to ensure adequate turnaround time when two or more vessels are berthed simultaneously. This improvement requires removal of the break-bulk cargo transit shed adjacent to the existing container berths and acquisition, by either purchase or long-term lease, of additional container storage space. This improvement would allow the terminal to realize its full container handling potential of 1.2 million tons annually.

Implementation of this will require that at least twenty acres of land located west of Delaware Avenue and owned by Conrail be purchased or leased for container storage. In addition, the break-bulk cargo handling function of the Packer Avenue Marine Terminal should be transferred to a suitable existing facility, such as Pier 84 which would be renovated for this purpose. The costs for removal of the transit shed, extension of crane rails and installation of a new crane are estimated to be $4 million. The costs of improving lands that would be leased from Conrail for container storage to support the crane are estimated to be an additional $4 million. This improvement should be financed by the City of Philadelphia's Capital Program as a self-sustaining project. The debt service on these improvements would be paid by the tenant of the Packer Avenue Marine Terminal through lease payments to the City.




PACKER AVENUE
MARINE TERMINAL IMPROVEMENTS
ADDITIONAL CONTAINER
STORAGE (TO BE ACQUIRED)
PATTISON
DELAWARE
AVENUE
PACKER AVENUE
MARINE TERMINAL
TRANSIT SHED
PACKER
AVENUE
WALT WHITMAN BRIDGE APPROACH
CARGO WAREHOUSE
CARGO WAREHOUSE
REEFER WAREHOUSE
NEW CRANE
REMOVE SHED
TRANSIT SHED
TRANSIT SHED
EXISTING
CONTAINER
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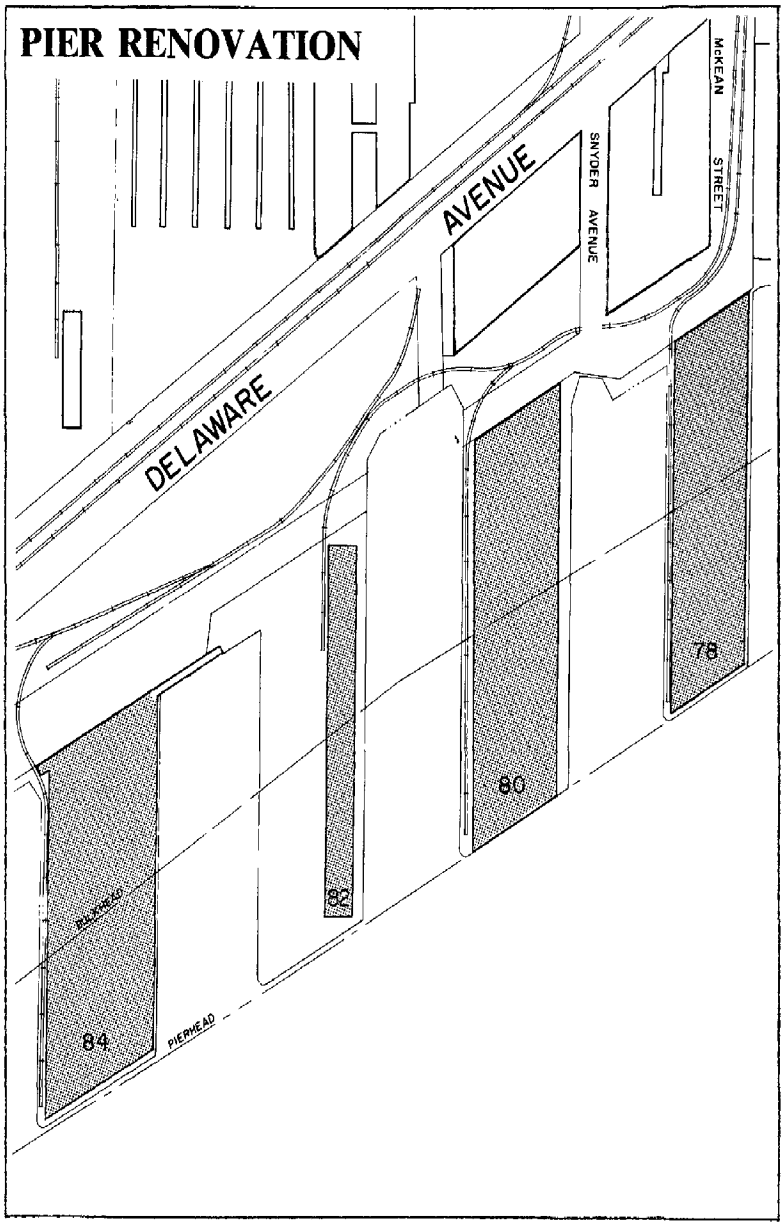
GEN.
CARGO BERTHS
GENERAL CARGO BERTH
108

**Pier Renovation.** In the 1978 *Port Facilities Study,* Piers 78, 80, 82 and 84 were projected to have an economic life extending past 1990. This has been reinforced by recent improvements to the piers themselves and to their backup cargo marshalling and storage capacity. Pier 78 and its out buildings had been included as part of the City's first Foreign Trade Zone in 1978. The expanding levels of its port-related activity now indicate, however, that it is desirable to retain Pier 78 in maritime commerce and to concentrate marketing efforts in Eastwick, the other Foreign Trade Zone area in Philadelphia.

Traffic through these piers is likely to expand at least in part from diversions of break-bulk cargo to them from the City's two modern terminals, which are forecast to gradually increase both the volume and percentage of their containerized cargo traffic.

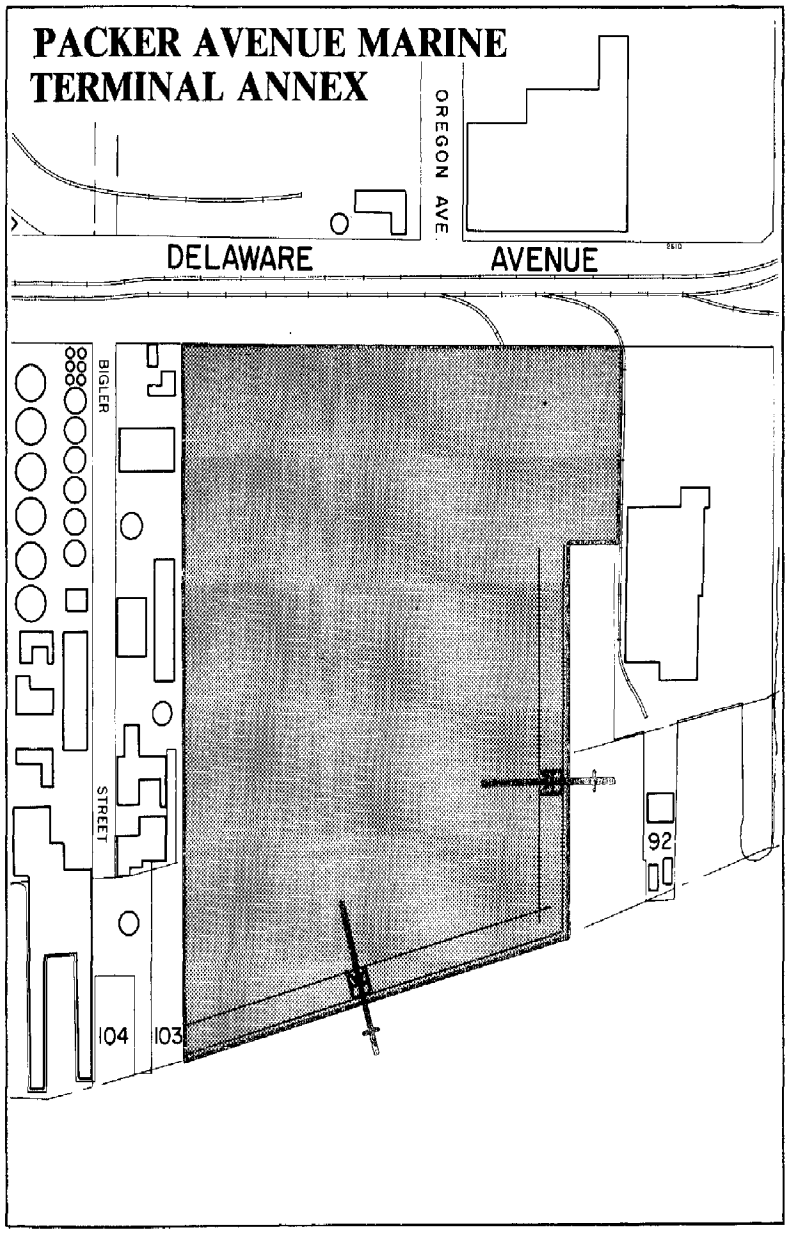
The recommended removal of one transit shed at Packer Avenue Marine Terminal, as discussed above, will increase that Terminal's container capacity, but at the same time will reduce its break-bulk cargo handling capacity. This capacity should be developed elsewhere in the Port of Philadelphia to insure that this cargo is not lost to some other port. These piers can efficiently handle this cargo if needed improvements and repairs are made.

One of the distinguishing features of Piers 78, 80, 82 and 84 is the availability of immediately adjacent backup cargo storage area. This feature, which is designed into modern container terminals, is not similarly found at finger piers elsewhere in Philadelphia. The Philadelphia Port Corporation's recent improvements to this storage area, including paving and fencing the City-



owned former Municipal Car Storage Yard and demolition of obsolete warehouses along Delaware Avenue adjacent to these piers, make it likely that they will continue in active use for the foreseeable future. The Philadelphia Port Corporation has also initiated a major program to rehabilitate these piers using a variety of funding sources including a grant to the City of Philadelphia from the Economic Development Administration. Piers 78 and 80 have been substantially renovated through this process. Additional renovation to Piers 82 and 84 are still needed. These renovations would include: repaving the pier shed floor, repairing the standpipe system and replacing the underground water main. It is recommended that this rehabilitation project continue and that backup storage lands adjacent to these piers be preserved for this purpose and, when possible, expanded through acquisition of adjacent property. Renovation of Piers 82 and 84 is estimated to cost $1 million.

**Development of Piers 96, 98 and 100.** Over the long term, the City should consider the feasibility of developing two additional container berths on the site of Piers 96, 98 and 100. One berth of approximately 900 feet in length can be developed on the north side of Pier 96. The other berth would be developed by bulkheading across the pierhead line of the three existing piers. The space created behind the bulkhead could be filled to create a 30 acre area for container handling and storage. This new facility would not be large enough to operate as a separate terminal, but these container facilities could serve as an annex to the Packer Avenue Marine Terminal when that facility has reached its full container handling capacity. The need for this additional container capacity will not exist before 1990.



The ability to construct these two new container berths is contingent upon the availability of at least twenty acres of land for container storage in addition to the twenty acres that could be provided on the piers. In addition, the costs of bulkheading, sewer line extensions and filling necessary to develop this terminal are high. Permits to fill in the needed area would necessitate federal review and are likely to take several years to obtain.

Another potential use for Piers 96, 98 and 100 is as a support yard for a trash to steam plant that could be developed at the Southwark Generating Station (Pier 92). This station is one of several sites under consideration for such a facility which will not be constructed until late 1980s.

In the short term, however, these piers can provide the port with additional break bulk cargo handling capacity. One possibility would be to use these piers for such labor intensive port traffic as cocoa bean shipments. No major renovations or other improvements to these piers are recommended over the foreseeable future.

**Demolition of Obsolete and Deteriorated Piers.** One of the findings of the 1978 *Port Facilities Study* was that piers which are functionally obsolete are also physically deteriorated. This finding is particularly noticeable for privately owned piers, where the potential return on the owner's investment in physical improvements is so low that the investment cannot be justified. This refutes the conventional wisdom that the waterfront's idle piers could be generating employment and economic activity if only the City would repair them. On the contrary, there are strong indications that the continuing presence of these functionally obsolete structures impedes redevelopment and generation of new employment and economic activity.

It is recommended that pier structures for which there is no practical reuse be demolished to prepare these sites for marketing and redevelopment. Demolition is recommended for Piers 55, 56, 57, 67, 68 and 70, all of which are in private ownership.

**Support Development of Private Bulk Terminal Port Facilities.** Bulk terminal port facilities in the South Delaware Waterfront District include Conrail's coal and ore piers at Greenwich, Publicker Industries' pier facilities just north of the Walt Whitman Bridge and Amstar's sugar pier near Reed Street.

Although these bulk facilities are in the hands of the private sector, the City and the State should continue to assist in their development where that development is consistent with the City's goals for the district.

The City and State role in the public financing of Conrail's Pier 124 coal export terminal capacity expansion is one example of the public sector's involvement in bulk terminal development.

Assistance may also take the form of active support for private sector requests for marine development permits from the U.S. Army Corps of Engineers. On a larger scale, the City, State and regional interests should continue their cooperation in lobbying for maintenance dredging projects and other navigation improvements that are critical to the continued economic viability of the district's bulk marine terminals.

**Increase Port Activity**

**Increase Port Marketing.** The World Trade Division of the Delaware River Port Authority performs the bulk of the Port of Philadelphia's marketing, as part of DRPA's legislative authorization to promote the regional Ports of Philadelphia. Declines in cargo tonnage in 1980, principally in the area of bulk oil imports but also involving general cargo, indicate a need to improve the marketing of the Port. Quantitative improvements, through increasing the amount of the DRPA's marketing activities, have been funded by increases in the World Trade Division's budget, while qualitative improvements to port marketing strategies are the focus of both the *Regional Port Study* now underway and special executive committees composed of City and DRPA delegates.

The South Delaware Waterfront will benefit immediately from the improved marketing of the Port because much of the Port's general cargo handling capacity is located here and because this type of cargo handling activity has the greatest employment and economic impact. It is recommended that the marketing conclusions and recommendations of the *Regional Port Study* and of the executive committees should be given the widest possible dissemination and both public and private support.

**Target Labor Intensive Port Traffic.** Philadelphia longshore employment has been negatively impacted by the rapid containerization of break-bulk general cargo and by the loss of labor intensive cargo commodities to other ports. Joint labor, management and public agency efforts are now underway to correct the conditions that led to the loss of some of these commodities, such as cocoa beans.

Other actions are also being undertaken to increase Philadelphia's share of certain break-bulk cargo commodities which have been moving through other American North Atlantic ports. One outcome of this effort has been the increasing quantities of paper from Finland moving through Pier 80 since its substantial renovation.

The *Regional Port Study* and Port Marketing Executive Committee (consisting of representation from the City of Philadelphia and the Delaware River Port Authority) will recommend strategies for increasing Philadelphia's tonnage of commodities for which the Port has competitive advantages. It is recommended that particular emphasis be placed upon attracting labor intensive cargo commodities when these marketing recommendations are implemented.

**Coast Guard Marine Safety Office.** The U.S. Coast Guard is constructing a Marine Safety Office at the foot of Washington Avenue in the South Delaware Waterfront District. This office will consolidate many Coast Guard functions of the Port which are presently in various locations along the river. The new office will also provide space for the City's Marine Fire and Police detachments.

This new facility is now being designed. Because of its location, the appearance and design of the Marine Safety Office will have an important effect on the development of the adjacent riverfront land. Therefore it is essential that the City work closely with the Coast Guard to achieve mutual agreement on two design issues. First, the access to the Marine Safety Office from Delaware Avenue must be designed so as to preserve the development opportunities for the adjacent land to the south. To accomplish this, the City should encourage the Coast Guard to provide access to the new facility from an extension of Washington Avenue east of Delaware Avenue. This may require acquisition of land from Conrail for the right of way. Second, the Marine Safety Office will be a complementary use to the existing houses west of Delaware Avenue and will in the future be an attractive neighbor for the residential and commercial development that is likely to take place at the foot of Washington Avenue. In reviewing the Coast Guard plans for this facility, the City should make every effort to encourage a design which maximizes the visual attractiveness of this use, while at the same time preserving the functional needs of this important port facility.

**Support Philadelphia Participation in International Coal Export Trade.** Increasing the volume of coal exports through the Port of Philadelphia has a variety of beneficial impacts on the Port, the City, the Region and the Commonwealth of Pennsylvania. Coal exports help to justify the necessary U.S. Army Corps of Engineers' Delaware River channel maintenance projects that undergo annual Congressional review, and this benefits the Regional Port. Pennsylvania benefits because of the economic and employment impacts of mining on depressed areas of the State. The City and the Region benefit not only from increases in coal-related port employment, which are rather limited, but also from the restoration of rail lines, terminals and equipment that will handle other goods as well as export coal.

Perhaps the most significant benefit that the City of Philadelphia may realize from coal exports is the increased awareness throughout the State that the City of Philadelphia is in fact *the* port of Pennsylvania, and that its well being directly affects those areas of the State which are economically dependent on coal mining.

The City of Philadelphia has assumed a leading role in the promotion of coal exports and coal marine terminal development through the formation of the Philadelphia Coal Rail Task Force. This organization represents coal producers, labor, shippers, port interests and all levels of government. It has been instrumental in generating state-wide support for the public financing of improvements to Conrail's coal exporting Pier 124 and has served as a forum for discussion of a wide range of issues that affect coal production, transportation and export. The outcome of these discussions will likely result in the development of additional coal export capacity not only at the Port but also along the entire chain of transportation from the coal mines to the foreign markets.

The most significant topic on the Task Force's current agenda is the development of deep water capacity for the Port of Philadelphia at a location in the State of Delaware. All American North Atlantic ports have experienced difficulty in handling deep draft collier vessels, but it is not financially feasible to deepen all ports that could potentially export coal. The Task Force has made their deep water proposal a least cost alternative in the event that one or possibly two coal ports are deepened. If their alternative is accepted, this capability would establish Philadelphia as a center of the American coal export industry. Deep draft vessels would be topped off with coal brought down by barge from Philadelphia coal terminals.

It is recommended that the City of

Philadelphia continue to provide its full support to the Philadelphia Coal Rail Task Force and particularly to its initiatives to develop a deep water terminal. Support for the terminal development is likely to take the form of lobbying assistance to have the U.S. Senate designate the Delaware River as one of the United States' deep water coal export terminals.

## Industrial Development

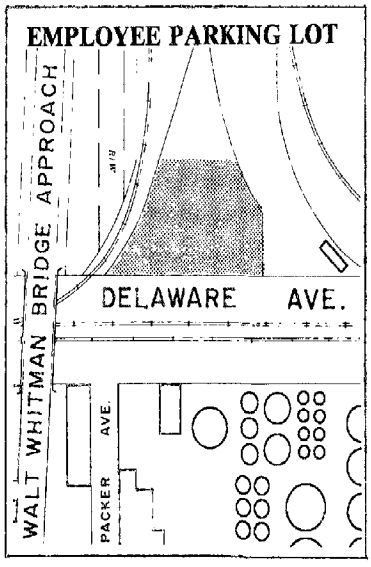
**Retain Manufacturing Employment and Encourage Business Expansion**

**Retain Industrial Zoning South of Reed Street.** All of the land in the South Delaware Waterfront District south of Reed Street is zoned for industrial or port use. All of the current uses in this area are for industry and the port. Since the major goal for the district is to preserve and encourage the development of industry, the port and port-related uses, no changes to existing zoning from industrial or port uses south of Reed Street should be made.

North of Reed Street, the ultimate land use probably does not include industry or port uses. There are however several important industries and existing port uses which are located in the area from Reed Street to Catharine Street. These include Philly Ship, a growing firm which provides maintenance service to vessels in the Port, and Piers 38 and 40, a major break bulk terminal facility owned by the Philadelphia Port Corporation. While much of the land surrounding these uses is vacant and under-utilized and is no longer suitable for modern industrial and port uses, both Philly Ship and Piers 38 and 40 are viable uses. The City should encourage and support these uses in this area. The development of the surrounding land for residential and commercial uses can coexist with these existing industrial and port uses. The existence of industrial uses in a newly developing residential or commercial area does not have to negatively impact either of the two different uses. At such time as Piers 38 and 40 are no longer usable for marine terminal use, their conversion to residential or commercial use can be supported. Until that time, every effort should be made to continue their use for maritime trade. The same is true for Philly Ship and other existing industrial users in this area north of Reed Street. Their existing use of the land should be supported. At a time when these industrial or port-related uses are no longer needed, conversion of the land to residential and commercial use can be supported.

**Provide Development Assistance to Firms.** The City should continue to provide development and business assistance to firms locating or expanding in the South Delaware Waterfront District. The City through its development agencies, the Philadelphia Industrial Development Corporation, the Philadelphia Citywide Development Corporation and others, should actively target business incentives to South Delaware Waterfront firms. In addition to the provision of numerous financial assistance incentives including tax exempt financing, second mortgage financing and the State's Pennsylvania Industrial Development Authority financing, other available business incentives should be actively marketed in the district. The availability of the Urban Development Action Grant Program should be publicized by the Office of Housing and Community Development. This program can be a powerful incentive where private financing is committed for part of a project. The Office of Employment and Training, along with the Private Industry Council, should identify job training needs and should make district firms aware of incentives available for job training and skills upgrading. The work of the One-Stop Business Service of the City's Commerce Department should be targeted to district firms. This office has the expertise to assist many firms in their individual dealings with City and other local agencies.

**Provide Additional Employee Parking.** Most of the employees in the South Delaware Waterfront District drive to work. The provision of secure employee parking is necessary if firms are to attract qualified workers. The alternative to providing parking is to encourage workers to use public transit. The South Delaware Waterfront District is served by transit, but this service is probably not adequate to induce many workers to choose public transit over driving. As a result, there are two centers of present and potential



employment activity which lack sufficient employee parking. These are in the vicinity of Delaware and Oregon Avenues and near the intersection of Swanson and Mifflin Streets.

On the west side of Delaware Avenue north of the Walt Whitman Bridge, a 1.5 acre property owned by the Penn Central Corporation should be acquired by the City and developed as an employee parking lot. This parking lot would accommodate approximately 150 cars. The cost of acquiring this property and improving it would be $250,000. This parking lot would serve the workers of the Port, Publicker Industries and SAF America when their proposed factory is developed nearby. A second parking lot should be developed by the City on one of the vacant blocks owned by Publicker Industries along Swanson Street. This parking lot would serve the surrounding firms, including the workers of Unesco, Inolex, Correll Steel Company, Grant Paper Company, other existing industries, and any new factories that are built on vacant lands nearby.

**Improve, Coordinate and Target the Provision of Public Services to the District.** The provision of adequate public services to the South Delaware Waterfront District is essential if firms are to invest and expand in this area. A continuing source of complaints has been the frequent illegal dumping of trash in the district, particularly along Weccacoe Avenue where there is relatively sparse development and very light traffic. Illegal dumping has a very negative impact on local industries' perception of the area's appearance and attracts rats and vermin to the area.

It is recommended that code enforcement, particularly the assessment of fines on trash dumpers, be carried out in a consistent manner in this district through regular police patrols. Any reduction in dumping will have a very measurable impact on businessmen's perception of the district.

**Attract New Industrial and Port-Related Development.**

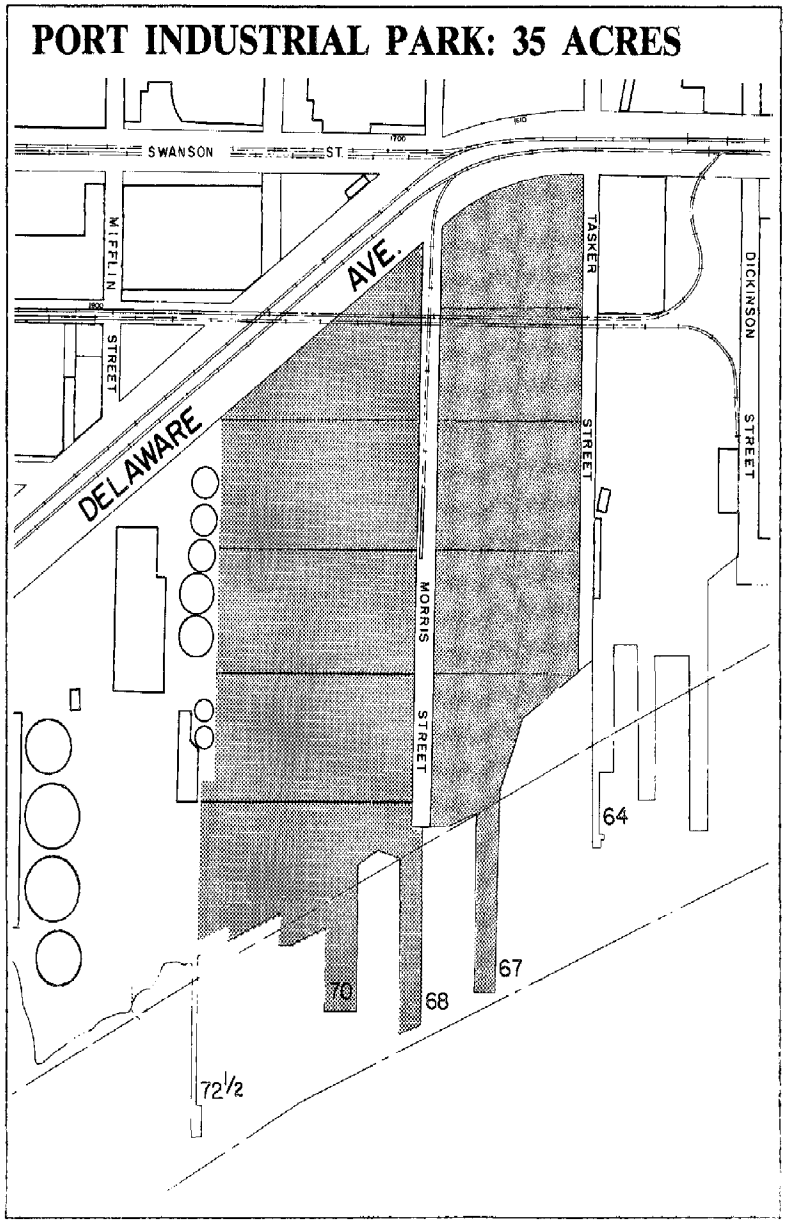
**Acquire the Vacant Kerr-McGee Site and Surrounding Vacant Industrial Properties and Develop a Port Industrial Park.** The Kerr-McGee property and adjacent parcels of land in the vicinity of Morris Street are vacant and available. These properties form approximately 35 acres of land with over one thousand feet of river frontage and access to both Conrail and Chessie System rail service. No other available land in Philadelphia has these special characteristics.

The chief drawback of these properties is that they have unconventional configurations and confusing access. These drawbacks can be remedied by the assembly and clearance of these parcels and their marketing as an assembled site in order to make the site's special characteristics apparent to potential buyers. It is recommended that this land assembly and marketing project be undertaken by the Philadelphia Industrial Development Corporation.

The *Regional Ports Study* currently underway may be of assistance in the marketing of this site. The work program of the study includes a waterfront industrial development analysis. Its findings should help in the preparation of strategies to market these parcels. The cost of acquiring this land would be approximately $3,100,000. Site improvements would cost another $350,000. The land could then be sold at below market rates using the land write down program of PIDC. A 35 acre industrial park when fully developed would have approximately 525 workers and would pay wage taxes, property taxes, and use and occupancy taxes in excess of $1,000,000 per year.

This industrial park is especially marketable because it would be one of only a very few locations in the Delaware Valley with competitive freight rail service. Further, it is near modern port activities, the International Airport and Center City. Finally, it has excellent access to the Interstate highway system and to southern New Jersey. Similar qualities found in PIDC's nearby Interplex Business Complex have led to the rapid development of the Eastwick and Penrose Industrial Districts, with the latter district now beginning to approach full capacity. In developing and marketing this industrial park, the Philadelphia Port Corporation should play an active role to target development of this land to port and port-related users.

**Chessie Piggyback Facility.** The Chessie System has announced that it intends to make major improvements to its *Piggyback* terminal facilities in Philadelphia. Chessie's present *Piggyback* terminal is located in the South Delaware Waterfront District along Delaware Avenue. The Chessie System has yet to decide whether this existing facility will be improved or whether a new facility will be constructed elsewhere. Because of the importance of this intermodal freight facility to the Philadelphia Port and to the City's economy in general, the City should provide the Chessie System with whatever public assistance is necessary and appropriate to implement these improvements.

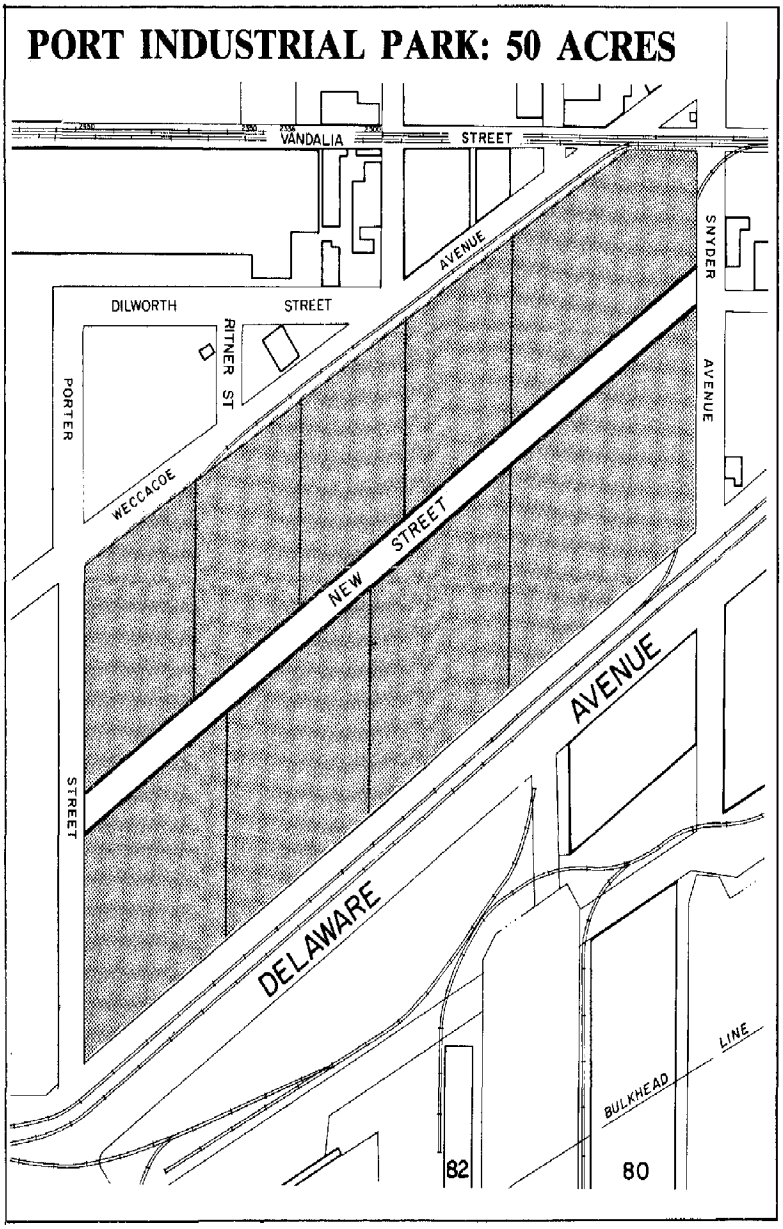



If the Chessie System decides not to make these improvements in the South Delaware Waterfront District, approximately fifty acres will become surplus to the railroad's needs. If this occurs, the City should acquire this land and develop a second port industrial park, as proposed for the Kerr-McGee site.

Acquisition of this site from the Chessie System would be in the order of $3.0 million. Site improvements would cost approximately $500,000. A 50 acre port industrial park would create approximately 750 jobs and would generated City tax revenues when fully developed in excess of $1,500,000 per year.

This port industrial park should be developed by the Philadelphia Industrial Development Corporation, and marketing should focus on port and port-related users. The advantages of this industrial park would be similar to those discussed earlier for the Kerr-McGee site. The development of these two new industrial parks in the South Delaware Waterfront District would reserve sufficient land for port and port related users to meet the demands of the Philadelphia Port for the next 20 years. It is essential that this commitment to the port be made if other land along the waterfront, such as that near Center City, is to be made available for other non-port and non-industrial uses. The most appropriate place to make that commitment is in the South Delaware Waterfront District which is the focus of a substantial portion of port activity.

**Continue Support for Private Development.** A number of specific private development proposals have been put forth for the South Delaware Waterfront District. The City should continue to foster private development in the area and should specifically tailor assistance to




the particular needs of each proposal.

The decline of the level of Publicker Industries' activity may be reversed and its employment increased by as many as 250 jobs. This will occur if the gasohol production capability at their Bigler Street refinery is developed. This development is conditioned upon the availability of financing from a fund established by the U.S. Department of Energy.

When this fund was first announced, a nationwide competition was conducted to identify the most worthy projects. Publicker was selected as one of the finalists and is negotiating the terms of a loan from the Department of Energy. Intensive lobbying accompanied selection of the finalists, and the City of Philadelphia provided Publicker with its full support. Their proposal is presently before a Review Committee.

If Publicker's proposal is accepted, then the next step will be to secure the necessary development permits from various agencies in the Federal, State and City governments. The City of Philadelphia should continue to provide Publicker with its full support at every opportunity during the permit review process.

The City of Philadelphia should also continue support for SAF America's proposal to develop a yeast plant employing 300 at the Foreign Trade Zone on South Delaware Avenue south of Oregon Avenue. The proposed SAF America development will occupy the entire 23.7 acre Foreign Trade Zone in the vicinity of Delaware and Oregon Avenues, leaving no further acreage for Foreign Trade Zone development at this site. The other location on the South Delaware Waterfront designated as part of the Foreign

Trade Zone in the City's original Zone certification, Pier 78 and its outbuildings, is recommended to remain in maritime-related commerce. Since the properties comprising the City's first Foreign Trade Zone are now either designated entirely for development or active port use, it is now recommended that Foreign Trade Zone marketing efforts be shifted away from the South Delaware Waterfront. Efforts should be instead focused upon the new zone that was recently certified in the Eastwick section of the City, at 70th Street and Holstein Avenue.

## Other Development Opportunities

**Foster Commercial and Residential Development Where Appropriate**

**Encourage Commercial and Residential Development at the Foot of Washington Avenue.** The area at the foot of Washington Avenue differs from other sites in the South Delaware Waterfront District in that it represents a major development opportunity for residential, commercial and recreational uses. There are several clear reasons why this area should be developed for residential and commercial uses.

First, the piers below the foot of Washington Avenue south to Amstar provide no existing or even potential capacity to the Port. The existing piers are too small and functionally obsolete, and the surrounding area lacks sufficient ground storage potential for consideration as a container terminal site. The railyards here provide service at present only to Amstar and a few industries along Washington Avenue at a usage rate far below these railyards' capacities. The only existing use found in this area that is critical to the long term viability of industry is the switching and storage of rail traffic to and from Amstar Corporation.

Port-related uses have already been examined, and the conclusion is that these sites are impractical for potential container terminal development. Bulk terminal development here appears undesirable because of the inadequate rail access to the site, which is in the bed of Delaware Avenue. Reuse of the existing piers is impractical because of their size and physical condition, and because of the availability of longer, wider, underused piers elsewhere on the South Delaware Waterfront, such as Piers 96 and 98, which are more suitable to the handling of modern break-bulk ships.

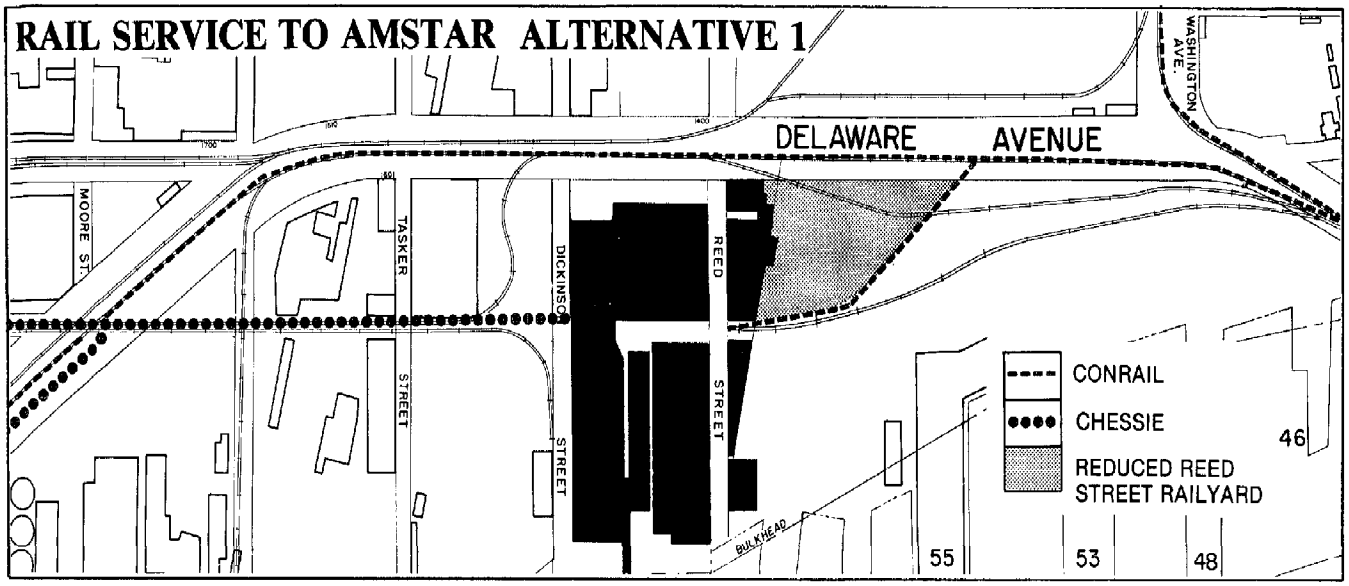
While these sites may have limited reuse potential for industrial development, there is no apparent specific demand for this use at these sites, and at the same time, there is a considerable amount of industrially zoned, rail served acreage available elsewhere. Removal of these lands from the pool of available industrially zoned acreage is not likely to have any appreciable effect on the supply of industrial land in the City of Philadelphia.

While the reuse potential of these sites for port related development is impractical, and for industrial purposes is marginal, considerable demand is apparent in this general area for residential, commercial and recreational development relating to the Delaware River. There are significant locational advantages that suggest that mixed residential, recreational and commercial development would be the most suitable use for these sites. Second, this area fronts onto the Delaware River for more than a quarter of a mile and, where the River bends eastward, affords a dramatic view back to Penn's Landing and Center City. Access to this area is excellent, entrances to the Delaware Expressway are nearby, and Washington Avenue is a major thoroughfare for east-west traffic. Mixed residential, recreational and commercial development would be most compatible with uses in adjacent neighborhoods. Such development could also better exploit the historic character of this area, of which Old Swedes' Church is an example. Already a substantial number of new houses have been constructed along Delaware Avenue in this area. The Coast Guard's Marine Safety Office will be constructed at the foot of Washington Avenue and will be an attractive use within a new residential and commercial area.

Third, the area at the foot of Washington Avenue should be viewed as an integral part of the plan for the development of the Central Riverfront. This plan proposes to create an environment in which one can live, shop and stroll along the water's edge. Within the context of this plan, the foot of Washington Avenue is naturally suited to serve as its southern end. When this site is fully assembled, approximately 35 acres of cleared land directly fronting on the Delaware River will be available for development. Properly designed, with a buffer to mitigate against potential problems between industry and homes and with the resolution of Amstar rail service issues, this site could provide unique residential, commercial and recreational opportunities for the City of Philadelphia.

Development of this area will be constrained by the need to manage development in such a way so as not to negatively impact existing port and industrial uses which are adjacent to this area. This would include Piers 38 and 40, industries such as Philly Ship and the Amstar Corporation.

The Amstar Corporation is located direct-


RAIL SERVICE TO AMSTAR ALTERNATIVE 1
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TASKER STREET
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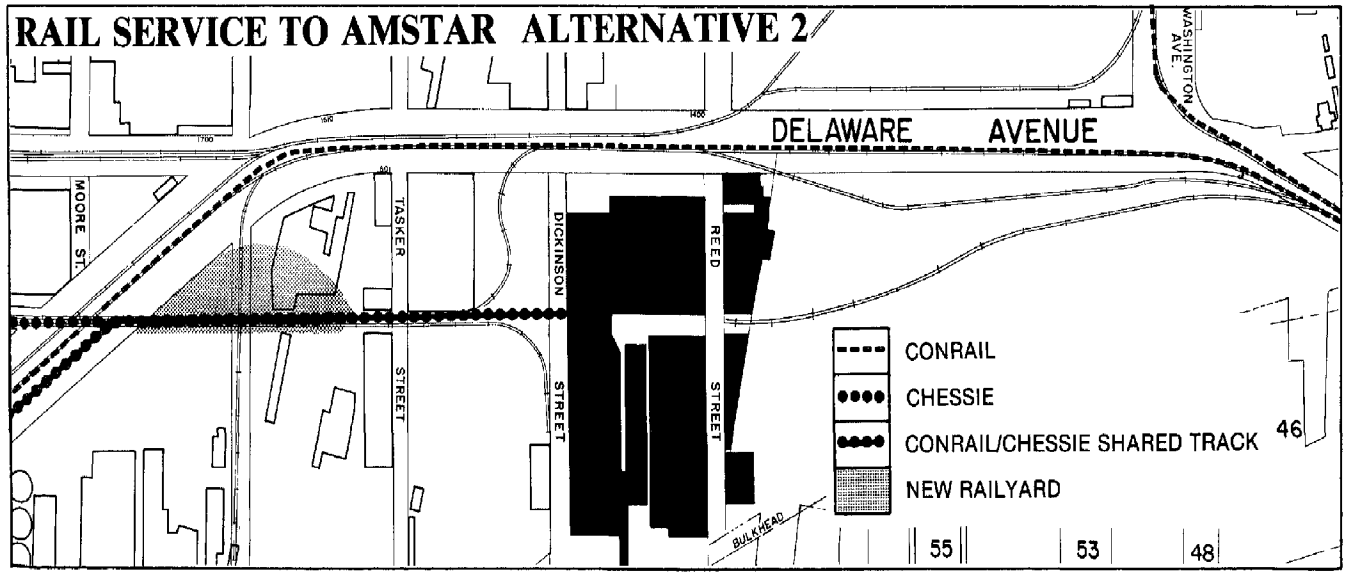
RAIL SERVICE TO AMSTAR ALTERNATIVE 2
DELAWARE AVENUE
WASHINGTON AVE.
MOORE ST.
TASKER STREET
DICKINSON STREET
REED STREET
BULKHEAD
CONRAIL
CHESSIE
CONRAIL/CHESSIE SHARED TRACK
NEW RAILYARD
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ly to the south of the area being proposed for residential and commercial development. It is a major industrial facility in the South Delaware Waterfront District and employs 650 workers. A major objective of the development of the foot of Washington Avenue will be to accommodate the needs of Amstar and to develop a plan which will allow these two different land uses to coexist.

There are two areas of concern regarding Amstar Corporation. First, a buffer must be designed between the Amstar plant and new development to the north. This buffer will be needed to serve new residents and also to serve Amstar. The buffer will screen the Amstar plant and should reduce any problems of noise, odor or traffic that might result from the refinery's operation. Second, the Reed Street Rail Yard to the north of Amstar is mostly vacant and underutilized. Its one remaining function is to service the Amstar plant from the north. Amstar is presently served by two rail carriers; the Chessie System has rail service to the plant from the south, and Conrail serves the plant from the Reed Street Yard. Before any development can take place at the foot of Washington Avenue and on the Reed Street Yard, a satisfactory method of providing alternative Conrail service to the Amstar Corporation must be found.

There are two alternatives that will satisfy the rail needs of Amstar and release substantial property for development. The first alternative would continue Conrail service to Amstar from the north, but by using a very much reduced Reed Street Yard. By redesigning the Reed Street Yard to accommodate only Amstar traffic, most of the existing railyard would be reused. This alternative would have the least impact on the operation of the Amstar refinery but would introduce another constraint into the reuse design. The new residential and commercial development would have to be designed to accommodate this new yard. Through good design these problems could be managed.

The second alternative would be the provision of Conrail service to Amstar exclusively from Amstar's south side via the Chessie System tracks along Vandalia Street. This latter alternative allows the reuse of the entire Reed Street Rail Yard in conjunction with the redevelopment of the adjacent Piers 53, 55, 56 and 57, but in all likelihood may require development of a small railyard for Conrail to serve Amstar along Vandalia Street.

The second alternative provides all rail service to Amstar via Vandalia Street and permits the most coordinated and integrated development of the properties above Amstar. This alternative, however, raises a number of issues: Do existing work flows within the Amstar plant permit service exclusively from Vandalia Street, or are certain operations entirely dependent upon Reed Street Rail Yard service? Can work flows be changed to permit redirected rail service?

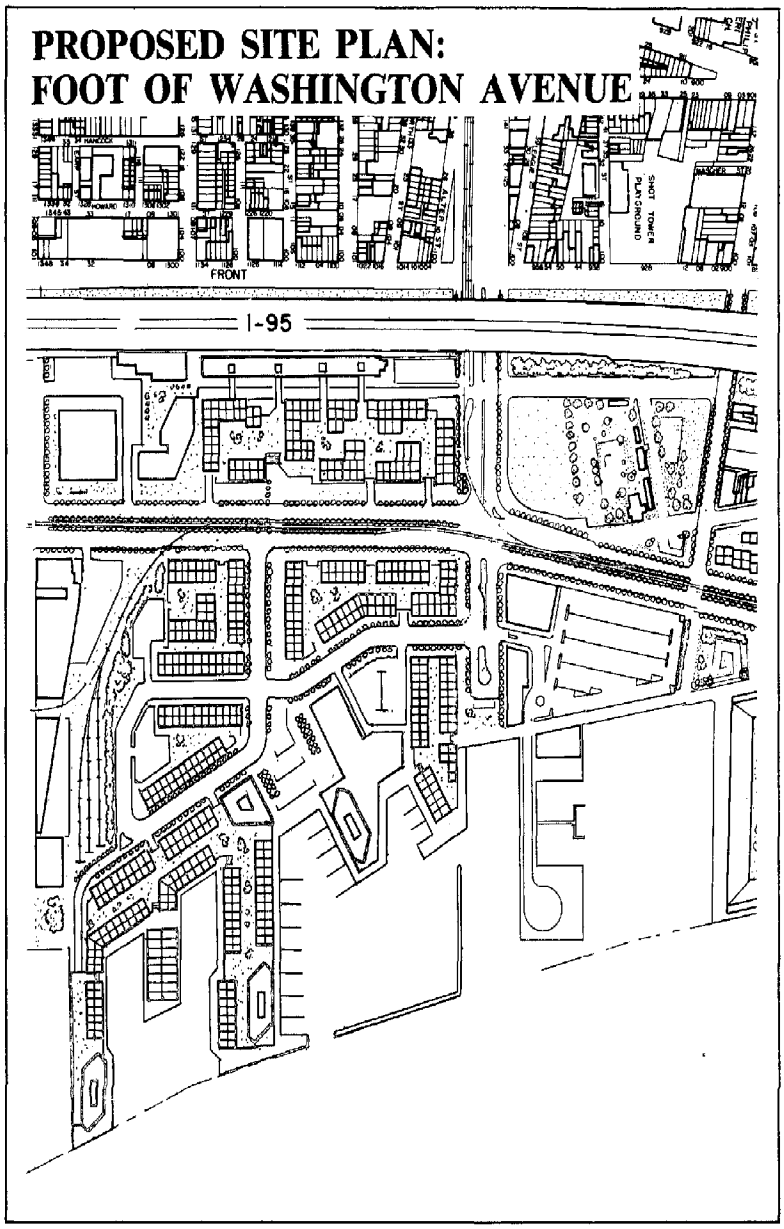
What actions are necessary to permit Conrail use of Chessie's Vandalia Street tracks?

If capacity is lost at the Reed Street Yard from its redevelopment, can it be substituted on Amstar's south side on presently available properties along the Vandalia Street tracks? How much, if any, capacity must be replaced, and in what configuration?

Analysis of these two alternatives and the answers to the above questions are the focus of an engineering study now underway by the Planning Commission. Present and potential rail service demand and the lands available to meet these demands at the Reed Street and Federal Street railyards will be analyzed in order to determine the best possible solution.

Whichever alternative is selected, substantial vacant waterfront and adjacent lands will be freed for alternative uses.

The detailed land use and urban design recommendations for the foot of Washington Avenue are discussed in the Central Riverfront Plan. Those detailed recommendations follow from these guidelines. First, the area north of Amstar, comprising Piers 53, 55, 56 and 57 and the Reed and Federal Street railyards, should be developed for housing, recreation and open space, and commercial activities. Second, the protection of Amstar's rail service requirements should be established by the City of Philadelphia as a condition for granting any change in the zoning of the Reed Street Rail Yard needed to permit this new development. And third, a small portion of the vacant properties in the vicinity of Morris Street, recommended earlier for development of a port industrial park, be reserved until such time as Amstar's rail capacity requirements are clearly understood and the viability of the Vandalia Street alternative for Amstar rail service is known.




## Transportation Improvements

**Improve Highway Access to the South Delaware Waterfront District**

**Complete I-95 and Improve Access.** Interstate 95 should be completed and access should be improved in order to provide better service to the South Delaware Waterfront and to reduce traffic volumes on Front Street south of Morris Street. The Morris Street entry ramp should be opened with a configuration which will minimize traffic impacts on Front Street. Exiting traffic from northbound I-95 should be directed to Delaware Avenue, possibly on Morris Street. The intersection of Morris Street with Delaware Avenue should be signalized, and the median barrier should be cut to allow cross traffic.

**Improve Signage to Port and Transportation Facilities.** Signage on I-95, the Schuylkill Expressway, the Walt Whitman Bridge and on local through streets in the South Delaware Waterfront District should be improved to direct trucks to and from major generators of traffic such as Packer Avenue Marine Terminal and the Chessie *Piggyback* Yard.

## Improve Traffic Circulation

**Reconstruct Delaware Avenue and Clarify Circulation Patterns While Allowing Needed Access.** Delaware Avenue needs extensive improvements in order to adequately serve existing and planned new development in the South Delaware Waterfront District.

Funding limitations require that the improvements be directed to correcting the most serious problems. The rail portions of the road are in very poor condition

and should be reconstructed. Only rail tracks in active use or which are needed for planned industrial revitalization should be rebuilt.

Improved circulation on Delaware Avenue requires signing, striping and some additional traffic signals to direct vehicular flow. The planned channelization of Delaware Avenue into rail, through traffic, and service lanes will help to clarify traffic flow. But the current design needs some modifications in order to provide better access to adjacent properties and intersecting streets. Specifically, a median cut and a traffic signal should be provided at or near Morris Street in conjunction with improved I-95 access. A median cut should also be provided at McKean Street to allow left turn access for the industries located on the east side of Delaware Avenue at McKean. Finally, to provide more flexibility in the event of loading obstructions, barriers between through and service lanes should be low enough to permit vehicles to cross at slow speeds.

**Extend Washington Avenue East of Delaware Avenue to Serve New Development.**

**Repair Local Streets Especially Where the Presence of Railroad Tracks in Streets Has Led to Deterioration of the Road Surface.** Streets in the South Delaware Waterfront District need repairs in many locations, generally where railroad tracks are embedded in the streets. Among these locations needing repairs, the most important are Oregon Avenue at Swanson and Vandalia Streets and Morris Street between Water Street and Delaware Avenue. Swanson Street also should be repaired in any section which is needed to serve development with vehicular access.

**Improve Rail Service**

**Resolve Limitations for High and Wide Cargo.** There is one constraint that handicaps the otherwise complete provision of rail service in the South Delaware Waterfront District. There are clearance and curvature limitations along rail lines serving the South Delaware Waterfront such that *high and wide* cargo exceeding a certain height, width or length cannot reach Packer Avenue Marine Terminal. Thus, one of this terminal's three container cranes, which has a heavy lift capability of 325 tons, is underutilized.

Over a period of several years, a series of meetings have been held among affected railroads, public agencies and shippers in order to identify clearance and curvature constraints to *high and wide* cargo and to propose solutions to resolve this problem. It is recommended that the City of Philadelphia convene all affected parties and urge the timely resolution of all pertinent issues. Providing accessibility for all oversized cargo to Packer Avenue Marine Terminal will allow the port to gain significant amounts of new general cargo tonnage and to increase its employment and economic activity.

ACT
ACT
TRAILER TRAIN

# Glossary

## Port and Rail Terms

**Berth** is the water area in which a ship lies when docked at a marginal *wharf* or at a pier.

**Break-bulk cargo** is *general cargo* moved to and from a ship's hold by gangs of stevedores. Examples of this are cargo not amenable to containerization, such as steel products, or cargo whose vessel or foreign port of origin or destination lacks container handling capability.

**Bulk cargo** is cargo that can be pumped, dumped or poured. Examples of this are coal, grain, oil, sugar and ores.

**Bulkhead line** is the federally established line that sets the boundary of the shore. Piers typically extend out into the river between the bulkhead and pierhead lines. Piers may not extend beyond the *pierhead line*, but many extend inshore of the *bulkhead line*.

**Collier vessels** are *bulk cargo* ships with coal as the principal cargo.

**Container cargo** is *general cargo* packed in boxes 20 or 40 feet long which are moved to and from the dock by truck or rail, and over the dock by special cranes or ship's gear. Examples of this are cargo moving via container ship and containers moving as deck cargo on other ships.

**Container-on-flat-car** is container traffic moving to and from a marine terminal by rail. Examples of this are international container traffic to and from an inland point via the port of Philadelphia for which rail service and rates are competitive with that of trucks.

**Closed storage** is used for weather sensitive break-bulk general cargo which is kept under a roof. The *Port Facilities Study* estimated that annual covered storage cargo handling capacity in 1977 existed in the *Ports of Philadelphia* for 4.4 million tons of cargo and projected that by 1990 this capacity would decline to 3.5 million tons, primarily as a result of facility obsolescence. The study estimated that by 1990 a maximum of seventy five percent of this capacity would be utilized.

**Deep draft vessels,** when fully loaded, exceed the depth limitations of the harbor channel. For the Delaware River in Philadelphia, the U.S. Army Corps of Engineers maintains a 40 foot channel depth through its dredging activities. In Delaware Bay, oil vessels having drafts of 55 feet are permitted, but their cargo is siphoned off to permit the vessel to proceed upriver to Philadelphia.

**Flexi Flo** is a specialized system of bulk cargo transfer from rail tank cars to trucks. Conrail maintains a *Flexi Flo* terminal in the South Delaware Waterfront District on the south side of Oregon Avenue, east of Vandalia Street.

**General Cargo** is merchandise that requires special care in handling, either in containers or as *break-bulk*. This includes auto parts, meat, vehicles, instruments, paper and steel products.

**High and wide** is cargo that exceeds the height or width or length of standard railroad equipment. Examples of this include: cargo that would be 9 feet wide at 1½ feet above the top of the rail; cargo that would be 6 feet wide at 17½ feet above the top of the rail; and cargo of any height or width whose length exceeds 89 feet. The permissible dimensions of *high and wide* cargo vary with each rail line but are usually most constrained in urban areas where bridges, overpasses, tight curves and tunnels are encountered.

**Longshoremen's Hiring Hall** is a building located west of Delaware Avenue under the Walt Whitman Bridge where longshoremen assemble for assignment to gangs that handle cargo on arriving or departing ships.

**Merchandise Cargo** is the same as *general cargo*.

**Open Storage** is used for non-weather sensitive break-bulk general cargo. The *Port Facilities Study* estimated that in the *Ports of Philadelphia* the aggregate annual open storage handling capacity was 5.7 million tons and expected this to decline to 4.8 million tons in 1990. The study projected that the maximum utilization rate for this space would be 57% in 1990.

**Pier face** is the outer end of a pier fronting onto the river, frequently along the boundary known at the *pierhead line*.

**Pierhead line** is the federally established boundary delimiting the distance into the river to which piers may be constructed.

Beyond the *pierhead line* are the navigable waters of the river.

**Piggyback** or *Trailer-On-Flat Car* consists of truck trailers moving intercity by rail rather than by highway. Railroads maintain *TOFC* terminals at major centers of traffic origin or destination. Examples of this are truck trailers or containers on truck trailer chassis with origin or destination at either of the 3 public use *TOFC* terminals in Philadelphia, or at both container terminals, where *Piggyback* ramps are provided.

**Ports of Philadelphia** refers to all docking facilities located along both sides of the Delaware River from Trenton, New Jersey south to the Atlantic Ocean, and including facilities along the Schuylkill River in Philadelphia and the Christina River in Wilmington, Delaware.

**RO-RO** or *Roll-on, Roll-off* is *general cargo* packaged in containers which are mounted on truck trailer chassis and driven onto or off ships. Examples of this are cargo bound to or from ports either lacking container handling capability or having capabilities overextended by peak volumes.

**Transshipping** involves the transfer of cargo from means of conveyance to another for further transportation. *Transshipment* may be intermodal, for example rail to water (coal), or train to truck *(Piggyback),* or intramodal, for example from *deep draft vessel* to barge (oil).

**Wharf** is a structure built either along the shore (known as a *marginal wharf*) or at an angle from the shore (defined as a *pier*) which is built for the purpose of receiving and discharging ships' cargo.

# Environmental Terms

**Dissolved oxygen** is often referred to as D.O. This is gaseous oxygen which is disolved in water. An adequate concentration of oxygen in river water is necessary to sustain fish life and prevent offensive odors. Fish generally require concentrations of D.O. in excess of 4.0 milligrams of oxygen per liter of water. But where waste treatment is inadequate, rivers may contain virtually no dissolved oxygen. This is because oxygen is consumed from the water by bacteria feeding on organic wastes.

**Elevated salts** derive from the ocean. The lower Delaware River is an estuary in which fresh water from upriver mixes with salt water in Delaware Bay. Normally, no measurable quantities of sea salts occur in the river in the Philadelphia vicinity. But during droughts, there are insufficient volumes of fresh water to adequately flush seawater from the river in the Philadelphia area, and the concentration of sea salts rises noticeably.

The Delaware River Basin Commission, with representatives from Delaware, New Jersey, New York and Pennsylvania, is responsible for regulating the river's flow and has established a criterion for salt levels. The concentration of chloride, an indicator of sea salt, should never exceed 250 milligrams per liter in the Delaware River upstream from the mouth of the Schuylkill River. This criterion, unfortunately, is frequently violated during dry weather. When the concentration of chloride in the river violates this standard, there may be adverse effects for public water supplies in southern New Jersey and for industrial supplies downstream from the Benjamin Franklin Bridge.

**Fecal coliform bacteria** are microscopic plants that develop in the human intestinal tract. Their presence in the river is an indication of contamination by human waste and of a potential hazard that disease causing bacteria and viruses may also exist in the river. In the South Delaware Waterfront District, fecal coliform bacteria occur in concentrations about 100 times greater than concentrations acceptable for swimming in the river.

**Floodplains** are waterfront lands prone to flooding. During exceptionally heavy rainstorms, the banks of the Delaware River cannot contain all of the flow from upstream, and the river inundates adjacent lands. The Federal government has established a uniform criterion for defining flood plains. They are all lands covered by water during a flood of such a magnitude that it has a probability of recurring only once every 100 years. The floodplain is divided into two components for the purpose of floodplain management. The *floodway* denotes land areas subject to excessively deep or swiftly moving flood waters. The balance of the floodplain is known as the *floodway fringe,* where development may be permitted as long as flood-proofing and other precautions prescribed by City codes are utilized.

**Non-methane hydrocarbons** are a class of gaseous chemical compounds formed from carbon and hydrogen. They are larger than the relatively stable methane compound and are responsible for the creation of ozone, a serious lung irritant, when exposed to sunlight.

**Nitrogen oxides** are a class of gaseous compounds which are serious lung irritants, the most significant uncontrolled source of which is automobile exhaust.

**Once-through-cooling** occurs during electricity generation at the Southwark Generating Station. Great amounts of heat must be dissipated from the boilers which power the generators. The walls of the boilers are surrounded by water to which the waste heat is transferred. This cooling water is withdrawn from the Delaware River, passed only once against the boilers, and discharged back to the river at a temperature slightly higher than when withdrawn.

**Ozone** is a reactive form of oxygen created when airborne hydrocarbons are energized by sunlight, and it can cause lung irritation when in concentrations exceeding national standards.

**Regulatory flood elevation** relates to a flood of the Delaware River with a 100 year recurrence interval. In this event, the U.S. Army Corps of Engineers has determined that the level of the river in the Philadelphia area will rise to an elevation of 10 feet above mean sea level, which is 7 feet above the river's average level. City codes specify that flood protection measures are required for structures up to an elevation which is 1 foot above the top of flooding waters. Hence, the regulatory flood elevation is 11 feet mean sea level. The City's streets and drainage maps, however, do not use elevation measures based on mean sea level. When converted to the City's datum, the 100 year flood has an elevation of 4.29 feet, and the regulatory flood elevation is 5.29 feet.

**Shallow water areas** are submerged lands, usually situated at the river's edge, which are covered by less than 10 feet of water. Aquatic biologists regard shallow water areas as the most productive portion of a river because these areas produce food, give shelter and provide breeding areas for fish. Much of the shallows which once existed along Philadelphia's riverfront have been destroyed by pier and bulkhead development and by filling. Federal laws and regulations serve to protect remaining shallows from future, unnecessary destruction.

**Sulfur dioxide** is a common byproduct of fuel combustion emitted in exhaust gases. This compound can be irritating to eyes and lungs at concentrations in the air exceeding standards established by the Federal government. Oil refineries, electric utilities and home heating systems contribute most of the sulfur dioxide in Philadelphia's air.

**Suspended particulates** are small-sized particles discharged from stacks during the burning of fuel or other material. Even though pollution control equipment can trap most of the particles generated by burning, many thousand pounds of fine particles still may be released daily by a large industry or utility.

**Weeds** include certain plant species that are capable of surviving the extreme dryness and infertility of rubbly, vacant land along the riverfront. The most common species occurring in the district are the following.

*Ailanthus* is also known as the *Tree-of-Heaven.* This oriental weed tree is Philadelphia's most rapidly growing tree, capable of growing 10 feet per year even in the most unlikely crevices. The leaves are exceptionally large, with as many as 40 leaflets, the trunks are slightly furrowed, and the large, pale green flower clumps produce a distinctive odor.

*Sweetclover* is an escapee from farm fields. This legume occurs in virtually all vacant fields in the City, growing vigorously to chest height by mid summer, producing a profuse show of yellow or white flowers, and dying in late summer.

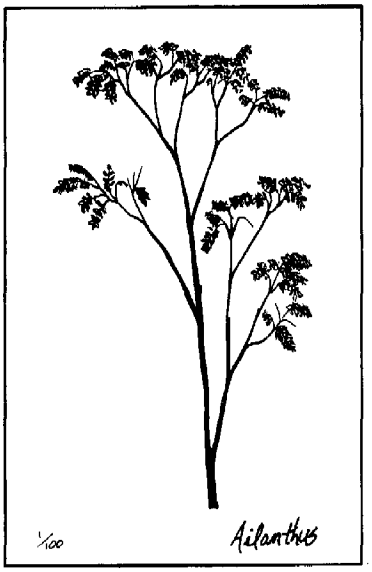
*Prickly lettuce* is a prickly-leaved cousin of the garden variety of lettuce that grows to a waist high spike bearing a mass of small, dandelion-like flowers in midsummer.

*Goosefoot* is also known as *Lamb's-quarter.* This chest high, branching weed is typically one of the first invaders of newly exposed land surfaces. Its diamond shaped leaves are dull blue-green above and mealy white beneath.

*Wormwood* is a chest high weed with feathery, deeply dissected leaves resembling those of common ragweed. A closely related plant also occurring on the riverfront, called *mugwort,* has leaves with a velvety white surface beneath.

*Barren chess* is calf-high grass, distinguished by its occassionally purplish stems, its early death in summer and its seeds which cling aggressively to the socks of passersby.

*Foxtail millet* often grows in dense clumps, and in midsummer produces waist high stalks, each bearing a bushy *foxtail* containing large, roundish seeds which are a major food source for song birds.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Ailanthus

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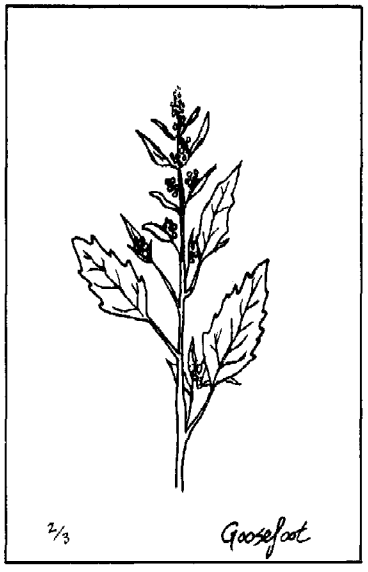
Sweetclover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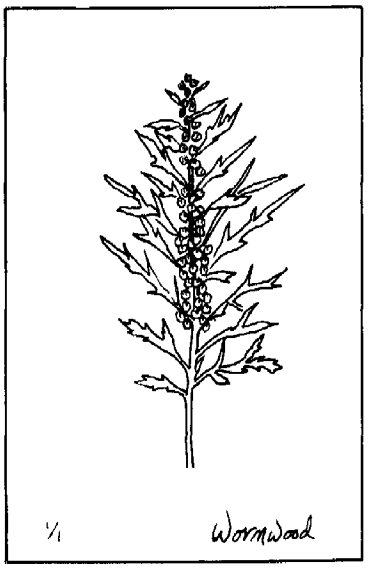
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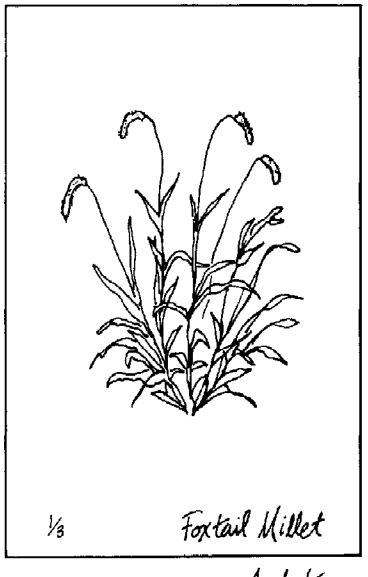
Barren Chess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Foxtail Millet

Andrade

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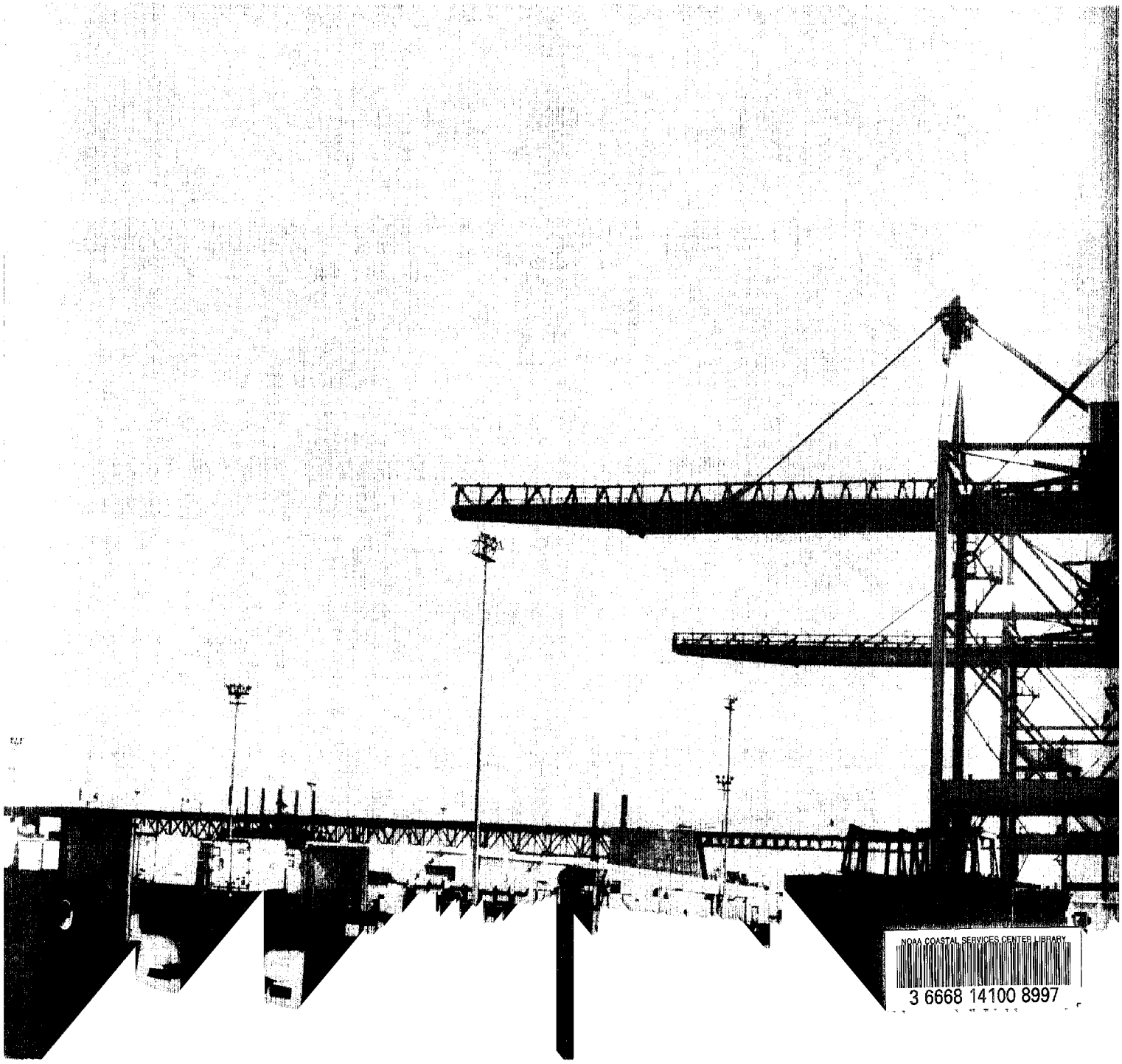

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