BROWNFIELD
economic redevelopment
...linked to trade & transportation

FINAL REPORT

# Brownfield Economic Redevelopment:

## Preparing Modern Intermodal Freight Infrastructure to Support Brownfield Economic Redevelopment

A Joint Project of the
North Jersey Transportation Planning Authority, Inc. and
the New Jersey Institute of Technology

*Funded by the Federal Transportation and Community and System Preservation Pilot (TCSP) Program*
January 2003

NJIT New Jersey Institute of Technology

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This report was financed by the US Department of Transportation, Transportation and Community and System Preservation Pilot program. The NJTPA and NJIT are solely responsible for its contents. Information presented on case study properties in this document is intended to provide only general guidance as to the issues affecting possible development of the sites and cannot substitute for due diligence on the part of those advancing development proposals.

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# Section 1- Introduction

Northern New Jersey is positioned to reap significant economic, environmental and social benefits from changes in global trade patterns and business practices that already are increasing the flow of goods through the region's port, airport and rail terminals. The region can best take advantage of these changes by undertaking well-placed infrastructure investments in conjunction with efforts to redevelop abandoned and under-used industrial sites in the port area to serve as warehousing and distribution centers (W/DCs).

This final report on the Brownfield Economic Redevelopment (BER) project focuses on how these sites, known as brownfields, can be used as strategic assets to meet the evolving needs of the freight industry. The report presents the findings of several case studies of brownfield sites, which yielded insights into the complex issues that confront the region in achieving the redevelopment of the thousands of acres of brownfields in the port area.

The report makes clear that this is an ideal time for the state and region to adopt policies and programs to aid redevelopment of these brownfields for freight related purposes. The anticipated use of giant container ships carrying goods from Asian markets via the Suez Canal to the East Coast, combined with the deepening of channels at the port of New York & New Jersey, means that there will be significantly greater volume of high-end consumer goods moving through the port in the near future. At the same time, changes in logistics practices by businesses are favoring distribution operations closer to ports and other freight terminals and are creating new types of warehouse facilities that employ larger numbers of workers to process and manipulate goods before they are shipped to markets.

If the region can capitalize on these trends through large-scale freight related brownfield redevelopment, this report shows, it can create a strong new base of employment to help make up for the continuing decline in the state's manufacturing base. It can also offer a more effective alternative to siting warehouses and distribution centers on the fringes of the region, which has led to a massive loss of open space, an increase in truck traffic over already congested roads and added regional air pollution.

Moving freight activity closer to the region's core to efficiently use available land and existing transportation infrastructure, makes this an ideal Smart Growth initiative for the state and region. It also is an effective economic growth strategy: as other sectors of the economy have been buffeted by recession, traffic through the port has continued to grow and even more dramatic growth is projected for coming years.

However, as discussed in this report, there are significant obstacles to realizing these benefits. High remediation costs, lack of coordination of government programs, inflexible and time-consuming environmental regulations and a piecemeal approach to planning are among the barriers. The report presents a set of targeted recommendations that will move the state's brownfield redevelopment process forward and highlights critical policy questions that must be addressed by state, local and regional officials in cooperation with the private sector.

The BER project was funded under the federal Transportation and Community and System Preservation Pilot program. This report draws upon and incorporates findings of Phase I of the project, which was completed in 2001. The report is divided into sections on background, methodology, case study summaries, case study findings, analysis of findings and conclusions-recommendations. The "Port District" referred to in this document is defined as the area within a roughly 25 mile radius from Port Newark/Elizabeth.

# Section 2 - Background & Context



## 2.1 Global Trends Affecting Brownfield Reuse

### 2.1.1 Importance of Freight

The goods handled by the port, airport and rail terminals in northern New Jersey underpin much of the tri-state metropolitan region's economy. Nearly every commodity used, consumed or sold in the region passes through the northern New Jersey freight distribution system. A study in 2000, pointed to the value of freight to the State of New Jersey: [1]

- New Jersey is ninth among states in the volume of exports generated, sending goods made in the state to over 200 worldwide destinations.
- These exports include pharmaceuticals, chemicals, electric and electronic machinery and computer-related equipment.
- New Jersey is fifth among states for foreign investment with over 1,200 foreign owned firms.
- More than 375 million tons of freight move through the state each year, with more than 80 percent moving at least part of the journey by truck.
- The NJ freight distribution industry employs over 484,000 workers, more than the entire manufacturing economy of the state. The Port of New York and New Jersey generates more than 166,000 bi-state regional jobs ranging from white-collar insurance and banking to blue-collar stevedores and truckers.
- New Jersey already has more than 440 million square feet of warehousing and distribution space.

This importance of freight to New Jersey has deep historical roots. The region was settled and grew around its port facilities and river systems (Hudson River, Erie Canal, Delaware River, etc.) that allowed for the movement of commerce to inland communities. Ship, barge, and rail facilities and later interstate highways concentrated around the largest metropolitan population in North America. Because of its central location on the East Coast, the region became a distribution platform for a wide area extending north to New England, south to the Delaware River/Philadelphia metro area and west nearly to Chicago.

The huge consumer market in and near the metro-NY, NJ, CT, PA regions helped to stimulate innovations in freight distribution practices. The birth of modern "intermodal containerization" occurred in 1956 at the growing port facilities in Port Newark/Elizabeth when a trucking entrepreneur named Malcolm McClean lashed truck vans to the deck of a ship to facilitate more rapid handling of cargo at their destination port. Following this logistical breakthrough, cargo operations accelerated at marine terminals. Previously concentrated on finger piers along the New York Harbor waterfront, these terminals migrated to New Jersey because of the need for upland to handle container storage and marshalling and to take advantage of extensive national rail and highway connections. The Port of New York Authority (later the Port Authority of New York and New Jersey) invested in new facilities for handling containerized freight, making the port the largest ocean container facility on the Atlantic and Gulf coasts.

As a result, container traffic through the Port of New York and New Jersey grew from approximately 2.5 million twenty-foot equivalent container units (TEUs) in 1995 to some 3.3 million in 2001. The Port of NY/NJ is increasingly seen as a hub port for Atlantic trade. This role was strengthened in June 1998 when the giant marine freight corporation, Sealand-Maersk, which had been considering moving its operations to the rival ports of Norfolk, Baltimore or Halifax, agreed to renew its lease of port facilities in Newark-Elizabeth for another 30 years. This development was widely hailed by regional officials as the foundation for continuing strong growth for commerce in the region.

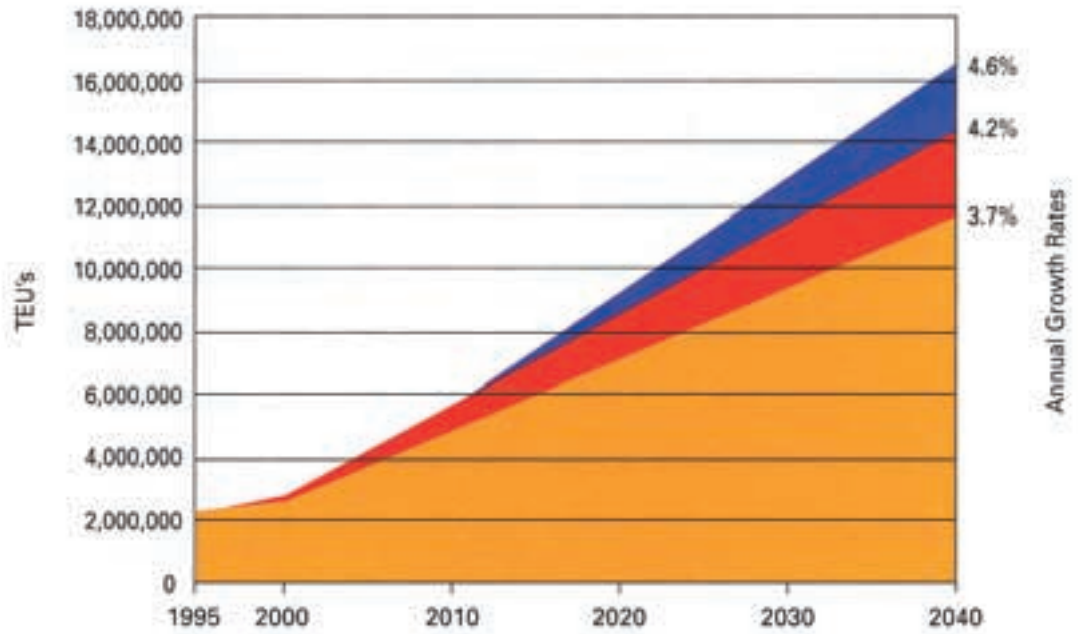
While the marine port is the focal point for the

largest volume of commerce in the region — and therefore is devoted most attention in this report — the role of the airport and rail terminals cannot be overlooked. The region's extensive rail freight network is being upgraded and expanded as a result of the acquisition of Conrail by Norfolk-Southern and CSX railroads which in 2000 handled more than 28 million tons of cargo either originating or terminating in New Jersey. Newark Liberty International Airport has become the eighth largest air cargo hub in North America, handling some 1.2 million tons of air cargo worth more than $52 billion in 2000. The availability of these freight modes in proximity to the port (and in the midst of the region's extensive highway network) allows the region to serve as an efficient multimodal goods distribution center for companies handling many types of products and serving many destinations nationally and internationally.

These many significant advantages underlie the continuing growth of commerce despite the current recession and even after the 9/11 tragedy and are the basis for projections for dramatic growth in commerce in coming decades. Container movements of "general cargo," which defines most manufactured goods, are projected to grow at an annual rate of between 3.8 and 4.4 percent. By the year 2040, according to Port Authority projections, port container traffic could increase more than fivefold to as many as 17 million TEUs (Figure 2-1). This level of growth could create hundreds of thousands of new port related jobs (Figure 2-2) as well as have positive ripple effects throughout many sectors of the economy. According to the Port Authority of New York and New Jersey, it represents "a rare opportunity for the New York-New Jersey region—to create new jobs and generate higher incomes, to reduce the cost of doing business and to raise the standard of living enjoyed by the region's people."[2]

However, realizing this level of growth is far from assured. The region still faces many difficult challenges to sustaining its leading role in commerce on the East Coast — not the least of which is the continuing and relentless competition from other ports in realizing new efficiencies in handling freight. This report shows that brownfield redevelopment for freight purposes will be a key strategy in meeting many of these challenges and safeguarding the region's future.

**Figure 2-1 Growth of Container Volumes**




Source: Port Authority of NY & NJ, 2000

## 2.1.2 The International Supply Chain

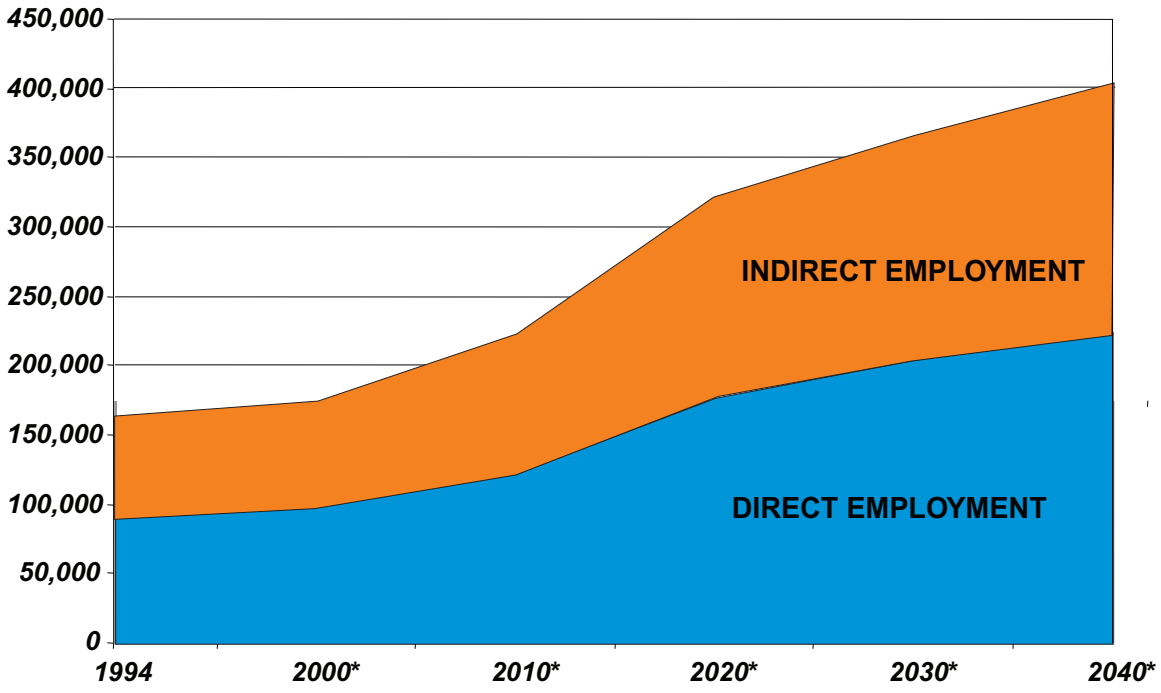
The reason dramatic growth in commerce through the port, airport and rail terminals holds out such important promise for northern New Jersey stems from the expanding role of international trade in virtually all sectors of the economy.

The U.S. economy is the most open economy in the world. Increasingly, many of our manufacturing inputs and most of our consumer products are sourced whole or in part from overseas markets. This has been a long-term process as U.S. manufacturers have downsized and moved many production and assembly operations to cheaper overseas production facilities. It has been abetted by U.S. and international trade agreements such as the General Agreement on Trade and Tariffs-GATT and the North American Free Trade Agreement (NAFTA) which have opened markets and permitted U.S. capital to move to offshore locations for production.

A declining portion of the U.S. economy is devoted to manufacturing. As production has moved to far flung locations around the globe, the efficiency of transportation has become a critical concern. Corporations, often employing specialized logistics firms, make millions of dollars in profit by shaving pennies off the cost of the production and movement of goods. They use elaborate production chains that take advantage of cheap labor in one country, raw materials in another, subsidized manufacturing or favorable tariffs in a third.

A case in point is the production and order fulfillment of Dell computer which uses a "horizontal" supply chain in which parts and sub-assemblies of electronic components are produced around the globe and provided to a central U.S. plant for assembly into a final computer based on orders already received from customers. This process avoids the overhead of maintaining large inventories of parts or of producing potentially stale products in advance that may sit unwanted on store shelves for long periods. In effect, for Dell, the truck, train and ocean vessels carrying computer parts have become "inventory in motion." This inventory is managed through advanced logistics practices to insure that the goods arrive at "time definite" intervals for inclusion in the production process or to be sold directly to consumers or delivered to retail outlets. Many other cor-

**Figure 2-2 Employment Projections**




* Estimated Source: Port Authority of NY & NJ, 2000

porations supply their needs in a similar manner. None of this would be possible without open markets and sophisticated logistics-driven transportation systems and supportive communication infrastructure.[3]

The extent to which these practices integrating the global economy have taken hold was underlined in the October 2002 by the strike halting freight traffic through West Coast Ports. Parts were not available for cars, washing machines, computers, and an wide variety of other goods that are "manufactured" or finished in the U.S. Losses quickly mounted to more than $1 billion a day, nationally, and threatened to move into the realm of $3 billion per day.

The competition between economic regions for this international commerce is intense and will become more so as barriers drop under relentless global integration and the opening of markets. The winners will be those regions that develop the facilities, infrastructure and capabilities to most efficiently meet the time definite demands of the international supply chain.

Regions must also be prepared to accommodate new trade patterns and technologies. New, giant container vessels, requiring 50-foot drafts and carrying thousands of marine containers, are increasingly altering international trade routes. The larger ships are active in the Asia/Pacific trade (China, Japan, Korea, Taiwan, South and S.E. Asia, etc.). This region is the manufacturing heartland of the global economy. The larger ships will also move west through the Suez Canal which has a 58-foot draft to serve the European and North American markets (see Figure 2-3). This trans-Suez route will decrease the importance of trans-continental rail shipments from West Coast ports — via the so-called "land bridge" — which is how most Asian goods currently reach the New York-New Jersey region. These Asian goods include electronics and much of higher value manufactured and assembled goods consumed in the region.

The port of New York and New Jersey as a hub destination on the Atlantic stands to become a major beneficiary of this new global trade system. Yet, as discussed below, the extent of benefits to be realized will depend on the region's success in accomplishing major investments to address obstacles to greater port efficiency.

## 2.1.3 Port Efficiency Challenges

The port is challenged on a number of fronts to manage its growth in traffic and to adapt its practices to meet the demands of international shippers. On the waterside, the port must deepen its channels and berths to over 50 feet to handle the "megaships" that

**Figure 3 Shifting Trade Patterns: Estimated Diversion of West Coast Trade to East Coast**


Source: Moffat-Nichol Engineers

carry thousands of marine containers. The federal government is currently matching Port Authority investment in channel deepening on a 60-40 basis. Overall, the 10-year project being undertaken by the U.S. Army Corps of Engineers to deepen the main channel to 50+ feet is expected to cost $2.3 billion dollars over the next decade. Once deepened, the port also must maintain channel depths and find ways to dispose of sometimes-contaminated sediments, which now require expensive upland disposal options.

But even greater challenges face the port in its terminal operations and in its landside transportation capacity. In terms of its terminal operations, the port must increase its efficiency and utilization of precious land resources. The Port of New York and New Jersey has a very low terminal efficiency rating, which is usually measured in containers-per-acre-per-year (that is, how many marine container equivalents, TEUs, move through the terminal per acre per year). Currently, the Port moves approximately 1,900 containers per year, whereas West Coast Ports such as Los Angeles/Long Beach move anywhere from 4,000 to 7,000 TEUs per year, depending on the terminal. Overseas, Hong Kong and Singapore move upwards of 18,000 TEUs per year and Rotterdam in the Netherlands, which has a distribution function similar to NY/NJ, moves over 10,000 TEUs per year. This suggests that the Port must use its available space more efficiently, creating more upland for container handling and storage and moving to a 24hour /7day or a 24/5 operational schedule to handle more and larger ships, enabling traffic to move in and out of its terminals on off-peak roadway hours.

On the landside, New Jersey is the most developed state in the U.S. and is also one of the most congested. The road and rail infrastructure is heavily congested, especially during peak hours. The main roadways in proximity to the Port and Newark Liberty International Airport, such as The New Jersey Turnpike, I-78, I-280, U.S. 1&9 handle heavy volumes of vehicular traffic. Truck traffic, often resembling miles-long convoys, slows to a crawl during peak hours, but is strong during all hours of the day.

To address these issues, the Port Authority is slated to invest hundreds of millions of dollars over the next decade in its port operations. Much of this investment is devoted to terminal improvements such as extending piers, new intermodal facilities, clearing old warehouses for increased container activity and improving Intelligent Transportation Systems (ITS) information architecture; and improved access to terminals. Key projects include the revamping of ExpressRail, the port's on-dock rail facility in Elizabeth; upgrading Arlington yard and expansion of capacity at Howland Hook, Staten Island; and improved security at terminals and other enhancements. The Port Authority is also involved in the relocation or creation of facilities such as its Automarine terminal, which handles vehicle imports and exports. This facility is expected to move from its present location on the Port Jersey Channel to either Woodbridge, NJ or to Staten Island.

The private sector is matching Port Authority investments. The port's major terminal operators, such as Global Terminals, Inc, Maher Terminals, Inc. and Sealand-Maersk have undertaken capital investment programs such as purchasing new large ship cranes, straddle-carriers, and installing new information systems and architecture to process the more than twelve thousand daily truck/container movements into port terminals. Additional port capacity will come on line when the Port Jersey complex of Global Terminal, Inc. is expanded to replace the Automarine terminal and the adjacent Military Ocean Terminal of Bayonne is developed into a deep-water container port complex over the next decade.

While the port is focusing on dredging and upgrade of its terminals, there is increasing pressure on the Port Authority to deal with the landside impacts of its port activities. A consortium of federal, state, and regional agencies, along with numerous public interest groups under the acronym of "CPIP" (Comprehensive Port Improvement Program) is studying the landside needs and feasibility of continuing port growth. Their studies will be accompanied by a separate environmental impact statement (EIS) on overall transportation and economic impacts as well as infrastructure needs to address port traffic throughout the region. The port is also exploring the possibility of setting up peripheral terminals outside the region to handle its growing cargo manifest. These terminals, known as the Port Inland Distribution Network (PIDN), are envisioned to be

at least 75 miles distant from the Port Elizabeth. Containers offloaded at Port Elizabeth would be reloaded on barges or rail cars and moved directly to these locations for processing and final delivery.

A separate effort in the state of New Jersey is an effort to strengthen and coordinate transportation plans to support port growth in the area under the aegis of the "International Intermodal Transportation Corridor," an advanced industrial and distribution corridor ranging from the George Washington Bridge (I-80/I95) in the north of the state to central New Jersey, along the I-95 corridor. Federal legislation has offered support for planning agencies to study ways to take advantage of the economic and distribution synergies that are possible. It has established a transportation information center at the New Jersey Institute of Technology to gather information and to study industrial and distribution strengths of the corridor.

Additional efforts to support port growth include the following:

- The state of New Jersey has committed to a series of infrastructure improvements collectively designated the "Portway" project. It is a 17-mile semi-dedicated trucking corridor that is intended to provide fast and efficient movement of goods between key port, airport and intermodal rail terminals
- Other state and federally funded infrastructure projects are being undertaken in the area including improvements in the Route 1/9 corridor.
- Union county is pursuing major roadway improvement in conjunction with hotel and retail developments south of the Port Area. These improvements would separate auto traffic from truck traffic and eliminate a number of freight bottlenecks in the area.
- CSX and NS railroads have invested $120 million in the regional freight rail network since acquiring the assets of Conrail in 1996. They are planning for another $150 million in joint public/private investments to expand rail system capacity. The state and Port Authority plan to match the freight rail investment 50/50.

The major investments being made by the Port Authority, private shippers and the state of New Jersey are doing much to realize the "throughput" and efficiency needed to capture a significant share of growing international trade and safeguard the region's status as a hub for the east coast. However, as noted later in this report (Section 6.2.5), additional needed infrastructure investments — potentially totaling in the billions of dollars — warrant the consideration of new financing mechanisms, such as modest fees on certain port activities, in coming years.

## 2.1.4 Logistics and Value Added Facilities

Achieving the efficient logistics practice required by the international trading system will require more than simply improving the speed with which shipping containers move between production and consumption markets and megaships docked in the port. The area around the port must also develop the kinds of support facilities and services that stage, sort and prepare goods for delivery to businesses and consumers. As explained below, these services include high-throughput warehousing and value-added processing which can potentially be performed at new facilities on the region's brownfield sites.

As noted previously in this report, the global supply chain has become lean and fast: the increasing pace of production, assembly and order fulfillment dictate where distribution and logistics services are located. One aspect of this push for efficiency is a shift away from storing goods for long periods in warehouses in favor of delivering goods under a "time definite" contract to meet the needs of users. A report produced by consultant Ann Strauss-Wieder under BER Phase I examined the evolution of warehouses and distribution centers. She noted that "[t]he overarching philosophy is to keep the inventory in motion; use information tracking capabilities to manage the inventory while it is in transit and maintain a flexibility in transportation that allows for shifts in delivery instructions. Within the warehouse, velocity translates into moving products through the facility as efficiently and quickly as possible."[4]

Warehouses located near ports, airports and rail terminals — such as those developed on brownfields in the port area of northern New Jersey — have advantages in maintaining and managing this velocity of goods movement. The shorter distances involved mean

truckers can make multiple "turns" between the warehouse, the port and other transportation facilities rather than having to spend hours fighting traffic over regional roadways. A recent forum on issues related to freight transportation in New Jersey indicated that trucking and warehouse companies operating in the NY/NJ metro area face a minimum of a 15 percent congestion cost penalty in their distribution operations. Serving the region from the periphery only adds to these costs. A location close to the port district's hub of transportation connections, therefore, can mean savings in both cost and time for businesses seeking to optimize goods distribution. These savings can greatly outweigh higher land and development costs near the port district — though they may be less tangible to many businesses compared to the "hard dollar" outlays for property, development and other business costs.

An additional factor favoring "close in" locations is the need for companies to be near final consumer markets where customization and product differentiation can take place. Many companies are finding that tailoring products to customer needs for each order is crucial to sales. So manufacturers want the final assembly or finishing of a product to take place at the latest possible intervention point before order fulfillment--often at a warehouse or distribution center.

Shippers can also take advantage of reduced tariffs when they import "unfinished" products. These goods arrive at the port-of-entry needing final assembly, finishing, labeling, "kitting," and other "value added" processing. These services are performed to meet the requirements of individual orders or to prepare a product for its retail exposure. The goods are finished and then moved rapidly to customers.

Facilities that perform such value added services and address the need for advanced logistics (including high volume sorting and turnover of goods) tend not only to be located close to major transportation facilities; they also have characteristics very different from traditional warehouses devoted to storage. According to the Market Analysis prepared for BER Phase I by John Ricklefs of Moffat-Nichol Engineers, these operations can be located in modern facilities of 100,000 square feet or less, compared to traditional warehouses often many times that size. The new "value added" facilities also incorporate high tech sorting and inventory systems and employ many more workers with a range of skill levels. Often the facilities are designed with "cross-dock" layouts which have truck loading docks on both sides of the building to facilitate transfers between vehicles including "transloading" from heavier marine containers to "street legal" container weights.

The BER Phase I Market Analysis pointed to proliferation of such facilities near the port complex of Long Beach and Los Angeles in California. There, Asian trade has spawned a large number of high velocity, value added warehouses within 15 miles of the port. Based on interviews with local warehouse managers, Dr. Ricklefs found that "static physical storage of goods from containers is dead" in the Long Beach/Los Angeles port region. Instead, goods are processed through clean, modern facilities ranging from less than 100,000 square feet to big box distribution centers of one million square feet or more. These facilities are often clustered together in modern industrial park settings, known as Planned Unit Developments (PUDs), and employ many non-unionized unskilled and semi-skilled workers for value added operations. With modern logistics practices, one warehouse manager noted, "over the previous two years, the volume [his warehouse] handled had quadrupled in the same amount of space."

The adoption of this model of high velocity distribution centers in the northern New Jersey region, is happening gradually now, but is expected to accelerate with the arrival of increasing volumes of electronics, clothing and other consumer goods on direct

ocean shipment from Asia, as harbor channels are deepened for megaships over the next decade. Currently, the region's distribution industry is dominated by large warehouses of 250,000 to over 1 million square feet that occupy huge tracks of recently developed farmland and open space on the fringes of the region, such at Exit 8A of the NJ Turnpike and in Eastern Pennsylvania. Most of the distribution centers in the northern New Jersey region employ a moderate level of high technology goods handling, tracking and other systems. Some engage in more complex types of value added processing, but for most, their main function remains storage, often for long-term inventory.

A recent real estate industry analysis looking at emerging industrial investment opportunities,[5] indicated that such mega-warehouses will continue to play an important economic role as "bulk fulfillment distribution centers" for companies feeding products to retail and wholesale outlets over multi-state regions. However, the report also pointed to "increasing demand for speed-oriented facilities in hub/gateway metropolitan areas near major transportation infrastructure" (New York/New Jersey was specifically cited as one of the top-five hub/gateway metropolitan areas.) Operators of speed oriented facilities, according to the report, are less attracted to the cheap rents available on the fringes of metro regions and instead "place a high premium on quick access to a large customer base and proximity to ports and airports."

## 2.1.5 Brownfields: the Solution

Northern New Jersey has a portfolio of hidden economic assets that are the necessary ingredients in the logistics pipeline: thousands of acres of available land near the port, airport and rail intermodal terminals where new, speed oriented distribution facilities can be built to give companies opportunities perform advanced distribution and value added activities. This study has identified numerous sites available to accommodate this lucrative, job-producing work, ranging from relatively small sites of perhaps a dozen acres, to large sites of one hundred acres or more. There are also opportunities to assemble neighboring sites into larger parcels (one case study looked at the former Koppers Coke site that encompasses over 160 acres with two adjoining sites).

The five case study sites investigated as part of the BER project totaled 500 acres and the project team identified an estimated 2,500 acres of brownfield sites within ten miles of the port and airport that are potentially suitable for freight related reuse. Throughout the entire port district (a 25 mile radius from the port), the project team estimates that there are thousands of additional acres of brownfield sites.

While redevelopment of these sites often presents difficult environmental and other challenges, the sites nevertheless offer features of prime importance to shippers and importers: they are near to the largest port-of-entry on the U.S. Atlantic Coast; they are in the midst of one of the richest consumer markets on earth; and, with appropriate infrastructure upgrades, they can be linked to the excellent landside intermodal connections for movement to inland markets. The latter includes the largest intermodal rail terminals and FedEx and UPS hubs in the U.S. northeast, allowing goods to be moved rapidly to market without lengthy stays in warehouses.

The regional can capitalize on these advantages to achieve large scale brownfield redevelopment, which promises to provide important benefits to the region's economy, environment, transportation system and quality of life. At the same time, failure to act could be disastrous for the future of the region. A September 2001 editorial in the Journal of Commerce raised the prospect of "stunted growth" if the challenges facing goods movement in the NY/NJ/CT region are not met. It pointed out that over the last decade the New York-New Jersey port has been losing out to Savannah, Norfolk and Charleston in attracting the growing volume of Asian trade being shipped directly to the East Coast via the Suez or Panama Canals. It notes that "part of the reason is the success those ports have had in convincing major retailers to locate distribution centers (DCs) on ample plots of land near their ports. New York cannot make a similar pitch. So the land crunch that's hurting the port today may turn into a long-term disability."

This underlines the importance for the region to focus attention on the land resources that are available to serve the needs of the logistics industry and to position itself to handle the huge expected growth in cargo volume. The remainder of this report presents

findings, analysis, conclusions and recommendations intended to help the region see that this is accomplished..

## 2.2 Regional Trends Affecting Brownfield Reuse

### 2.2.1 Market Demand for Warehouse/Distribution Centers (W/DC)

Real estate trends in northern New Jersey appear increasingly favorable to brownfield reuse in the port district. As a result of northern New Jersey's extensive freight facilities and its location in the midst of major population centers, the region has been less affected than other areas of the country by the nationwide downturn in the W/DC industry. While the vacancy rate for industrial space[6] was over 11 percent nationwide during the third quarter of 2002, in northern New Jersey the rate was substantially less, in the 6 percent range.[7]

However, there are differences among the submarkets within the northern New Jersey region and these differences are helping drive the prospects for brownfield development in the region. Insignia ESG, a major real estate firm serving the region, identifies five submarkets in the region, four of which are located in the "core" area within 15 miles of the Port Newark and Elizabeth — Hudson River Waterfront, Meadowlands, Newark/Airport and South I-287/Edison. The remaining submarket identified by Insignia ESG, Brunswicks/8A, is on the fringe of the region stretching down to Exit 8A of the Turnpike.

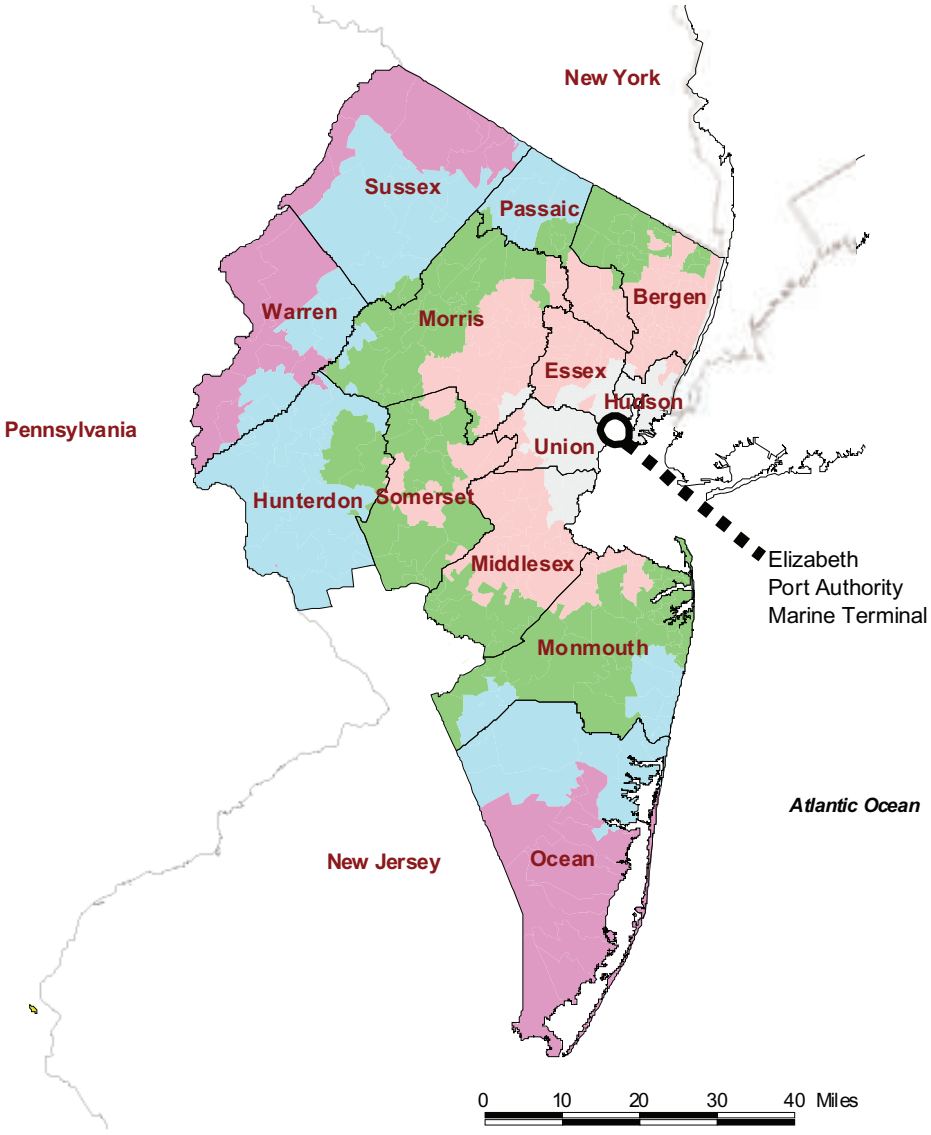
Over the last two decades, the Exit 8A fringe submarket has been the big winner in attracting W/DC facilities. This submarket underwent rapid development based on the availability of thousands of acres of available greenfield properties along the Turnpike and other major highways. These properties allowed developers to build the largest of W/DC facilities — some 1 million square feet or more — cheaply and rapidly and customize them to the needs of major companies. The ability to access the port, airport and rail terminals in the core area within an hour's drive was an important selling point. But more important were the good highway connections that allowed companies to use the facilities as distribution hubs serving major consumer markets in New Jersey, Pennsylvania, New York and surrounding states.

By 2000, approximately 45 million square feet of W/DC's had been built near Exit 8A.[8] As prime locations near this exit have been occupied, substantial development has shifted further south to greenfields near Exit 7A.[9] Other substantial concentrations have located even further south (such as near exit 10 of Interstate 295 in Gloucester County with approximately 17 million square feet of space) and just beyond New Jersey's borders in the Bethlehem/Lehigh Valley in Eastern Pennsylvania (with approximately 24 million square feet). The rapidly developing warehouse sector in Pennsylvania is generating significant truck traffic between the port, its warehouses and the tri-state NY-NJ-CT metro market.

As these massive developments on the fringe have proceeded, the core submarkets have also continued to grow, though at a more deliberate pace. Many companies have been willing to pay the generally higher development costs and rents in the core submarkets to take advantage of better transportation access to the port, airport and rail terminals as well as to the large consumer markets in immediate surrounding areas and New York City. (Two-thirds of the NY-NJ-CT consumer market lies east of the Hudson River). The Meadowlands district in northern New Jersey, for instance, has become home to many W/DC's serving New York City retail outlets. Rents are in the $6.50 per square foot range com-

# Figure 2.4
## Round Trip Trucking Cost[1] from Elizabeth Port Authority Terminal

Loaded 1st Leg, 85% Empty 2nd Leg




**LEGEND**

Mileage Cost Ranges

- $10[(2)] to $30
- $30 to $60
- $60 to $90
- $90 to $120
- $120 to $193

1. Truck operational cost ($1.31/mile loaded) were calculated by amortizing: Vehicle Depreciation; Insurance; Fuel Costs; Driver Wages; Overhead and Profit; on a per mile basis.

2. Minimum cost for trip, even if less than 1 mile.

Source: Moffatt & Nichol, January 2000

pared to the $5 per square foot range near Exit 8A. Other large concentrations of W/DC facilities in the core submarket are located in Raritan Center in Edison, the Greenville area of Jersey City and southern Bergen County.

Figure 2.4 shows average costs for trucking goods from the port to locations within northern New Jersey, a key element of the cost of doing business in various sub markets in the region.

Recent trends suggest the beginning of a partial reversal in the fortunes of the fringe and core submarkets. According to Insignia, while rents in the core area submarkets have remained fairly stable, there has been fall-off of asking rents in the fringe submarkets, particularly in the 8A submarket. In addition, Insignia calculates that the availability rate has been below 10 percent for the core submarkets while it has steadily increased from 12 percent to close to 18 percent for the 8A submarket.[10] Similarly, CB Richard Ellis finds that its vacancy index was 9.1 percent for the northern area of the state compared to 10 percent for the mid-state area in the second quarter of 2002.[11]

This weakening in the 8A market reflects overbuilding, especially in relation to the reduced space needs of many companies in the current recession. At the same time, the stability, and even strength, of the core submarkets reflects new market forces that are making these close-in areas more desirable. In particular, with the pool of prime greenfield sites on the fringe diminishing, the real estate industry is now giving serious attention to opportunities in core areas including brownfield redevelopment.

Other factors building the strength of the core submarket include: recognition of opportunities being created by the dramatic growth projected for freight handled by the port and airport; the desire of some companies to optimize their supply chains through smaller, close-in facilities as discussed previously; and difficulties in hiring and retaining low wage workers in suburban or rural areas which has become a growing problem for some companies near Exit 8A.[12]

The new strength of the core sub markets is reflected in public comments by executives of the major development companies who previously targeted investments almost exclusively near Exit 8A.[13] According to one executive, "There are properties in play in places like Elizabeth, Linden, Carteret and Newark that nobody would have even thought about five years ago."[14] Members of the NJIT-NJTPA study team saw this interest first-hand through numerous inquiries about the case study properties.

As the economy improves, the 8A market will no doubt rebound and large-scale development of facilities on greenfields will recommence, particularly for multi-state distribution, e-commerce and catalog fulfillment operations of major companies. However, if the emerging market trends can be encouraged and sustained through appropriate government policies, it appears realistic to expect that a significant share of the development activity can be channeled to brownfield sites in the core area.

Importantly, core areas could also be positioned to accommodate the substantial demands for W/DC space that will accompany the growth of port trade. The Market Analysis conducted for Phase I of this study, estimated that over the next forty years, the projected five-fold increase in the port traffic will create a need for 200 or more new W/DC facilities occupying 1,400 or more acres.[15]

The accelerated schedule of port dredging approved since these estimates were made suggests that these demands could materialize much sooner. In addition, larger assemblies of brownfield acreage will be required if current large-scale W/DC facilities continue to dominate the market rather that transitioning to smaller, "high velocity" facilities seen on the West Coast. Potentially hundreds of additional acres will be needed to accommodate the growth of air cargo in the next two decades. Thus, current market trends, together with market demands accompanying growing trade, are creating unprecedented opportunities for reclaiming northern New Jersey brownfields for W/DCs facilities.

## 2.2.2 Market Recognition and Activity

The strong and improving prospects for brownfield redevelopment in northern New Jersey have prompted a number of successful reclamation projects, with more on the drawing boards. Yet these projects account for only a small portion of the thousands of acres of brownfields in and around the port district.

Currently, the largest brownfield redevelopment projects in this area have been mixes of office, retail, entertainment and other uses, rather than freight facilities. The Jersey Gardens Mall, located adjacent to the port and airport, was built on a former municipal landfill and has become the anchor for additional hotel and retail development nearby. This development has been made possible by reconfigured roadway links to the area and financing drawing upon sales taxes generated at the sites. The City of Elizabeth has plans to make the area a major conference destination and is pursuing additional roadway improvements, a light rail line and ferry services to facilitate access to the site. Development on a similar scale is slated for a two square mile area containing former municipal landfills in the Meadowlands. It will be transformed into golf courses, hotels, housing and offices by the end of the decade.

Freight related redevelopment projects also are at various stages. Potentially the largest freight related project is the plan for creating an integrated freight district on 150-200 acres at Tremley Point, approximately nine miles south of the port and airport. A consultant report completed in June 2001, called for county and local governments to work with private developers to realize a well-planned "Global Freight Village" at Tremley Point drawing upon the model of such villages operating successfully in Europe.[16]

Environmental work is near completion on the first 130-acre parcel at the site. Full build-out will depend on road and rail improvements to the area, including completion of an access road to an upgraded Exit 12 of the New Jersey Turnpike. As discussed later in this report, the plan for Tremley Point — though it still faces challenges in being fully realized — promises to provide a vision for how large-scale freight development could be organized and developed throughout the port district.

As this project takes shape, scattered other freight related brownfield projects are being accomplished in and around the port district. Most involve individual landowners or developers reclaiming one property at a time, with minimal public involvement. A particularly active developer is the Morris Company. Among other projects, it has developed three modern warehouses in Carlstadt on a brownfield at the junction of Routes 3 and 21. The 50-acre site had been home to a manufacturer of pesticides, fragrances and other chemicals. The property underwent extensive clean-up to make way for three W/DC facilities totaling 850,000 square feet.

Other examples of brownfield redevelopment include 800,000 square feet of W/DC space being built on 50 acres at the former Greenville rail yards in Jersey City (two warehouses, totaling 520,000 square feet and providing 400 jobs, are now under construction); one million square feet or more planned at a former Tennoco chemical plant near Raritan Center in Edison; and the establishment of a Paterson Plank Road redevelopment district within the Meadowlands.

A recently announced freight development, adjacent to Exit 12 of the Turnpike, is slated for one of the case study sites that was part of the BER study. The city of Carteret announced in August 2002 that a developer will develop a "container-shipping warehouse and distribution center" in two phases. The first phase will involve 1.1 million square feet of warehouse space on a former garbage dump. Completion of this project will require extensive environmental cleanup and site preparation activities as well as construction of access roads.

The growing number of freight related brownfield projects moving forward recently suggest that a turning point may have been reached in opening up the market for these types of projects. However, the study project team also found that the pace of brownfield redevelopment activity is being held back not only by the costs and difficulties of redeveloping contaminated properties but also by continuing real estate speculation. Some property owners, hearing projections of dramatic increases in freight activity in future years, are holding off on sale or development in the hope of reaping greater profits when dredging is substantially completed. An August 2001 article in the New York

Times observed "some brokers are advising clients with property near the port to lie low while the market develops."[17]

Breaking the log jam preventing the full realization of the market potential for freight related brownfield redevelopment, as detailed later in this report, will require government intervention in the form of new policies, financing and public-private partnerships targeted to the W/DC industry.

[1] Ann Strauss-Wieder, Inc: *The Value of Freight to the State of New Jersey.* Rutgers. New Jersey Department of Transportation. November 2000.

[2] Port Authority of New York and New Jersey . *Building a 21st Century Port*. Report, 2001.

[3] Abbey, Douglas D.; Twist, David C. and Koonmen, Leo J. (of AMB Investment Management, Inc.), "The need for speed: Impact on Supply-Chain Real Estate." *Future* (A Publication of the Urban Land Institute) January 2001

[4] Ann Strauss-Wieder. *Warehousing and Distribution Center Context*. Report prepared for NJTPA-NJIT Brownfield Economic Redevelopment Project, Phase I. February 2001.

[5] Abbey, Douglas D., op. cit.

[6] The majority of industrial space is composed of W/DC space in New Jersey.

[7] Cooper, James C. and Madigan, Kathleen "Consumers Have Done Their Part. Now, Business Will Have To Pitch In" *Business Week* September 16, 2002 Pg. 19; Holusha, John. "Commercial property: In New Jersey Warehouses Lead the Way." *New York Time*s, Section 11, P. 1, August 18, 2002.

[8] Strauss-Wieder, Ann Inc. February 2001. op. cit.

[9] Martin, Antoinette. "In the Region/New Jersey; Another Turnpike Exit as Industrial Destination." *New York Times,* November 24, 2002, Section 11; Page 7.

[10] Insignia/ESG Research Services Group. "I on the Market" *Quarterly Commercial Real Estate Reports for North and Central New Jersey*.

[11] CB Richard Ellis. *Industrial Vacancy Index*. Second Quarter 2002.

[12] Holusha, John. August 18, 2002. op.cit.

[13] ibid.

[14] Martin Antoinette "In the Region/New Jersey; Brownfields Luring Builders With Good Locations" *The New York Times* April 7, 2002 Section 11; Page 9.

[15] Ricklefs, Dr. John. *BER-1Market Analysis Final Report*. Moffat-Nichol Engineers. Report prepared for NJTPA-NJIT Brownfield Economic Redevelopment Project, Phase I. February 2001.

[16] Planners Diversified. *An Analysis of the Potential for a Global Freight Village in the Tremley Point Area of the City of Linden*. Prepared for the Union County Department of Economic Development. June, 30, 2001.

[17] Holusha, John. "Commercial Property; Making Way for Bigger Ships." *The New York Times*, August 5, 2001, Section 11; Page 1.

# Section 3 - Study Methodology

## 3.1 Introduction

This section describes the methodology used in this study to investigate the opportunities for freight-related redevelopment of brownfield sites. This methodology was intended to identify brownfield sites appropriate for freight-related redevelopment in northern New Jersey, select representative case studies from among these sites and carry out technical analysis to assist public and private owners of the selected sites to pursue redevelopment opportunities. The methodology described here has relevance to similar brownfield redevelopment efforts throughout northern New Jersey and other industrialized areas of the country. More detailed descriptions of aspects of this methodology are provided in the Appendix.

## 3.2 Summary of Phase I

Phase I was carried out under the direction of a project team from NJTPA and NJIT. A number of consultants and an advisory committee of public and private officials assisted in major project tasks. In addition, NJIT graduate and undergraduate students were employed on specific tasks.

The following is a summary of the tasks that comprised Phase I:

**Market Analysis:** This task was undertaken with the assistance of the consulting firm Moffat & Nichols Engineers. It involved surveying analogous U.S. regions with strong goods movement sectors – particularly Long Beach, California — to identify redevelopment patterns and types of industry locating in such areas, labor force needs and brownfield reclamation activities. Based on this survey, this task assessed the future of the freight industry in northern New Jersey and the prospects for freight-related brownfield redevelopment. It provided general criteria –(e.g., required lot size, needed transportation access, workforce accessibility etc.) for identifying brownfield sites suitable for accommodating freight industry development. A separate survey and analysis of the warehousing and distribution industry in northern New Jersey conducted by consultant Ann Strauss-Wieder supplemented this activity. This locally focused market analysis provided key inputs for the Environmental Scan task.

**Environmental Scan:** This task was undertaken with the assistance of the consulting firm BEM, Inc. It involved compiling a database of brownfield sites in the NJTPA region using information from state agencies, local governments and on-site inspections. Geographic Information System (GIS) technology was used to map the sites. The resulting database was then screened using criteria developed in the market analysis to create an inventory of brownfield sites with varying degrees of potential for freight-related redevelopment. Among the key criteria used to screen the sites were that they are:

- within 25 miles of the port and ideally within 15 miles ("the port district")
- within 2 miles of a highway exit or on a freight rail line
- larger than 3.3 acres; and
- removed from residential areas .

Further screening based on local input and field inspections by teams of graduate students were used to identify several dozen promising sites that would be candidates for case studies during Phase II.

**Community Outreach:** This task was undertaken with the assistance of the consulting firm McClaren Hart, Inc. It included a multilevel outreach approach that involved periodic meetings of an Advisory Committee, distribution of a quarterly project newsletter, informational meetings in local communities, workshops and the NJTPA web site. Many activities were undertaken in conjunction with gathering information as part of the Environmental Scan, including meetings with communities receiving EPA brownfield grants. A half-day conference was held for the presentation of consultant's final reports.

# 3.3 Case Study Selection

The final stages of Phase I and the early stages of Phase II involved finalizing the selection of sites that could undergo detailed investigation as case studies. The Phase I activities described above provided a pool of 60 or more potential case study sites, many more than resources would allow to be studied. As a result, the project team further narrowed the pool based on the following considerations:

Suitability for freight related re-use – Using the GIS database, the Project Team was able to identify large sites (greater that 10 acres) located in designated industrial zoned areas. Additionally, rail and highway transportation infrastructure was overlaid. Sites near schools or churches, or surrounded by highly developed residential areas, were not considered.

**Variety** – The Project Team looked at sites ranging in size from approximately 10 acres to more than 100 acres with varying degrees of site characterization and transportation access. By looking at a wide range of conditions, the Project Team sought to gain a comprehensive look at the full array of issues facing brownfield sites.

**Status of Property** - Properties with redevelopment plans that have some level of local approval and properties zoned for residential, recreational or other non-industrial use also were not considered.

These further screens narrowed the list of potential case study sites. Efforts were then made to obtain owner consent, including giving the project team and consultants access to the site to conduct environmental, transportation and real estate market assessments (as described below). To accomplish this, letters were sent out to property owners identified in existing public documents. It was found in many cases, however, that lawyers or other parties were the actual decision makers controlling the sites. As a result, gaining consent for using particular sites as case studies proved very time consuming, requiring extensive field investigations, discussions with knowledgeable local officials, numerous contacts and meetings with owners/controlling parties, development of legal documents and often lengthy reviews by attorneys and governing bodies.

The final step in this consent process was the signing of an access agreement. The Project Team, with the help of NJIT in-house attorneys, developed both a "Sampling Agreement" and a "No Sampling" agreement: the former allows access to sites for the purpose of carrying out soil sampling, while the latter permits the Project Team to obtain and review existing available environmental information from the property owner. After several months of effort, the project team gained needed permissions for four case study sites. A more limited analysis was conducted an additional site. These case study sites are as follows:

- **Arsynco** - The Arsynco site is located in the Borough of Carlstadt and consists of approximately 15 acres. The site is located immediately east of Route 17 between Paterson Plank Road (NJ Route 120) and Moonachie Avenue.
- **Carteret Redevelopment Properties** - Carteret Redevelopment Properties is located in the Borough of Carteret and consists of a collection of contiguous properties totaling approximately 300 acres. The focus of our case study is on a 160-acre parcel owned by the City of Carteret. The group of sites is located north of Roosevelt Boulevard, near New Jersey Turnpike Interchange 12.
- **Albert Steel Drum** - The Albert Steel Drum site is located at the southeast corner of Wilson Avenue and Avenue "L" in the City of Newark. The site is currently vacant and consists of approximately 12 acres.
- **Reichhold Chemical** - The Reichhold Chemical site includes approximately 17 acres of

currently underutilized property straddling the municipal line between the cities of Elizabeth and Linden. A single large structure is used primarily for storage. The site also has a large paved area, which serves as both a parking and vehicle maneuvering area, and an impervious surface constructed as part of a prior environmental mitigation effort.

- **Koppers Coke/Diamond Shamrock /Standard Chlorine** (limited investigation) – This study location actually consists of three contiguous brownfield properties, all located in the Town of Kearny: Koppers Coke, Diamond Shamrock and Standard Chlorine. Collectively, the group makes up approximately 120 acres. These properties were studied and evaluated together principally due to transportation access limitations. For the purposes of these discussions, the site will be referred to simply as Koppers Coke, the largest of the three sites.

## 3.4 Summary of Phase II Case Studies Tasks

The following summarizes the tasks undertaken by the Project Team with consultant support for each case study. The principal Phase II consultant was Schoor DePalma, Inc. More information about these investigations is available in the lengthy case study reports provided to the owners of each site:

**Transportation Assessment** – Transportation access was a key element in the evaluation of sites. The Project Team conducted a field investigation to identify specific transportation access features and issues that needed to be addressed. The Project Team examined highway, rail and marine access modes and received input from state, county and local transportation officials. The Project Team also met and had regular dialogue with freight and passenger rail service providers. Trip generation tables (estimating the number of trips entering and exiting the site) and trip distribution patterns (estimating where, how and when trips take place) were developed based on existing travel patterns, proximity to major transportation facilities, and the expected use and square footage of the building. The special characteristics of value-added warehouse operations, which were assumed to be the most likely redevelopment prospects rather than traditional W/DC operations, had to be taken into account when estimating trip generation. . These special characteristics include:

- A larger number of workers
- Longer hours of operation, often 24 hours a day, seven days a week
- More staffing levels, including entry level pickers and packers, delivery personnel, human resources personnel, shift supervisors, engineering and production personnel, marketing professionals and senior level management.

Based on this investigation, the team prepared conceptual layouts of transportation access for each of the sites. This included needed infrastructure improvements. Additionally, bus routes and rail upgrades were identified where necessary.

**Environmental Assessment** – The principal consultant reviewed existing environmental information from past site investigations and in one instance conducted environmental characterization to determine the degree of environmental contamination and possible methods for remediation. In the instance where additional site characterizations were performed, subtasks included:

*Preliminary Assessment* - to identify potential contaminants and areas of concern based on prior environmental characterization and use of field analytical methods.

*Preparation Of Conceptual Site Models* - to provide a systematic planning methodology for identifying remediation goals/action levels for all identified contaminants.

*Dynamic Workplan Preparation* - to provide a decision making framework and logic to be utilized for field decision making.

*Field Implementation* - conducting appropriate dynamic work site investigations include performing all necessary environmental testing and/or sampling, including soil/sediment samples, groundwater analysis, magnetometer surveys, aerial photographs, etc.

*Remedial Selection And Costing* - providing an evaluation of all environmental site characterization data to develop remedial options and costs for each case study site. This included using USEPA and/or NJDEP data; identifying of all remedial strategies and/or options; providing cost estimates to implement and operate each selected remedial option and developing a draft Remedial Action Selection Report.

In instances where only existing environmental information was reviewed, the purpose was to evaluate the adequacy of the current understanding of environmental contamination at the site and what additional characterization was needed to complete the delineation of impacts to a level sufficient to identify the appropriate remediation. Then the consultant was asked to speculate on the type of remedial activities that would be needed to clean the site to a level compatible with industrial redevelopment. Finally, the consultant was asked to determine how this remedial approach could be design so that it would integrate with site redevelopment by a W/DC.

**Real Estate Market Analysis** – Subconsultant evaluated each case study property in relation to the current real estate market to gain insight into redevelopment prospects and strategies. A key step involved assessing each site's highest and best use, including its suitability for warehousing and freight-related uses based on highway/road access, property size, construction cost, workforce availability, site approval time impacts and access to ports, as well as local land use regulations and community interests. Other real estate analysis included a valuation appraisal to determine the anticipated value of each site once it had been redeveloped with warehousing. Trends in warehouse rental rates and associated returns on investment analyses were provided both for the site areas and region wide. The latter analysis took the form of a separate report prepared by subconsultant Anne-Strauss Wieder. Finally, a real estate marketing package was developed for each site containing conceptual views of warehouse redevelopment consistent with the communities' aesthetic values; identification of companies known to have an interest in redevelopment of similar properties; identification of financing options (both public and private); and identification of risk management insurance options.

**Community Outreach** - Throughout phase II, the project team and consultants participated in a variety of meetings both related to the case study investigations and to larger efforts around the state and region to promote brownfield redevelopment. Presentations and information about the project were provided to NJTPA committee meetings, a county brownfield task force, a statewide transportation conference and other meetings. The project Steering Committee, composed of key state agency representatives, met periodically. In addition, the project team issued periodic newsletters and maintained a project website.

## 3.5 Evaluation

Both phases of the project were subject to an independent evaluation designed to provide feedback during the course of the project and an overall assessment of the effectiveness of the project. During Phase I, consultant Richard Roberts, presented the project team with a paper evaluating many of the key concepts and approaches underlying the project, particularly as presented in the Market Analysis. Insights from this evaluation were incorporated into Phase II and are reflected in this report. Consultant Bruce Mackie, Geotrans, Inc., prepared a final evaluation of the project. This evaluation is attached (Appendix G).

# Section 4 - Case Study Summaries



## 4.1 Introduction

This section provides summary descriptions of the five case studies conducted as part of the BER project. The purpose of conducting case studies was to evaluate in detail the factors that influence the redevelopment of industrial brownfield properties for warehouse and distribution and identify the site-specific characteristics that impact the redevelopment potential of the properties. Each case study consisted of a transportation access analysis, property assessment, a real estate market study and in some instances an appraisal.

The full findings of the case studies are contained in lengthy separate reports that have been provided to property owners and federal funding agencies and are available for review on request. More detailed executive summaries of the case study reports are provided in Appendix I.

The case studies were conducted for informational purposes only and reflect a snapshot of conditions at one period of time. As a result, the reports, summaries or analysis of case studies provide only general guidance as to the issues affecting possible development of the sites and cannot substitute for due diligence on the part of those advancing development proposals. A map showing the regional distribution of the case study sites is shown in Figure 4.1.


**Figure 4.1**
**Map of Case Study Sites**

# 4.2 Brief Descriptions of the Case Study Sites

## 4.2.1 Arsynco Site

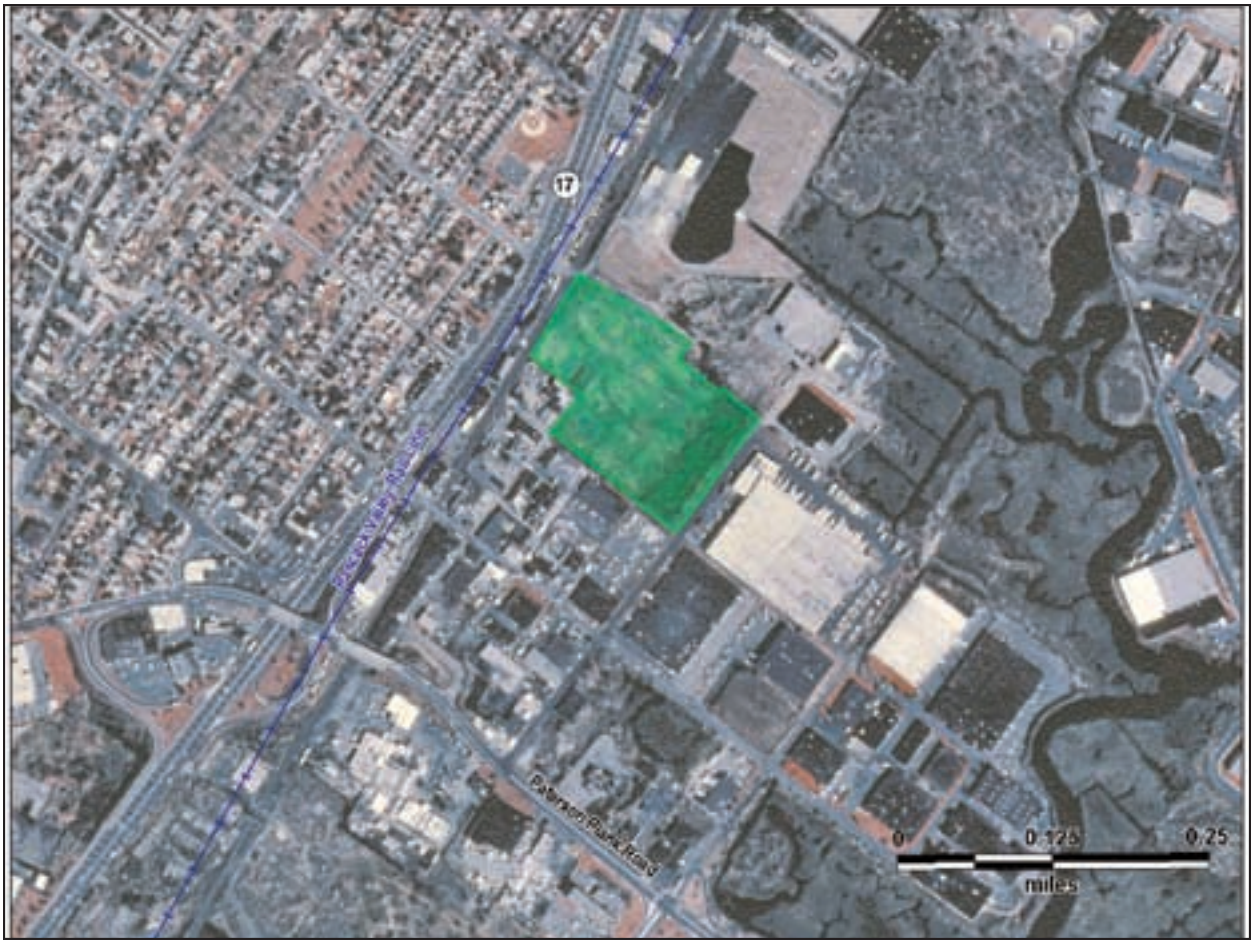
### 4.2.1.1 General Site Description: Arsynco Site

The Arsynco site is 12.2 acres in size and is located in the New Jersey Meadowlands Commission District in the Borough of Carlstadt. The street address is 511 13th Street. The property is identified as Block 91-Lot 1 on the Borough of Carlstadt tax records. The Zoning Ordinance of the Borough of Carlstadt and the NJ Meadowlands Commission indicate that the site is located within the Light Industrial and Distribution B Zone, which allows for warehouse and distribution activities. The property has been owned and operated by a number of chemical companies since the early 1900's. Arsynco has owned and operated the site since 1969. Operations on the site ceased in 1993. Arsynco was involved in the manufacture of specialty organic chemicals and pharmaceutical intermediates. A map showing the location of the site and its immediate surroundings is shown in Figure 4.2.

### 4.2.1.2. Transportation Access: Arsynco Site

Arsynco is served through a network of local streets, NJ Route 17 and Paterson Plank Road. Additionally, there is an existing rail freight siding that runs adjacent to the property. Several bus lines operate near the site, providing access for a potential transit user workforce. In addition, the Pascack Valley commuter rail line would serve as an additional means for workers to

**Figure 4.2 Aerial Imagery of Arsynco Site**



access the site. Although the site is accessible via NJ Route 17, use of the network of local streets is recommended as a principal means of highway access. Freight rail access is possible, but is problematic due to increasing competition with anticipated increased passenger service on the Pascack Valley line.

#### *4.2.1.3 Environmental Assessment: Arsynco Site*

For the purposes of environmental investigations, the site has been divided into several areas. These areas have been investigated extensively. Based upon these investigations, possible remedial actions have been identified. These include:

a. Excavation and off-site disposal of soil containing PCBs over 500 mg/kg

b. Excavation and on site disposal in an engineered containment cell of soil containing PCBs between 50 and 500 mg/kg

c. Installation and operation of a air sparging/soil vapor extraction system (AS/SVE) to remove VOCs in soil and shallow groundwater

d. Covering the site with an approved cap

e. Deed restriction institutional controls

f. Monitored natural attenuation for groundwater with low concentrations of VOCs

Several important components of the clean up proposal are still in discussion and the outcome will greatly impact the remediation cost, principally the approval for on site containment of PCB impacted soil. Additionally, the extent of the AS/SVE system has not been finalized. Thus, there are still significant issues that remain to be resolved with regard to the final remediation program.

#### *4.2.1.4 Market Assessment: Arsynco Site*

The site is located within the Meadowlands industrial sub market in northern NJ. This is one of the strongest industrial real estate markets in the NY/NJ Metropolitan region.

Along with this is the fact that much of the growth in warehouse and distribution space in Bergen County has been redevelopment of old functionally obsolete buildings. These conditions fuel the demand for modern distribution centers in this area and this site offers the opportunity to build, at a minimum, a 200,000 sq. ft. building that would be an important step in satisfying this demand (Figure 4.3) provides a conceptual design for a warehouse and distribution center on this site). Not only would redevelopment of this property have important effects on the market demand, but it would also provide approximately 200 jobs and up to $150,000 in tax revenue to the local municipality.

Additional market factors affecting redevelopment of this property is the fact that it is within the Patterson Plank Road Redevelopment District and the future of the Meadowlands Sports Complex. This site is within a group of properties that the NJ Meadowlands Commission has designated for redevelopment in conjunction with the development activities that are planned for the Sports Complex.

Thus, while there is strong demand for warehouse and distribution space in the area, there is the potential that these other factors could effect reuse options for the site. Possible other reuses for the property could be a mass transit center for accessing the Sports Complex, a local sports and entertainment complex, a records storage facility or an ethnic food distribution center.

## 4.2.2 Albert Steel Drum Site

#### *4.2.2.1. General Site Description: Albert Steel Drum Site*

The 13.7-acre Albert Steel Drum (ASD) Site is located in the "Ironbound" section of Newark on the southeast corner of Wilson Avenue and Avenue L. The site consists of three parcels of land defined as Block 5038, Lots 70, 108 and 109 of the City of Newark Tax Assessor's map. Currently, the site is vacant. However, the site has been industrialized since the early 1900's. Albert Steel Drum leased their facility in 1974 and operated a drum recycling and recon-

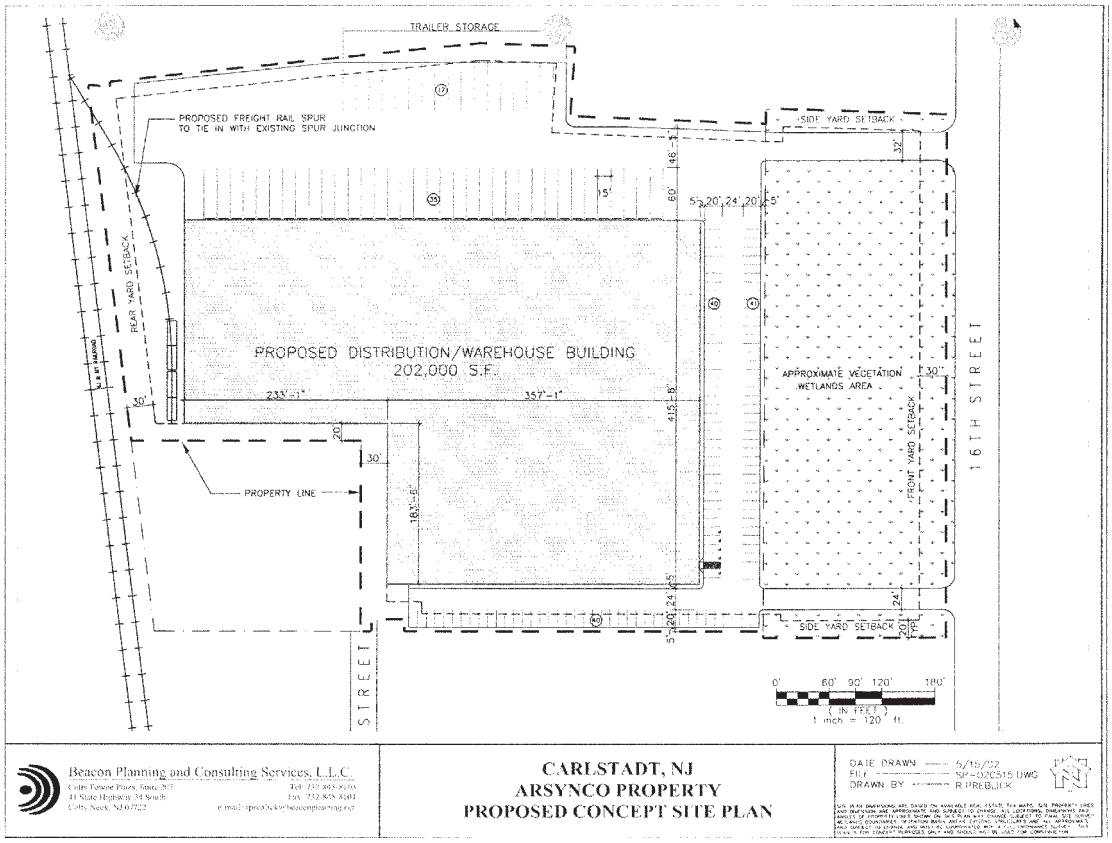



**Figure 4.3 Proposed Concept Site Plan for Arsynco Site**

ditioning business until 1977. The site was purchased by the Newark Housing Authority in 1980 with the intention of rehabilitating the property for future industrial activities. The site is in an area zoned Industrial (H-3) by the City of Newark. This zoning classification allows for a variety of industrial uses including warehouse and distribution. Additionally, all major utilities are available in sufficient capacity to support redevelopment. However, storm water management is an issue because the area floods. Figure 4.4 provides a map of the site showing lot lines and surrounding land uses.

### *4.2.2.2. Transportation Access: Albert Steel Drum Site*

Close proximity to several key regional highways, including Doremus Avenue, Route 1 & 9, the New Jersey Turnpike and the future Portway, make the Albert Steel Drum site desirable for access to Newark International Airport and the surrounding marine ports.

The site is particularly important because of its accessibility to Portway. Currently, the first section of Portway is being built from the port area to the intersection of Doremus Ave. and Wilson Ave. Included in this construction project is a rebuild of the Doremus Ave. Bridge over the Oak Island Rail Yards. This bridge is specially designed to handle heavy weight trucks, which when complete will allow overweight containers to be trucked off the port directly into warehouse and distribution facilities with out impacting regional highways (Figure 4.5).

Although the Albert Steel Drum is relatively small for rail service customer, there is a strong potential to serve this site from both the north and south with rail. Conrail maintains an active track along the east side of the site, which connects to Brills Yard to the North


**Figure 4.4 Aerial Imagery of Albert Steel Drum Site**

and the Oak Island Yard to the south. Additionally, NJ Transit operates bus service along Wilson Avenue with stops where Wilson Avenue intersects Avenue L.

### *4.2.2.3 Environmental Assessment: Albert Steel Drum Site*

This site has a long history of environmental investigation and remediation. Initial site investigations began in 1980 when the NJDEP Division of Water Resources installed 20 soil borings and collected 80 soil samples. Based upon the results of the sampling, several subsurface and surface "hot spots" were identified to contain site contaminates above site clean up levels (1000 ppm VOCs soil & 50 ppm PCBs soil). In 1999 Kimball & Assoc. was contracted by NJDEP to perform additional investigations at the site to further define the "hot spot areas" and develop a 65 percent design document for the remediation. During this effort an additional PCB "hot spot" was identified and include in the final design. This effort estimated the volumes of soil needing removal, identified disposal options and provided more detail for the cap design. In May 2000, the NHA sold the site to Tony Pallet, Inc, which entered into an Administrative Consent Order (ACO) with NJDEP regarding the ASD Site in June 2000. A Remedial Action Work Plan (RAWP) was prepared and approved by NJDEP in August 2001. In the spring of 2002, the specified remedial actions were implemented. In October 2002, a revised RAWP was submitted that reflected changes to the cap design in order to accommodate the construction of a W/DC building.

Geologic strata at the site consist of an initial layer of historic fill that ranges in thickness from 6 to 12 feet. This layer is composed of a wide variety of materials including concrete, brick, plastic, metal and wood. Beneath the fill is the meadow mat, which is fairly thin (six inches to 1 foot). The geologic layer beneath the meadow mat is a silt layer. Groundwater consists of a shallow perched zone above the clay and a deeper zone in the fine sand. Also, the shale bedrock is a regional aquifer. Groundwater flow in the shallow

perched zone is from south to north and the quality of the shallow groundwater is generally poor, containing low levels of VOCs. Groundwater in the area is not used for potable supplies.

### 4.2.1.4 Market Assessment: Albert Steel Drum Site

The site is within the Newark/Airport/Sea Port sub market of the northern and Central NJ industrial real estate market. This sub market contains approximately 72 million sq. ft of industrial space as of 1st quarter 2002, consisting of 456 building over 50,000 sq ft. The availability rate was 6 percent and the average asking rent was $5.15 per sq. ft. However, the key market aspect of this site is it's proximity to the Newark/Elizabeth Port complex and the ease of access once the Portway construction on Doremus Avenue is complete. This site holds tremendous potential for constructing a modern value added distribution center that can service the region's air and seaports.

Conceptual plans have been developed for a building that can range in size from 250,000 sq. ft. to 350,000 sq. ft (Figure 4.6). The size of the building will be controlled by various factors including storm water management, building coverage allowed by zoning,

**Figure 4.5 Truck Route from Newark Airport to Albert Steel Drum Site**

truck access and geotechnical considerations. The market study indicates potential users could be spirits & wine distribution, clothing or dry goods repacking and distribution. Estimated land values when remediated to non-residential standards are $3000,000 to $350,000 per acre. Based upon possible building sizes, there is the potential to generate up to 300 jobs for the local urban workforce and between $500,000 to $600,000/yr in tax revenue to the City of Newark.

## 4.2.3 Reichhold Chemical Site

### *4.2.3.1 General Site Description: Reichhold Chemical Site*

The Reichhold Chemical Site is an assemblage of three tax lots located in southern Elizabeth, with a small portion in Linden. The property is identified as Block 4, Lots 63 and 67 (comprising 12.3 acres) on the City of Elizabeth tax map and Block 586, Lot 1 (comprising 7.2 acres) on the City of Linden tax map. Based upon the tax record the property contains approximately 19.5 acres. Reichhold Chemicals, Inc owns the property. The property is currently vacant with the exception of a large warehouse building on the northern side of the property. A majority of the site is covered by impervious surface. Figure 4.7 provides a map of the site and surrounding land uses. The site is in an industrial area of southern Elizabeth that contains the Joint Meeting wastewater treatment plant and other manufacturing and bulk fuel storage facilities. A small residential area lies to the north. The site is traversed by a Class Two short line railroad (Sound Shore Line) and the southern portion, which falls within Linden, is only accessible through the Elizabeth component. The site falls within the M-2 Medium Industrial Zone of Elizabeth and the Linden portion is in the HI Heavy Industry Zone. There appears to be no wetlands on the property and the topography is generally level.

**Figure 4.6 Conceptual Redevelopment Plans for Albert Steel Drum Site**

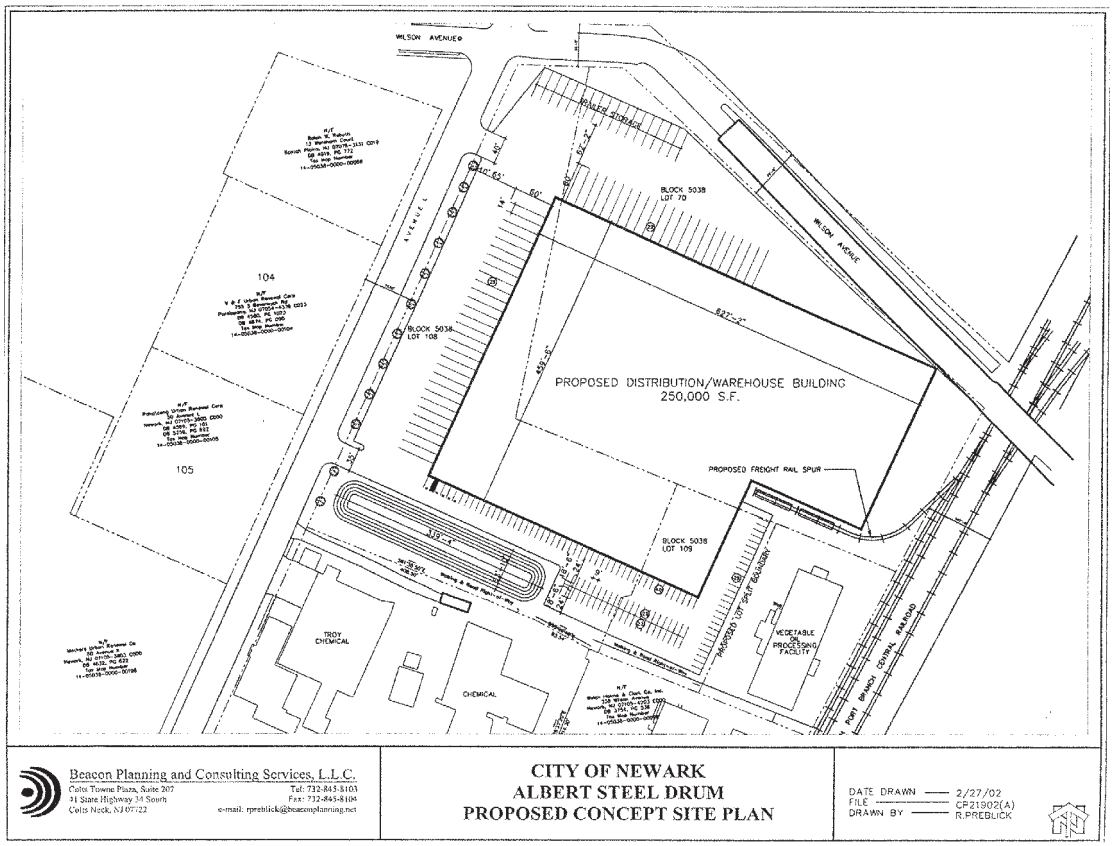



**Figure 4.7 Aerial Imagery of Reichhold Chemical Site**

### *4.2.3.2 Transportation Assessment: Reichhold Chemical Site*

The Reichhold Chemical site presents both many challenges and opportunities for transportation access. Bayway Avenue borders the site to the north and First Avenue to the east. To the west, the Chemical Coast rail line, a major north-south freight rail line owned and operated by Conrail on behalf of CSX and Norfolk Southern, borders the site. The Reichhold site is bifurcated by a short line railroad called the Sound Shore Line.

While the site is within close proximity to several key highway links, including the New Jersey Turnpike and the Gothels Bridge, highway access is limited due to a number of undesirable highway geometric and traffic control features along likely trip paths. And other alternative trip routes require use of narrow residential streets and substandard bridges.

Several initiatives are planned in the area that will enhance roadway access to the site. These include realignment of Relocated Bayway, widening and reconstruction of First Ave. and replacement of the First Ave. Bridge over the Elizabeth River. These improvements could enhance roadway access to the site. Rail access can be obtained from the Chemical Coast Line through the Class Two short line that exists on the site. The Chemical Coast Line extents north to the Trumbull Yards and the Oak Island Yards and intersects with the North Jersey Coast Line near Perth Amboy. Limited existing bus transit is available.

### *4.2.3.3 Environmental Assessment: Reichhold Chemical Site*

Industrial operation began on the site in the early 1900's. Initially the site was used for metals manufacturing operations or was left undeveloped. Reichhold began operations on a portion of the site in 1936. Reichhold ceased operations in 1991 and a decommissioning program was initiated. All on-site structures have been demolished with the exception of a ware-

house, which is used to store drummed and bagged raw material and finished products.

Initial environmental site investigations began in 1987. Contaminants of concern for the Reichhold site include VOCs, SVOCs, TPHC, PCBs and metals. In most cases the impacted soil was either excavated or capped with a deed notice. For groundwater, natural attenuation with a CEA is proposed. This is largely based upon the fact that a regional groundwater problem exists with respect to organics.

In November 2001, a Phase VI RIR/RAWP was submitted that addressed final issues with regard to the soil contamination and completed on-site groundwater delineation. Based upon this submittal, on site remediation of soils has been complete through a combination of excavation, capping and deed restrictions. Impacts to groundwater will be managed though a combination of enhanced bioremediation using oxygen release compounds (ORP), establishment of a CEA and monitored natural remediation (MNR).

### *4.2.3.4 Market Assessment: Reichhold Chemical Site*

The property is located in the City of Elizabeth Urban Enterprise Zone (UEZ). As such it is eligible for government support in terms of below market financing, tax incentives, tax abatements and employment credits and subsidies. Additionally, the property has other attributes that affect its marketability. These include its proximity to NJ Turnpike Exit 13, access to the Chemical Coast Line through the rail short line that bifurcates the site and the possibility to access the nearby Tosco-Phillips refinery plastic pellet manufacturing facility. On the other hand, discussions with Elizabeth officials indicate a strong concern on their part to minimize the impacts of trucking activities on residential areas that are north of the site.

Union County has the fourth largest amount of indusial space in the north and central NJ market with 87 million sq. ft., but has a fairly low vacancy rate. The proposed design for this site would allow for approximately 400,000 sq. ft of W/DC spread over two buildings (Figure 4.8). This would provide significant additional space to an industrial market that has a low vacancy rate. A 400,000 sq. ft W/DC could

**Figure 4.8 Proposed Concept Site Plan for Reichhold Chemical Site**

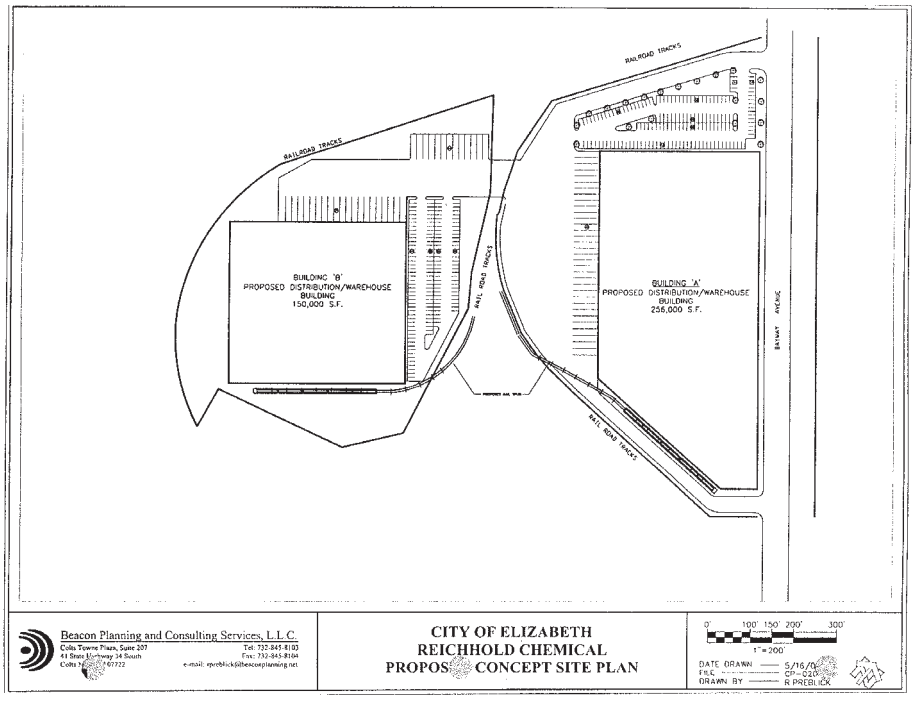



**Figure 4.9 Aerial Imagery of Carteret Redevelopment Properties**

provide 200 to 250 jobs and provide approximately $600,000/yr in property tax.

Another reuse opportunity for this site is plastic products manufacture. The site is near the Tosco-Philips refinery plastics pellet manufacturing facility. Preliminary analysis indicates it is possible to move rail cars of plastic pellets from the refinery to the site through rail connections under the NJ Turnpike.

## 4.2.4 Carteret Redevelopment Properties Site

### *4.2.4.1. General Site Description: Carteret Site*

This property is an assemblage of fifty tax lots that collectively comprise approximately 137 acres. It is Phase I of a two-phase redevelopment project. The property is located north of Industrial Road, near NJ Turnpike Exit 12 (Figure 4.9). Of the 137 acres only approximately 50 acres are developable and these consist of a former landfill. The property is located within the HI-A (Heavy Industrial) Zone. Permitted principal uses include industrial or manufacturing as well as a permitted conditional use as a regional mall.

As mentioned previously, the redevelopment site is composed of numerous lots. The Borough of Carteret does not own all of the lots. A portion of the landfill is occupied by an active recycling business called Dauman Recycling, Inc. CDI Industries, GATX, Industrial Reclamation Inc. and Middlesex Landfill Corp own other lots within the redevelopment area. Thus redevelopment will require purchasing and assemblage of lots owned by various entities.

### *4.2.4.2 Transportation Access: Carteret Site*

Carteret Redevelopment Properties is located within close proximity to the New Jersey Turnpike, Interchange 12. Portions of the site are currently active and are served principally through the existing network of streets, including Industrial Avenue and

Roosevelt Boulevard, which connect to the interchange. The New Jersey Turnpike Authority is pursuing extensive improvements to Exit 12 including reconfiguration of the ramps and construction of a new roadway. Three possible alignments are shown in Figure 4.10. The proposed improvements to Exit 12 will also include designs to access any redevelopment that will occur on the former Carteret landfill. However, the remediation of the landfill will include capping which will possibly place building floor elevations at 45 ft msl. Any roadway design for accessing the redevelopment on top of the landfill must consider the elevation difference between the site and the surrounding land area. The site is also located within close proximity of a major regional rail freight line, the Chemical Coast Rail Line. However, the substantial amount of fill needed for a likely environmental remediation scenario would make a direct rail connection impractical.

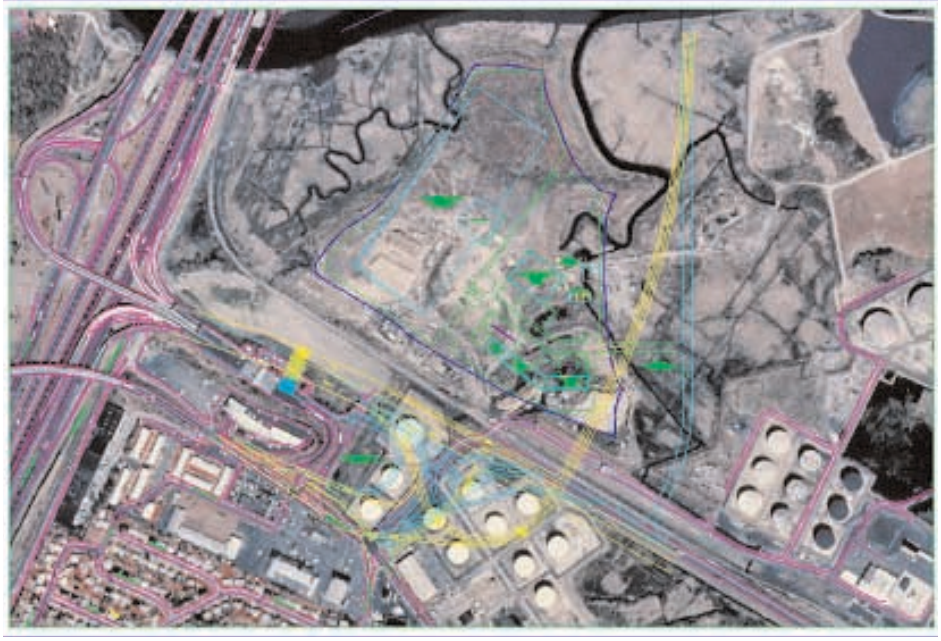
Several nearby bus routes with stops along Roosevelt Avenue could provide transit service for the Carteret site. Service is provided on weekdays with limited weekend service. Bus service should be coordinated with work schedules to ensure that efficient worker transit access is provided.

### *4.2.4.3 Environmental Assessment: Carteret Site*

Approximately 70 of the 137 acres are former landfill. These comprise three solid waste landfills, the Carteret Landfill, the Cranbrook Landfill and the Middlesex Landfill. These landfills officially terminated active disposal operations in 1985, 1966 and 1979. According to 1997 Remedial Investigation Report, the Cranbrook Landfill was closed in accordance with NJDEP requirements, but the other two have never been properly closed.

In 1997 a remedial investigation was conducted of the three landfills. Soil borings were advanced into the landfills and they were found to consist of a heterogeneous mix of wood, soils, household refuse and construction and demolition debris. A leachate mound exists within the landfill material with discharge along the east, north and west sides of the landfill mound. Shallow groundwater was found to

**Figure 4.10 Possible alignments of redesigned New Jersey Turnpike Interchange 12**



contain VOCs, SVOCs, metals and PCBs. Sediment was found to contain low levels of metals and pesticides.

Two engineering firms have developed conceptual designs for landfill closure by capping. Both consider the closure to include preparation of the landfill such that building foundations and other site improvements can be constructed. It is estimated that 2 million cubic yards of compacted fill will be required to cap the landfill. The material proposed for the capping fill would be dredged sediment. Additional closure items include landfill gas collection and treatment system, asphalt cap on top of the landfill, groundwater monitoring, leachate collection and treatment, relocation of two creeks, creation of new wetlands and enhancement of existing wetlands. Costs for impending this program range from $19 million to $36 mm. This program would result in the creation of approximately 50 acres of land on top of the landfill (in the form of a plateau) that would be available for redevelopment.

#### *4.2.4.4 Market Assessment: Carteret Site*

The success of the redevelopment of this parcel is closely tied to the proposed reconfiguration of the NJ Turnpike Exit 12 interchange. Transportation access to the site is dependent upon integrating into the design a roadway to the north that will match the proposed grade of the final landfill capping. One possible access option is shown on Figure 4.11. This figure also provides a reuse design that consists of a 670,000 sq. ft and a truck service travel center.

Market research indicates the need for a full service travel center proximate to the ports and the New York City area. A travel center at this location would allow truckers to stage up before accessing the ports. The concept proposed in Figure 4.11 includes hotels, restaurants, fueling area, truck service area, internet access, laundry and other amenities. Based on the concept provided it is estimated that the proposed travel center would yield approximately $2 million in annual taxes and significant provide employment opportunties for low to moderate-income workers in Union and Middlesex Counties.

The other component of the proposed redevelopment is a 670,000 sq. ft modern warehouse and distribution center. There are only a few buildings in the area with the ability to accommodate a large end user who requires space in excess of 250,000 sq. ft. As part of this study a limited appraisal was performed on the property. The appraisal was performed under two conditions, "as is" (defined as remediated to industrial clean conditions but not developed) and "as if" (defined as developed in accordance with the concept design). Considering approximately 50 buildable acres, the "as is" estimated value is $15.4 million and the "as if" estimated value is $64mm. Estimate total annual tax revenue to Carteret from the development concept would be approximately $2.9 million.

Following completion of the case study, in August 2002, th City of Carteret announced that a developer had entered into an agreement to build a W/DC complex on the site.

## 4.2.5 Koppers Coke/Standard Chlorine/Diamond Shamrock Site

#### *4.2.5.1. General Site Description: Koppers Coke Site*

This case study consists of three contiguous properties, which collectively make up one of the largest pieces of available land for development in northern NJ. The properties are located in the Town of Kearny, Hudson County (Figure 4.12). The properties that comprise this piece are known as the Koppers Coke site (173 acres; 40 acres of which are in the River), the Standard Chlorine site (25 acres) and the Diamond Shamrock site (27 acres). Together they total 185 acres of developable land.

The site is in an industrial portion of Kearny and is zoned heavy industrial. The nearest residential area in Kearny is over two miles to the west. Additionally, the site is within the New Jersey Meadowland Commission Hackensack Meadowlands District, which has zoned the site as heavy industrial. Permitted uses within this zoning are motor freight terminals, freight forwarding and intermodal facilities.

The Hudson County Improvement Authority (HCIA) owns the Koppers Coke site, the Standard Chlorine site is owned by the Standard Chlorine Chemical Company, Kearny, NJ and the Diamond

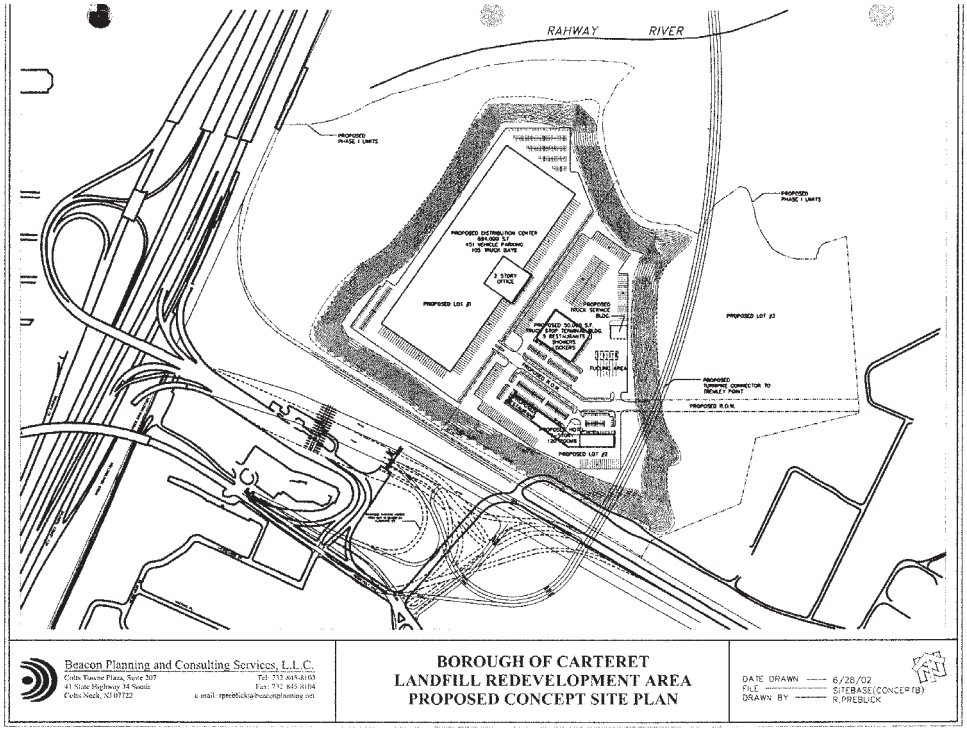



**Figure 4.11 Proposed Concept Site Plan for Carteret Redevelopment Site**

Shamrock site was formerly owned by Chemical Land Holdings and is now owned by Terra Solutions.

The properties have almost a 100-year history of industrial activity. At the Koppers Coke site, the Koppers Company used the site from 1917 to 1979. At the Standard Chlorine site, industrial activities began in 1916 when the site was purchased by the White Tar Company and continued until 1993, when the facility was closed. At the Diamond Shamrock site the Martin Dennis Company constructed a chromate chemical manufacturing facility in 1916.

### *4.2.5.2. Transportation Access: Koppers Coke Site*

The proximity of Koppers Coke to a major navigable waterway, the Hackensack River; existing passenger and freight rail lines including, the Morris & Essex Line, Boonton Line, northern Branch, and P&H Freight Lines Line; and key highways such as Fish House Road and Route 7 provide many challenges and opportunities for transportation access.

***Highway Access: Koppers Coke Site***

Currently, highway access to the Koppers Coke property is achieved through a narrow tunnel under the Morris and Essex Rail line in the eastern portion that connects to the Fish House Road ramp for the Wittpenn Bridge. The Standard Chlorine and Diamond Shamrock properties are currently accessed via an existing driveway off Rte 7 near the intersection with the Fish House Road ramp. Both of these access points are problematic and would be inadequate to handle increase traffic from redevelopment.

The southern edge of the Koppers Coke site is adjacent to or near several major regional roadways and two important intersections (Figure 4.12). Southeast of the site, Route 7 connects to Fish House Road via a grade-separated ramp. This ramp is also the western access to the Wittpenn Bridge over the Hackensack River into Jersey City. Along the southwestern edge of the Koppers Coke site, Route 7 and the Newark-Jersey City Turnpike (County Route 508) merge at a major interchange. Two important highway transportation improvements are planned for areas south

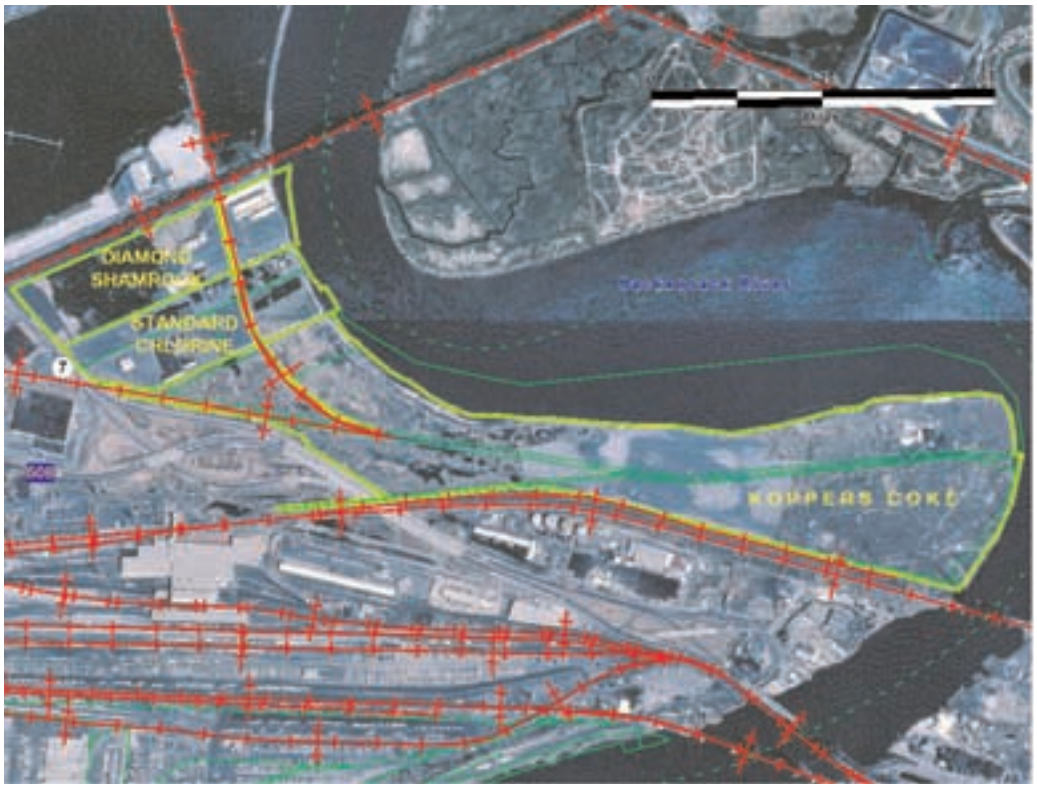



**Figure 4.12 Aerial Imagery of Koppers Coke, Standard Chlorine and Diamond Shamrock Site**

of the Koppers site. First, Portway, a roadway/intermodal connector system that will link the region's marine ports, airport and intermodal rail yards will be built along Fish House Road to the south (Figure 4.13) and integrate with the Wittpenn Bridge/Rt. 7 interchange. This will allow access from the Koppers site to the Portway road complex. Second, NJ Department of Transportation (NJDOT) plans to replace the existing Rt. 7 Wittpenn Bridge with a new bridge that will carry three lanes in each direction. The reconstruction of the Wittpenn Bridge and the Portway project upgrade of Fish House Road provide important opportunities to develop a useful access to the eastern portion of the site.

A western highway access point is also needed to provide adequate traffic flow through the entire site. This access would have to be on Rt. 7 in the vicinity of the Diamond Shamrock site. Several options exist, as depicted in Figure 4.14. While a traffic signal at the Rt. 7/Amtrak overpass could accommodate vehicles exiting the site, restricted sight distance and interaction with merging traffic could create safety problems for westbound Rt 7 traffic

***Rail Access: Koppers Coke Site***

Because of significant elevation differences and extensive passenger service, access to the site from the Amtrak and Morris & Essex lines is not possible. Additionally, use of the Seaboard Lead is not practical because of the at-grade crossing over Rt. 7 and lack of adequate connection to NS's Croxton Rail yards.

***Marine Access: Koppers Coke Site***

Marine access to the Koppers Coke site via the Hackensack River could provide a viable transportation alternative for freight movements. There is an existing dock facility on the eastern portion of the Koppers site that has in the past been used for off-loading of dredged material. Thus, the site is accessible by barge from the Port Newark/Elizabeth complex. Vessels would use the Newark Bay North Reach to

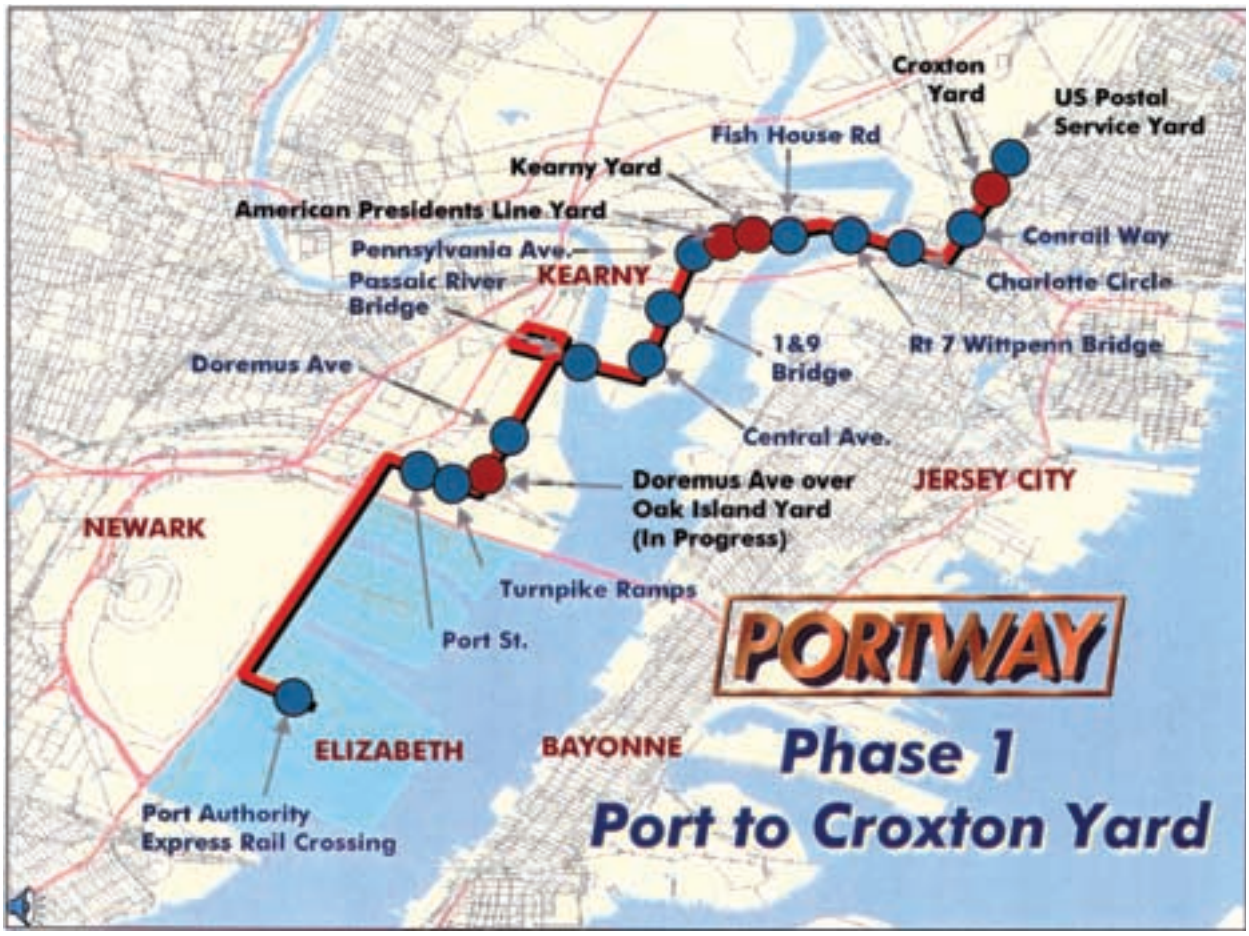



**Figure 4.13 NJDOT's Proposed Portway Alignment**


**Figure 4.14 Transportation Improvement Options at Koppers Coke Site**

the Drovers Point Reach then to the Marion Reach (Figure 4.15).

Currently transit access to the Koppers Coke site is very limited. NJ Transit operates a bus line from Jersey City to Newark with several transfer locations. However, hours of service are very limited.

#### *4.2.5.3 Environmental Assessment: Koppers Coke Site*

An important aspect that benefits the redevelopment of these three properties is their commonality with regard to subsurface conditions and how this can support a uniform approach to the control of environmental contaminates. All three properties have had significant site investigations, which have included both the determination of subsurface conditions as well as the distribution of contaminants. Based on these studies some conclusions about the geology and hydrogeology underlying the properties can be made that have an important bearing on overall remediation strategies.

Historic industrial fill overlies the entire 184 acres. While this unit varies in thickness (six to 20 feet) and composition (cinders, COPR, slag, building debris, coal ash, etc.) its presence is consistent and will require a cap over the entire site. Most important of all from a remediation perspective is a low permeable clay/till unit that is at least 80 feet thick. This unit is continuous beneath all the properties and separates the surface contaminant from the regional groundwater. Because of this clay/till layer, near surface contaminates are confined to the historic fill/meadow mat/fine sand layer combination and are prevented from moving downward and impacting the regional groundwater. Thus contaminates at these properties

**Figure 4.15 Marine Access to Koppers Coke Site**

are primarily isolated to the immediate site environs and the only potential for migration is horizontally to the Hackensack River (Figure 4.16). Important remediation considerations as a result of common subsurface conditions are:

a. A steel sheet pile (SSP) wall currently exists along the Hackensack River edge of the Koppers Coke site. This wall is "keyed" into the clay/till layer and is designed to prevent site contaminates from leaching into the Hackensack River. Since the clay/till layer exits under the other two properties, the SSP wall can be extended to the Standard Chlorine and Diamond Shamrock properties. By "keying" the SSP wall into the clay/till layer along the entire rivers edge, this will effectively seal off the properties from further impacts to the Hackensack River (Figure 4.17).

b. Groundwater conditions are similar on all properties. A shallow water table aquifer system is present. While impacted from released chemicals, it is not used for potable or industrial purpose. The regional groundwater, a useful aquifer, is separated by at least 80 feet of low permeable material and is not threatened by site contaminants.

c. This combination of isolated near surface contamination and continuous thick low permeable unit is conducive to a "hot spot" extraction, containment and capping and institutional controls remedial strategy (Figure 4.18).

Specific contaminants on each property, shown on Figure 4.16, include:

***Koppers Coke***- The Eastern area includes the former coal tar processing plant, former coke plant, and the former coal/coke storage area. Contaminates in the soil include BTEX, PAHs and cyanide. Additional free phase DNAPL has been observed in the Eastern area. In addition to the SSP wall, a slurry wall was installed in the Eastern area to contain the DNAPL. The Western area includes the former light oil residual area, spent oxide deposit area former coke/coal storage area.

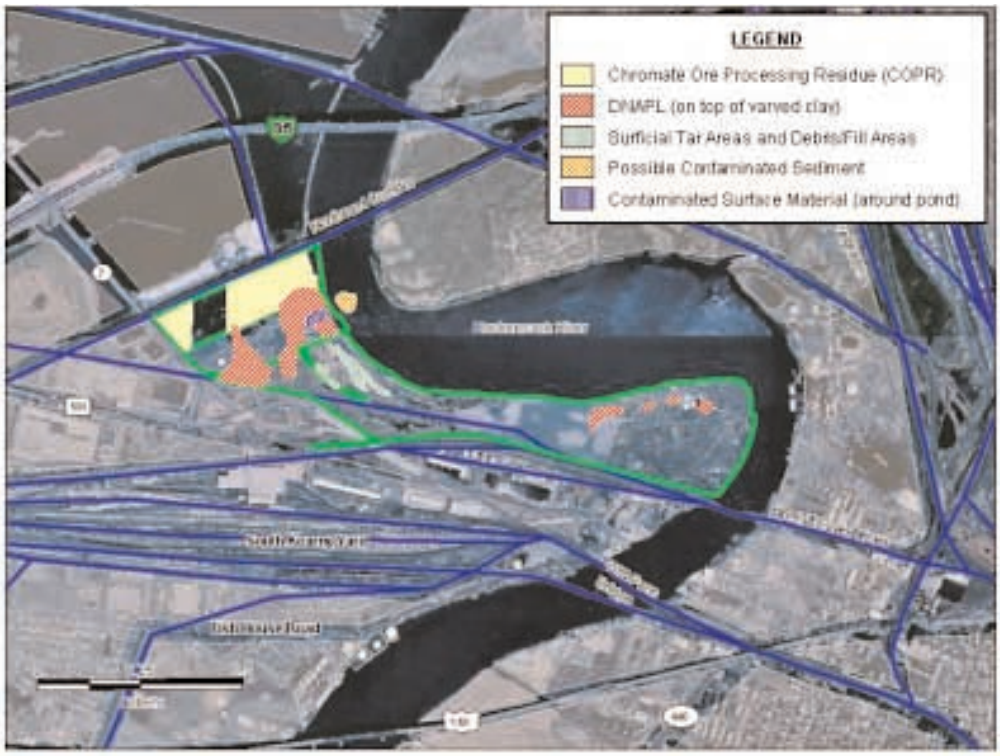



**Figure 4.16 General Environmental Issues**

Soil contaminates include PAHs, cyanide and chromium.

***Standard Chlorine site***- A variety of contaminates has been detected in historic fill at this site. These include total and hexavalent chromium, VOCs and SVOCs and Dioxin. The chromium is associated with COPR and is confined to area above the meadow mat. The most prevalent organics are chlorobenzene, dichlorobenzene and naphthalene. Additionally, pooled DNALP has been detected in above and below the meadow mat.

***Diamond Shamrock site***- The majority of the site contains elevated levels of total and hexavalent chromium above the meadow mat as a result of the massive COPR filling that has occurred at the site. Additionally, VOCs were detected in soil and groundwater along the southeastern edge of the property, near the DNAPL area on the Standard Chlorine property. Indications are the DNAPL has migrated on to the Diamond Shamrock property in this area.

Finally there is several areas of tidal and fresh water wetlands on the Koppers site. HCIA filed an application with the USACE to fill the wetlands as part of the remedial action plan. HCIA is currently working on a wetland mitigation plan, which will determine those area requiring mitigation and the mitigation ratio.

### *4.2.5.4 Market Assessment: Koppers Coke Site*

This assemblage of three properties represents one of the largest pieces of undeveloped former industrial land in the northern NJ Industrial real estate market. However, comparison of this site to current market demands is misleading because of the time required to prepare the site for redevelopment. Therefore, the market assessment has to evaluate the future benefits of freight related redevelopment within the context of Port growth, enhanced infrastructure, planned unit development (PUDs) and in close PIDNs.

This group of properties is particularly well suited to support growth. It is large enough to allow the development of a warehouse and distribution center

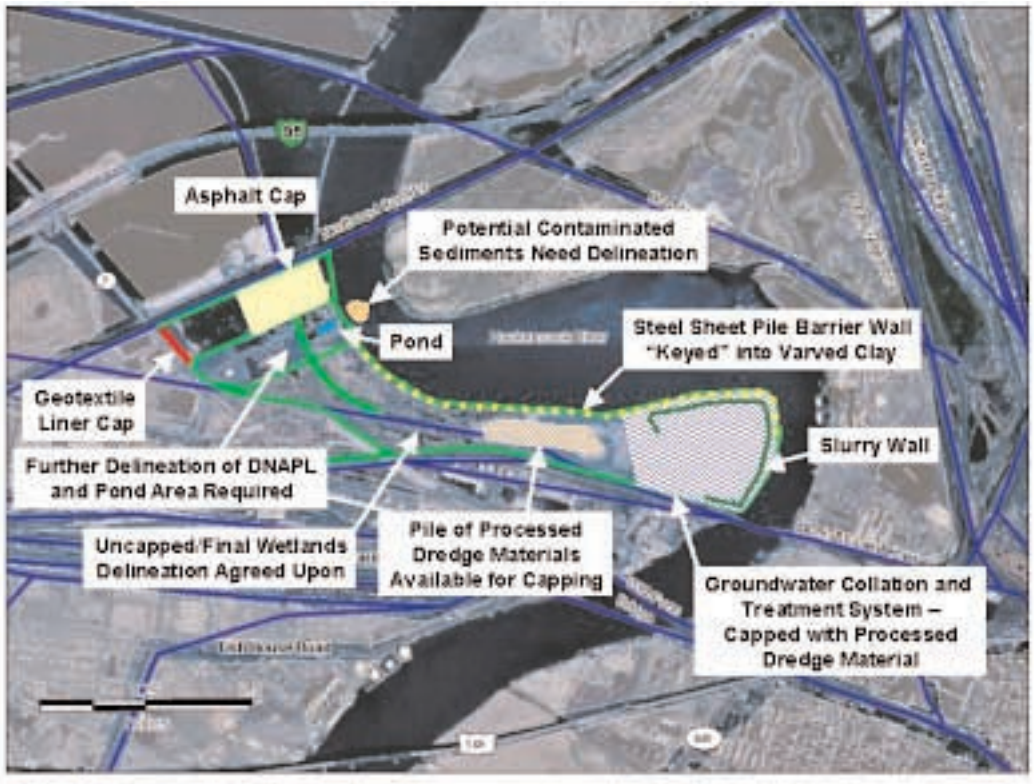



**Figure 4.17 Current Status of Remediation Activities**

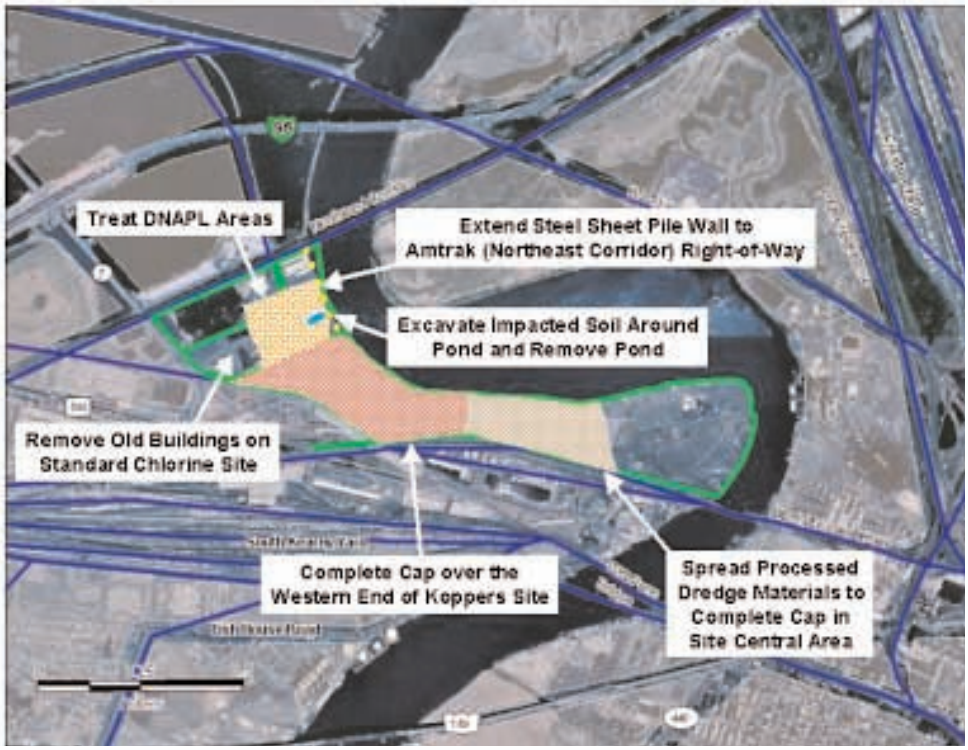



**Figure 4.18 Overview of Additional Remedial Activities**

planned development similar to those near the Port of Long Beach. These PUDs involve the collocation of numerous W/DC buildings in such a manner that they can integrate with one another to achieve synergies (as described in Section 6.3.1). This site has the available land to build the integrated PUD that can be linked to Portway so that freight related trucking could easily move between the W/DCs and the intermodal rail yards and ports. In addition, the site can also support a barge freight system that can move containers off the port dock area along a series of navigable channels to the existing dock at the Koppers Coke site. On-dock W/DCs can be built at the site that can quickly process freight in containers and be transferred in value added facilities. Thus this site has the significant benefit of being able to be linked to the port area through both enhanced transportation infrastructure (Portway) and marine barge freight.

# Section 5 - Case Study Findings



## 5.1 Introduction

The following sections discuss findings from the five case studies described in the previous section. The observations are provided within the context of transportation access, environmental conditions, market evaluation, property valuation, community acceptance and financing options.

An overall finding of the case studies is that there is an interplay among numerous factors that determines the viability of brownfield sites for value-added warehouse and distribution reuse. In particular, the case studies indicate a dynamic relationship between and among the extent of required environmental site clean up or remediation, transportation access to major regional arterials, and the industrial real estate market or value of the property. For example, transportation access is vital for distribution and logistics and has a significant impact on the value of the property. Simultaneously, the value of the property often dictates the level of transportation infrastructure improvements that can be undertaken by the developer. Higher market values are typically associated with residential properties yet these reuses very often require more extensive environmental remediation measures than value-added warehouse and distribution. Additionally, large impervious surfaces typically required for modern warehouse and distribution centers can become an integral component of the remediation strategy.

The interplay of these and other factors affecting redevelopment prospects is different for each brownfield site. The following discussion touches upon many of the key factors encountered in freight related redevelopment.

## 5.2 Transportation Access

**Summary of Important Findings**

- Transportation access is critical to freight related brownfield reuse
- Rail access is complicated and influenced by factors beyond the immediate site environs
- Study sites do not have ready-made direct access to major highway or rail arteries
- Local concerns regarding truck traffic must be considered particularly
- Mass transit is available to all sites to convey urban workforce (primarily bus lines)
- Marine access should be considered for the Koppers Coke site
- Regional transportation improvements should consider benefits to clusters of sites
- Trucks will be the dominant form of freight movement

**Discussion**

Access to transportation services and facilities is vitally important in the freight industry. For freight distribution and logistics operators on brownfield sites, transportation access is especially important. Ease of access significantly enhances the value of the property, offsetting potentially costly environmental remediation. In addition, good transportation access attracts the much-needed labor force necessary to operate high-end freight distribution and logistics facilities.

All the site locations are in close proximity to major interstate highways, active rail lines, navigable waterways and the important regional international ports of entry. This includes Newark International Airport, Port Elizabeth, Port Newark, the Northeast Corridor, Chemical Coast line and the New Jersey Turnpike, among others. Yet each site presents unique challenges to directly accessing the regional transportation network that links to the port and intermodal facilities.

Physical rail infrastructure is only one component in considering the feasibility of rail service. Other factors, such as the type and amount of goods being delivered, competing passenger service and ease of connectivity to regional freight rail lines must be

taken into account. For example, the Arysnco site, which has an active freight rail siding along its western property boundary, is seemingly an ideal candidate to be served via freight rail. However, since the freight siding connects to a passenger rail line, freight rail service is largely dictated by the passenger line service schedule. The Koppers Coke site has both active and inactive rail lines adjacent to and running through the contiguous group of sites. However, freight rail service is highly problematic due to conflicting passenger service schedules, lack of connections to regional freight rail lines and grade separation. Other sites, such as the Carteret site have active rail facilities along their borders, but cannot feasibly connect to rail freight service because of significant grade separation.

*Good transportation access enhances the value of brownfields, offsetting potentially costly environmental remediation. While most sites are in close proximity to major highways, rail lines and waterways, each site presents unique challenges to accessing the regional transportation network.*

Trucking will continue to be the dominant form of freight movement, though in some cases other transportation modes may provide viable alternatives. Trucking is particularly important in providing cost-effective service to the nearby consumer market. Therefore, access to major highway corridors is essential. Each site or cluster of sites is within close proximity of major regional highways such as the New Jersey Turnpike and I-280. However, in some cases, the network of local streets that provide direct access limits connectivity to these important links. Reichhold Chemical, for example, is less than one mile from Interchange 13 of the New Jersey Turnpike. However, poor geometric and traffic operational features of the local roads that link this site to the New Jersey Turnpike hinder the maneuverability of trucks and significantly increase travel times. Access to port terminals, also located within close proximity of the site, requires use of local residential streets and travel over substandard bridge structures.

While truck access remains a critical element to redeveloping brownfield sites for freight related use, the study team found that there is strong local concern regarding increased truck traffic connected with freight distribution and logistics re-uses. As discussed in Section 5.6 below, education is needed to make better known the aesthetically pleasing designs of these modern buildings, the jobs and ratables they can bring and the likelihood of manageable traffic impacts.

Another key transportation issue is workforce access. The influx of new employment opportunities brings about the potential for increased traffic. Fortunately, peak hours associated with W/DC facilities usually do not coincide with roadway peak traffic periods. Furthermore, we found that transit service is provided to all of the study sites, enabling single occupant vehicle trips to be reduced as well as providing a means to transport transit-dependent workers. However, bus service, in some cases, is limited.

Marine access may be promising for waterfront sites. A portion of the Koppers Coke site is located directly on the Hackensack River and has a deepened channel that could potentially be used to bring in barge freight traffic. Owens Corning Fiberglass currently has an agreement to use a large dock on the eastern portion of the site. A shared use agreement between the prospective property owner and Owens Corning Fiberglass would be required for using these dock facilities in conjunction with the W/DC reuse. Expansion of existing or construction of new dock facilities should also be explored to accommodate marine freight access. In general, the viability for marine access must consider factors such as site topography, time sensitivity of goods delivery, tidal patterns, physical features of the waterway (such as depth, width and curvature, bridge clearances) and roadway access.

Regional transportation projects, if planned properly, can have an important impact on clusters of sites. Two planned regional projects are particularly significant to large groups of brownfield sites that could be redeveloped for freight related purposes. These are Portway and the Exit 12 upgrade and expansion. As shown on Figure 4.13, the proposed Portway alignment will pass adjacent to and within close proximity to numerous large brownfield sites in Newark, Kearny and Jersey City. When built this roadway could link together a number of W/DCs on brownfield sites with enhanced

infrastructure that would connect the Port complex with the major intermodal rail yards. This would be the creation of the "string of pearls" concept discussed in the Phase I Market Analysis (see Section 6.2.2). In a similar vein, the upgrade and expansion of Exit 12 will allow redevelopment of not only the Carteret site but over 500 acres of additional sites including the GAF site on Tremley Point and the Port Reading Yards in Woodbridge.

# 5.3 Environmental

**Summary of Findings**

- Wide variety of chemical contamination exists on the sites
- Contaminated media is primarily soil, groundwater, and sediments
- Cleanup objective for redevelopment with W/DCs is non-residential (industrial) standards
- All sites have had some level of characterization, though in most cases insufficient to allow accurate estimate of clean up costs
- Triad Approach to site investigation is an effective method to accelerate characterization, fill data gaps and target cleanup
- NJDEP involved in every one of sites, and bureaucratic policies, procedures and regulations substantially delay and complicate redevelopment process
- New NJDEP policies and programs promise to address many key issues including streamlining approvals
- Much of the cleanup work projected for these formally industrial sites does not integrate the reuse concepts, forcing redesign and resubmitted of RAWPs & permits

**Discussion**

The case studies deal with wide variety of environmental issues that affect redevelopment and provide a cross section of the types of environmental conditions that need to be taken into account when considering a site for value-added warehousing and distribution. Four of the case studies were former industrial facilities (Reichhold, Albert Steel Drum, Arsynco and the Koppers group) and as such are indicative of the environmental conditions associated with New Jersey's industrial past. The other site consists of former landfills that were not properly closed and present their own issues with regard to remediation, building construction and stability.

The case studies and environmental evaluations raised serious concerns that some state environmental programs and regulations are not working effectively to advance brownfield reuse. Since the completion of the case studies in mid-2002, however, the NJDEP has initiated new policies, regulations and programs which promise to address many of the issues and problems by expediting environmental review of brownfield sites and providing certainty for developers. Specifically, in November 2002, NJDEP announced the creation of the Office of Brownfield Reuse within the Site Remediation Program (SRP) and had assigned a director to this office. The purpose of the new office is to provide an advocate within NJDEP for brownfield site reuse and become an incubator for new initiatives that will expedite brownfield site redevelopment. Additionally, NJDEP announced a new brownfield policy to bolster redevelopment, accelerate the process and make it more efficient and predictable. Elements of the new policy include establishment of the Office of Brownfield Reuse, liability reform, separation of NFAs between soil and groundwater, an area wide reuse program, expanded use of financial and market instruments to facilitate redevelopment, a certification program for consultants and zero tolerance for "mothballing" abandoned sites. The purpose is to encourage the remediation and reuse of brownfield sites, particularly in smart growth areas.

*NJDEP has initiated new policies, regulations and programs which promise to address many barriers to brownfield redevelopment by expediting environmental review of sites and providing certainty for developers.*

Because these initiatives are new, it remains to be seen how effectively they will address all the issues found in the site investigations.

## 5.3.1 Site Characterization and the Triad Approach

The industrial sites have a wide range of contaminants, which in many cases are mixed with historic fill that had been placed on the site to reclaim former marsh areas. The typical contaminants found are chlorinated solvents, a wide variety of petroleum hydrocarbons, polychlorinated biphenyl's (PCBs), polycyclic aromatic hydrocarbons (PAHs) and heavy metals including chromium, lead, zinc, arsenic and cadmium. These contaminants are the result of various facility operations and disposal practices including leaks and spills from manufacturing processes, discharge lagoons, underground storage tanks, waste piles, dumping of liquid wastes, discharge outfalls, drum storage and cleaning and the spreading of by products of the manufacturing processes. Contaminated media is primarily of three types: soil, groundwater and sediments.

All the former industrial sites have some form of NJDEP oversight, primarily through their involvement with the ECRA/ISRA regulatory programs. These programs began in the mid-1980s and require that investigations be performed and, if necessary, sites be cleaned up to appropriate standards. Specifications for this process are contained in the Technical Requirements for Site Remediation. As a result, there has been some level of site characterization performed at the sites that can provide a basis to evaluate possible remedial actions. However, at several of the sites there are substantial gaps in the investigation data that result in a large uncertainty as to the remediation approach and associated cost. This translates into a large cost range for the remedial options, which impacts developer's willingness to consider redevelopment because of the level of unacceptable environmental and ultimately, financial risk. The Triad Approach to site characterization was evaluated as an investigation method that could, quickly and inexpensively, provide site environmental information that could fill these data gaps and bring more certainty to remediation costs.

Site characterization is a process whereby the horizontal and vertical extent of environmental contaminants is identified and the level of contamination for the entire site is estimated. Typically, site characterization methods may include obtaining and analyzing ground water and soil samples at a limited number of key locations. The information gathered from this sampling is then extrapolated to develop a picture of what contaminants are present at the site. Once a site is characterized, the type, extent and cost of environmental remediation can be determined. However, this process is slow and cumbersome and not compatible with brownfield redevelopment. An alternative approach to traditional site characterization, Triad Approach was evaluated as part of this study and found to be more useful. The Triad Approach is an innovative site characterization technique that includes three elements, Systematic Planning, Dynamic Work plans and Real Time Data Generation. Field analytical methods and mobile laboratories are used to analyze samples in the field, thus generating real time data that is used to select new sampling locations.

The Triad Approach was used to characterize the Albert Steel Drum site in order to fill the data gaps and reduce the remediation cost uncertainty. These methods are effective for quickly and inexpensively delineating "hot spots" with a high degree of accuracy. This allowed soil remediation efforts to be focused on well-delineated areas, which provided a much higher degree of certainty to the cost estimates. This greater certainty helped to attract the interest of a major warehouse developer, who has entered into a sales agreement with the owner.

The strategy envisioned with the application of the Triad Approach at the Albert Steel Drum site was to use real time data in conjunction with field decision making to map the boundaries of VOC and PCB "hot spots". The purpose was to map them with sufficient detail to allow the collection of "in place" post excavation samples and to develop accurate estimates of soil volumes to be removed and treated. Previous investigations had identified several locations on the 13-acre site where VOCs and PCBs exceeded the site specific non-residential soil cleanup standard (1,000 ppm TVOCs and 50 PPM PCBs). However, these were single soil samples and the dimensions of the "hot spots" and subsequently the volume of soil needing remediation was unknown, thus still present-

ing substantial uncertainty. Using a combination of modified standard methods performed in a mobile laboratory and field analytical methods (FAMs) (field portable GC and immunoassay PCB test kits), the boundaries of the impacted areas were quickly delineated. This was accomplished because field personnel were receiving information on analytical results daily and could select new sampling locations in the field (judgmental sampling).

When used by experience applicators, this process is very powerful, saving time and money. In the end, this process removed much uncertainty from the remediation process, and soil excavation was performed quickly without costly delays. This study found that this type of approach is critical to brownfield redevelopers, who must be able to accurately predict cleanup costs and comply with schedules in order to stay within their established cost boundaries (pro forma) and complete a profitable project.

Based on our experience with the Albert Steel Drum site, we have found that methods to quickly and inexpensively identify contaminants and eliminate the level of uncertainty can facilitate redevelopment of brownfield sites.

### 5.3.2 State Environmental/Brownfield Policies

Another finding from the case studies is related to the role of the New Jersey Department of Environmental Protection (NJDEP) in the brownfield redevelopment process. NJDEP is involved in every one of the case study properties and in some instances has a significant impact on the rate of the redevelopment. Although clean up and redevelopment of the case study properties (totaling over 500 acres) represents a tremendous opportunity to improve the environment and create significant economic benefits for New Jersey from old non-performing assets, during the time the case studies were being conducted there was evidence of a short-sighted focus on forcing compliance with policies, procedures and regulations rather than on fostering a cooperative effort to get the property back "into play". For example, in order for NJDEP to issue a No Further Action (NFA) letter, all elements of environmental contamination had to be resolved. As noted previously, the new initiatives at NJDEP promise to provide a resolution to this and other issues and bring a more flexible approach to brownfield reuse, though actually accomplishing this will require much diligence on the part of state officials.

Based on the experiences of the NJTPA-NJIT project team, No Further Action (NFA) letters are essential for a brownfield property to progress to redevelopment. Such is the case with the Arysnco property, where ground water contamination has become an issue. Instead of a partial approval approach whereby the property could be redeveloped with a provision that groundwater be monitored, NJDEP policy previously linked soil and groundwater remediation actions, essentially preventing a property from moving forward. Ground water remediation is often extremely difficult and complicated to rectify. Almost all the groundwater remedies involve monitored natural attenuation and this requires an extended period of time to demonstrate that the natural attenuation processes are degrading the chemicals of concern. In many cases when preparing a site for industrial reuse, the soil remediation is limited to "hot spot" removal, capping and deed restrictions. Hot spot removal eliminates ongoing sources of groundwater contamination and capping/deed restriction prevents surface exposures. This type of remediation can be quantified, quickly achieved and if performed in conjunction with a redevelopment plan, can prepare a site for reuse in a predictable finite timeframe. Upon completion of these remediation efforts, an official soils NFA would provide developers and lenders with the assurances needed to fund the construction of a W/DC. The longer-term groundwater monitoring or remediation programs needed to achieve a groundwater NFA can be integrated in the W/DC design.

Thus it became evident during the review of the case studies that separating NFAs between soil and groundwater would have a significant impact on redevelopment timing, particularly with regards to industrial sites in northern NJ. NJDEP's recent policy directives have substantially addressed this issue, though there will still need to be a more flexible approach taken to the application of this and other regulations. Lengthy, indeterminate delays are often deal breakers for real estate projects, where time is money. Thus, there is an underlying tension between NJDEP regulatory and enforcement officials and developers who wish to see a quick return on their real estate investment. In the

end, insisting on an all or nothing approach usually means no one wins, as the property remains vacant, site contaminants continue to spread and no economic benefit is realized for the community. The recent NJDEP initiatives appear to recognize these needs.

In another example, a case study property became involved with ISRA in 1993. At that time a number of areas of concern were identified and the owner was ordered to initiate a site investigation. Over subsequent years, a substantial amount of environmental information has been collected on the site, but because certain administrative procedures were not precisely followed, the site remains contaminated and undeveloped. Even though the site characterization did not follow the administrative process exactly, the information obtained by the investigation is still valid for developing a reuse approach and evaluating remedial options within the context of the redevelopment. Thus, there must be flexibility on the part of the regulators and cooperation among all involved, with an emphasis on keeping the end point in mind – reaping the environmental and economic benefits by moving forward with redevelopment of the property.

*Insisting on an all or nothing approach in terms of site environmental cleanup usually means no one wins, as the property remains vacant, site contaminants continue to spread and no economic benefit is realized for the community.*

In the recent past, NJDEP's lack of innovative approaches to address site contamination resulted in extended time frames for the redevelopment. This is inconsistent with the time demands of real estate projects. A balance must be quickly reached between enforcement based regulations and the needs of developers to satisfy environmental remediation requirements.

Another finding is that much of the remedial action planning by both NJDEP and property owners is being done without consideration of realistic and feasible property reuse. NJDEP's recent initiatives have not directly addressed this issue, though it appears to warrant attention. The NJTPA-NJIT project team found that remedial action work plans do not account for new structures or a revised site layout. For example, at one site the final cap design required deep channels for runoff control. This was incompatible with the reuse proposal, a W/DC, because the building is going to occupy 60 percent of the lot and must be built on flat land. The remedial design had to be changed to reflect the new site layout, requiring an amendment to the Remedial Action Work plan. At another site, an air sparging system is proposed to treat shallow volatile organic carbons (VOC) that impact groundwater. The layout of this system is incompatible with the building design. Thus, the system will have to be modified to adjust to the site reuse option.

In many cases, reuse plans such as those envisioned by this study can be an integral part of the final remediation. Since these former industrial properties are being cleaned up to non-residential standards (industrial clean), most of the remedial approaches involve hot spot removal, along with containment or stabilization, capping, deed restriction and groundwater monitoring/natural attenuation. The large building and surrounding pavement associated with a warehouse and distribution center are excellent permanent caps. Thus, a finding of this study is that it is important to develop a remedial approach that considers the end use of the property. Modern warehouse and distribution logistics end uses justify different standards because these can become an important component of the remedial design.

## 5.4 Market Evaluation

**Summary of Findings**

- All properties are in north & central New Jersey industrial real estate markets
- There is a strong demand for warehousing & distribution (W&D) in this market area
- Average building size in market area is from 60,000 to 110,000 square feet, but modern W&D requires 300,000 to 500,000-square-foot buildings. Thus there is a demand for larger buildings
- An expected increase in West-Coast-style value added facilities may reduce the needed size of buildings but increase the need for PUDs

- Public money will be needed to help "spark" larger properties, but private money can manage smaller sites.
- The type of labor force available in urban northern New Jersey is compatible with the workforce requirements of modern W/DCs

**Discussion**

As discussed earlier (section 2.2), this study has shown that the strong demand for industrial space in northeastern and central New Jersey present a tremendous opportunity to create new wealth for New Jersey through the redevelopment of appropriate positioned brownfield sites.

The size of a building that the property will support has a significant impact on developer interest. All of the properties studied are in industrially zoned areas, which have allowable maximum building coverage of 50 percent to 70 percent. The greater the allowable building and impervious surface coverage, the more a developer is willing to pay for a property. However an issue arises in relation to zoning and other constraints that will restrict building size. These include wetlands, space for trailer parking, storm water runoff control, and transportation access and property shape. Other factors that influence property redevelopment potential include access to utilities, presence of a flood hazard zone and subsurface geotechnical conditions. The availability of financial incentives, such as tax abatements, special urban enterprise programs and employment credits are also key elements in market interest.

As part of the case studies, conceptual site plans were developed that depicted possible building layouts. Potential building sizes ranged from 200,000 square feet to 700,000 square feet. Analysis of the average building size in the northern and central New Jersey industrial market (exclusive of the Exit 8A area) indicates that the range is from 61,000 square feet in Bergen County to 109,000 square feet in Hudson County. However, specifications for modern warehouse distribution centers recommend building sizes above 250,000 square feet. Thus, there is a need to accommodate end users who require buildings in excess of 250,000 square feet. The case studies have shown that brownfield sites over 12 acres can provide the larger modern warehouse buildings needed for today's logistics management demands. As discussed in the Section 2.1.4, it is expected that West Coast-style value added warehouses are likely to become more prevalent in northern New Jersey with the increasing handling of Asian goods through the port. While these facilities are smaller in size, they are usually clustered in PUDs or industrial parks which often are 100 acres or more in size.

Additional recommended requirements for modern high throughput warehouses are cross-dock loading configuration, 38 foot clear ceiling heights, ESFR fire protection, trailer parking, 10 percent or less office space, minimum of 140 feet of trailer swing room, trailer pads, and load levelers, bollards & bumpers at the trailer docks. Also lighting should be 400-watt metal halide and electric power should be minimum 2000 amps, 480 volts, and 3 phase.

## 5.5 Property Value

**Summary of Findings**

- Price paid for "raw" land for W&D usage is based upon allowable building size under local zoning
- Other factors that influence value are utility availability, proximity to flood hazard zones, wetlands, geotechnical conditions and financial incentives
- Industrial developers will pay from $8 to $12 per square foot of allowable building coverage for industrial clean land
- Soils" NFA important for developers to receive lender approval
- Tremendous potential real estate value is "locked up" in the brownfield sites that if released can provide wealth to New Jersey
- Sale prices of "built out" W&D building range from $50 to $60 per square foot
- Price per acre of industrial clean land ranged from $135,000 to $350,000

Four of the case studies included preparation of a Limited Restricted Appraisal Report in order to obtain an estimate of the property value. The appraisal

was performed under two scenarios, one being "as is," which was defined as cleaned up to industrial standards with all necessary approvals for construction. The other scenario was "as if," which was defined as being developed in accordance with the industrial warehouse and distribution facility suggested by the study. A cost comparison approach was used as the basis for estimating value. One of the findings is that the underlying price paid for raw industrial property is based upon the building yield it can support. Typically, industrial developers will pay a maximum amount of $8 per square foot of building estimate. However, in discussions with potential developers and brokers, the location of the case studies is of such value that a land value supporting as much as $12 or more per square foot of building coverage is possible. This point is underscored by the sale of the Engelhard property in Newark, which was bought for $18 per square foot of anticipated building area. Based upon this analysis, the "as is" value for the four case study sites ranged from $1.6 million to $15.4 million. Estimated price per acre of industrial clean land from the case studies ranged from $135,000 to $350,000. Thus, another important finding is that there is tremendous potential land value locked up in these brownfield sites that needs to be released to provide wealth to New Jersey.

*At a potential price per acre of up to $350,000, there is tremendous potential land value locked up in brownfield sites in the port disctrict that can be released to provide wealth to New Jersey.*

With regard to the "as if " value, comparisons were made to building sales that have occurred between 1999 and 2001. All were big box industrial spaces with ceiling heights that ranged from 24 to 38 feet. The unadjusted range of sales values was between $46 and $53.48 per square foot. After adjusting for market conditions (time), ceiling heights and the favorable property location, a unit value from $50 to $60 per square foot of building area was judged to be realistically achievable. Based upon this analysis, the "as if" value of the four case studies properties ranged from $10 million to $64 million. Again, this indicates that there is tremendous real estate value locked up in these and other brownfield sites that could be an important source of wealth creation for New Jersey.

These properties have real economic value. However, remediation costs can have significant impact on the ability to realize economic potential of the properties. Some of the properties are currently "upside down" because remediation cost can not be accurately quantified. Thus, linking redevelopment with remediation in such a manner that the two are integrated and support one another is important to unlocking the economic potential for the sites.

## 5.6 Community Considerations

**Summary of Findings**

- Community involvement is critical to successful redevelopment for freight related use
- Municipal officials and community leaders need to become involved early in the redevelopment process
- Communities need to be educated on the improved labor requirements and aesthetics of modern W&D buildings
- Value added W&D could provide important job opportunities for lower income urban populations
- Community reception of freight related trucking is impacted by the sites proximity to residential areas

**Discussion**

New Jersey is a home rule state. This means that municipalities have control over land use decisions including zoning and site plan approval. While most of the case study sites were in industrial areas, separated from residential areas, municipal officials and community residents are aware of the properties and may have a reuse option in mind that is different than W/DC. Two site studies were proximate to residential areas, which had an impact on the type of reuse that would be acceptable to municipal officials.

Thus it is important to involve municipal officials (and, where practicable, community residents) early

on in the redevelopment process, since eventually they will have to approve the reuse. This is particularly important with regard to freight related reuse because of the perception that W/DCs can have a negative impact on neighborhoods through trucking and unsightly design. The study found that there is a need to educate local officials on the positive aspects of modern W/DCs, especially with regard to the labor demands and aesthetically pleasing designs of these modern buildings. Additionally, operators of these buildings, who were interviewed for this study, indicted that impacts from trucking were not as significant as people suspected because the operating hours are such that most truck activity takes place in the early morning and late evenings.

Several of the sites are in industrial areas somewhat distant from residential neighborhoods. Over the last several years, the populations of these neighborhoods have changed toward lower income residents. Placement of W/DCs on the brownfield sites in these areas can provide important job opportunities for lower income populations. Modern W/DCs are much more labor intensive than old style warehousing. Not only do they employ more personnel, they also offer a wider diversity of jobs.

# 5.7 Financial

**Summary of Important Findings**

- While there is generally a strong market for freight related brownfield re-use in the port area, financing is highly complex and is affected by a number of site-specific factors.
- Financial incentives fostered through current laws with tax rebates favor retail development.
- The development plan and associated remediation actions play an important role in the successful finance options.
- Knowledge of the extent of contamination and remediation necessary are essential in effective financial planning.
- Assembling properties can better spread environmental risk, can make infrastructure improvements more palatable thereby making financing more viable.
- Implementing "Centers of Excellence" could enhance the delivery of knowledge and resources to developers and municipalities on innovative financing strategies and programs for brownfield site remediation.

**Discussion**

A detailed analysis of financial issues and strategies related to freight related brownfield redevelopment, prepared by BER consultant Peter Zimmermann, is provided in Appendix F. The following highlights key points from this analysis.

It is no secret that brownfields redevelopment poses challenging finance issues. Even the perceived (as opposed to substantiated) environmental risks or other impairments present significant barriers can limit the marketability of the brownfield sites thereby increasing the chances of transactional failure. Freight-related uses have an added complexity, in that these types of uses generally follow consumer market demands as opposed to generating demand for goods or services on their own. Still, the study team found that there is generally a strong market for freight-related re-use of brownfields and that the significant demand for appropriately located industrial space within the study area helps diminish a portion of the competitive disadvantage of brownfield property.

However, financing must deal with the site-specific factors pertinent to the location and immediate surroundings. It is at this scale that the many concerns affecting successful financing arise. The list of these concerns is long, but a few examples demonstrate the real potential for intractable equity and debt lender issues with respect to financial risk identification, quantification, and management. Major uncertainties can exist with respect to:

- The extent of contamination
- Environmental agency remediation termination criteria (e.g., requirements For No Further Action)
- Timing and length of remediation
- Remedy success and cost/timing of cure
- Remedy cost variance (e.g., estimated 65% of

remedies go 10% or more over budget)

- Long-term and (potentially indeterminate) environmental risk exposure
- Incomplete Disclosure Risk
- Buyer/Seller Liability Transfer Failure
- Business Interruption Risk (rental loss/income loss)
- Buyer/Seller Remediation Control Risks (e.g., seller may have incentive to do less stringent remediation)

In addition, brownfield projects often require multiple layers of equity and/or debt financing, with all the commensurate lender take out, facility divestiture, equity partner contact(s) and other risk transfer structures. Another complexity can arise from the need for a combination of public as well as private funding to make a freight-related brownfield project feasible, in part due to the overwhelming need for adequate transportation infrastructure. In summary, from a real estate finance perspective, these and other issues make brownfield financing more complex that that for competing assets with lesser impairments.

**Financial Incentives**

To help balance the overall costs between brownfields and "greenfields" development, vital public funding and tax abatements/incentives are being put into place, and risk management instruments to address equity and debt providers' concerns are available, even in the current insurance environment. Also, new methods are being developed to solve long-standing problems associated with complex environmental liability structures (e.g., Superfund PRP groups) and assuring coverage of timing and cost risks associated with long-term operation, maintenance and monitoring (OM&M) for affected brownfield properties.

Unfortunately, current laws with tax rebates favor retail development versus freight, as the tax savings are derived primarily from sales taxes. While this has historically been very helpful for retail-related brownfield projects, it is not typically enough to override the other basic underlying risks inherent in brownfield work.

New legislation intended to assist industrial brownfield redevelopment has been proposed and will offer tax abatement mechanisms that should ameliorate some of the costs and risks associated with freight-related brownfields. In addition, the tax benefits stemming from developing mixed-use properties that include freight operations in these projects should also be considered.

Environmental insurance, when integrated into the real estate financing of a project, can be an essential factor in the success of the effort. It should be noted that every insurance package is project-specific, and that parties to the transaction should be prepared to invest the appropriate amount of time in the planning, negotiation and binding phases of the insurance-related work.

Another general guideline is to begin the insurance planning effort even during the site selection or feasibility study portion of a real estate deal. The reason for this is that problems and their solutions can be identified early on in the process, often in a preemptive mode. This can save considerable time and money, which are both critical in such projects.

Also, since quality insurance brokers have access to considerable databases of past projects, they are able to offer valuable advice in the planning phase, including recommendation for investment partners that work in the brownfields area, sources of debt capital, and specialty environmental consulting or legal assistance.

Finally, it will important to identify early on if the particular brownfields project is a candidate for insurance or not, and what alternatives are available in the financing aspects of the project. For example, remediation cost cap policies may only be feasible if remediation costs exceed certain amounts, or available only under restrictive terms if the estimated costs are insufficient are the duration of the remediation is too short.

**Advance Knowledge**

Many of the candidate study sites were found to have ongoing or completed environmental assessment or remedial planning activities. However, more precise or thorough determination of likely remediation activities necessary to accommodate a future use would be needed to develop financing mechanisms and appro-

priately address a property's environmental risks.

For example, in the absence of a future use, residential soil cleanup criteria may have been applied. This could easily increase remediation costs to the point where a real estate asset already impaired by other value diminution factors could have the remediation cost greater the present or future value.

However, in the presence of a freight-related (i.e., industrial) use, where large amounts of paved areas are desirable and actually increase the property's value, then less stringent non-residential criteria could apply, and the property improvements provide acceptable engineering controls to mitigate the environmental risks.

Therefore, in the event that a property is being evaluated in a brownfields context, existing remediation plans may need to be reassessed and refined with respect to the development plan and the planning-level pro forma financial analyses, as well as the other available risk management tools such as insurance options.

Redevelopment often requires more equity in the debt/equity arrangement than purchases and improvement of land with existing structures and uses. Because equity financing and payback terms are often sensitive to unanticipated changes in any of a number of development factors, equity funding has its own unique constraints and risks. This automatically makes any land or property development riskier relative to potentially competing properties without such requirements. When the possibility of contaminated land and environmental risk management requirements are added to this situation it only increases these risks on equity. In any case, the parties providing the debt side of the financing equation will have in many cases very well defined risk management data objectives that must be addressed for a brownfield property transaction.

Therefore, it is imperative that financial planning be incorporated into brownfield redevelopment at its earliest stages. It is far better to learn that the "numbers just won't work" at the early stage, and begin to access the many tools and alternative solutions to resolve the situation, as timing risk remains one of the more significant development risks requiring management, and if not addressed in the earliest planning stage can lead to failure of the deal.

The conclusion of the analysis may be that the project is not financially viable, or only marginally viable, under the currently projected remediation and site disposition plan. In this case, the results of should be fed back into the estimated remediation cost and schedule scenarios to achieve viability. For example, different remedial technologies may be assessed, mixes of passive and active technologies can be considered, or site use planning, grading or infrastructure can be revised.

*New methods are being developed to solve long-standing financing problems associated with brownfield properties Developers in the New Jersey/New York City metropolitan area can take advantage of some of the best financial and risk management expertise in the country.*

It is important to note that early knowledge of the financial impacts of the preliminary financial plan will increase the value of the remedial planning effort. Using this information, subsequent remedial planning efforts can make a significant contribution to the transactional negotiations and increase the potential for project success.

**Property Assemblage**

Through our case study work, we found that it was highly advantageous to assemble properties from environmental, transportation access and real estate market perspectives. Aggregation of brownfield properties also has financial advantages. Specifically, efforts to aggregate parcels can also be integrated into the insurance package to spread risk, increase the target coverage and buffer amounts, and obtain the best possible terms from underwriters. This may also significantly assist the overall project financing effort and increase the chances of success.

### Public/Private Resource Center

Finally, brownfield properties in the New Jersey/New York City metropolitan can take advantage of some of the best financial and risk management expertise in the country. Furthermore, we found that there are a number of innovative brownfield financing packages being offered through public and quasi –public agencies as well as private sector finance and insurance providers. Therefore, the climate is right to implement public/private centers of excellence where the skills and resources needed to make brownfield redevelopment a reality. These efforts, of course, would need to be closely integrated and coordinated with the many existing state and federal organizations and programs involved in brownfield redevelopment.

# Section 6 - Analysis of Findings



## 6.1 Introduction

The case studies discussed above yielded important insights into the opportunities and constraints affecting the redevelopment of brownfields for freight purposes. If freight related redevelopment is to be achieved on a large scale in the port district – as this report argues is vitally necessary to the future of the region – a variety of issues affecting redevelopment prospects of sites throughout the port district must be addressed. These include the need for major infrastructure improvements serving the entire district, improved environmental laws to speed site clean ups, new incentives to encourage redevelopment, coordinated land use policies, and other measures.

This section of the report analyzes the insights gained from the case studies in the context of these wider needs. It is divided into three subsections:

**Barriers** – the barriers that make brownfields more costly, time consuming and complicated to develop and how they can be addressed;

**Transportation** – the transportation needs in the port district and opportunities to use transportation improvements to bolster brownfield redevelopment; and

**Comprehensive Planning** - development models that can provide the basis for comprehensive land-use planning in the port district.

Recommendations and conclusions drawn from these analyses are presented in the final section of the report (Section 7).

## 6.2 Barriers

Brownfields, of course, are more costly, time consuming and complicated to develop than greenfield properties. State and federal programs in recent years have sought to close the "development gap" between the two. This has included the 1998 enactment of the Brownfield and Contaminated Site Remediation Act, which established a fund for reimbursing developers for up to 75 percent of clean up costs. The Act also strengthened the Voluntary Clean Up Program through which developers can enter into an agreement for site clean up and obtain a "no further action" letter limiting future liability. The state also makes loans, tax abatements and planning assistance available through local governments.

While these resources have been responsible for much of the success in brownfield redevelopment efforts, the development gap remains. The following sections (6.2.1 - 6.2.4) discuss continuing barriers, such as problems with permit approvals and environmental regulations, that confront property owners and contribute to the development gap. Also discussed are wider issues, such as the growing use of properties for container storage and biases against freight related redevelopment, that constitute barriers for the region and state in realizing the economic benefits possible through reusing brownfields on a large scale to accommodate future growth in trade. Needed transportation improvements are dealt with in a separate section (6.3).

### 6.2.1 Redevelopment Climate

One of this reports key findings is that current market trends "are creating unprecedented opportunities for reclaiming northern New Jersey brownfields for W/DC facilities." Yet many developers and real estate professionals continue to perceive an inhospitable climate for redevelopment of brownfields in much of urbanized northern New Jersey, especially in comparison with suburban and greenfield areas.

Developers complain about the additional costs of redeveloping properties in towns and counties near the port. While a significant share of remediation costs can be reimbursed, developers say that some localities charge high fees for permits or review of engineering plans. In contrast, nominal fees are charged by localities with plentiful greenfield acreage in eastern Pennsylvania and elsewhere. They also say that some localities lack the personnel and expertise to deal with applications in a timely manner.

Developers also face delays and uncertainties due to the need to navigate various New Jersey programs and requirements. While, as noted in Section 5.3.2, the McGreevey Administration has recently undertaken a series of initiatives to improve the effectiveness of state agencies and programs in promoting brownfield redevelopment, during the course of this study developers complained of one level of government or one agency not talking with another, of conflicting requirements and of delays caused by multiple reviews performed sequentially rather than in parallel. Many of these complaints involved environmental requirements (as discussed in more detail in a separate section below). As a result, developers said they faced a host of uncertainties that can make it difficult to meet the hard and fast timelines required by banks and prospective tenants/purchasers. Meanwhile, in greenfield areas a warehouse is typically built to suit a particular tenant within 12 months of the developer receiving permits.

*Government must do more to streamline approvals and address fragmentation of authority regarding brownfield redevelopment. The recent initiatives of the McGreevey Administration appear promising in addressing these issues.*

Many developer complaints about government red tape and snafus are no doubt well founded. However, government agencies must balance a variety of competing interests, including economic development, community desires and environmental concerns. They also must ensure cost effective use of public funds. Nevertheless, government must do more to streamline approvals and address fragmentation of authority regarding brownfield redevelopment. In particular, it must be better at providing "one stop shopping" for private parties exploring redevelopment.

The recent initiatives by the McGreevey Administration appear promising in addressing these issues. In addition to the new policies and programs within the NJDEP discussed earlier (Section 5.3.2), efforts are underway to revitalize the New Jersey Brownfield Redevelopment Task Force, which was created by the Legislature to provide government-wide coordination of brownfields efforts. The Administration has also created a new cabinet level council and a new division of the Department of Community Affairs devoted to Smart Growth including brownfield revitalization. To be effective, these initiatives must be provided needed resources, staff and authority. They also must be accompanied by efforts to insure officials and employees throughout government give priority to using programs and procedures to support brownfield redevelopment.

Another promising development at the state level is the introduction of new legislation in the State Assembly (A-2585). Among other provisions, it will improve the financial assistance available from the state for site remediation. One financial provision would expand the definition of the sales and income taxes generated by brownfield sites that can be used to reimburse developers for remediation costs. This would give developers of warehouses and other industrial uses financing options similar to those that apply to retail developments.

While such steps are valuable at the state level, developers and property owners also must navigate local government requirements as well as those of banks and insurers. In this regard, the BER case studies demonstrated the value of bringing multi-disciplinary teams of experts together to help private owners and developers address issues at particular sites. The case study teams included experts in environmental cleanup, transportation, real estate marketing, architecture and financing. The case study reports they produced proved instrumental in advancing development plans for two of the five case study sites and provided comprehensive documentation that will facilitate development of the remaining sites.

This success suggests the value of institutionalizing multidisciplinary brownfield teams--such as through a state supported technical assistance center--that could work with the private sector and government to advance development of key properties. In addition, NJTPA and NJIT have proposed a third phase of this project to continue the team approach to promoting brownfield redevelopment.

## 6.2.2 Local Acceptance

Opposition or indecision on the part of local governments in and around the port district has been a key barrier to increased freight related redevelopment of brownfields. Under New Jersey's "home rule" law, municipalities have the final authority on approving and regulating development within their borders. Some officials and residents of towns close to the port actively oppose freight-related development because they believe it will add truck traffic to already congested roads, worsen pollution and degrade their town's image and aesthetics without yielding substantial tax ratables. They hold out hopes for development similar to the mall, hotels and cinemas the City of Elizabeth has shown can be established even in long derelict industrial areas. One town is considering zoning changes to limit facilities generating truck traffic. Other towns, while not actively opposing warehouse redevelopment, have repeatedly delayed approvals of developer proposals.

Towns in and around the port district have long been burdened with the legacy of the last generation of industrial development. This includes abandoned and often dangerously contaminated properties as well as aging infrastructure. Local opposition to freight facilities tends to focus on the possible expansion of types of freight facilities associated with this industrial past, without fully recognizing the potential for the creation of the clean, modern and well-managed freight facilities that increasingly are being built around the country. These facilities tend to employ more workers and yield greater tax revenues than existing land uses in the port district. As noted in Section 5.6, impacts from trucking for many facilities may not be as significant as people suspect because most truck activity tends to take place in the early morning and late evenings or is spread out throughout the day. In addition, towns sometimes do not fully take into account the car and truck traffic associated with malls and other retail development.

Freight-related development in any case does not have to exclude retail, office and other non-freight uses favored by towns. The experience in Elizabeth has shown that transportation investments can be used to separate freight and other traffic, creating mutually compatible development zones. Transportation improvements facilitating access to brownfield sites also can be the key to minimizing the negative impacts of increased truck traffic on communities. Transportation needs are discussed in Section 6.3.

*Communities find themselves home to huge mountains of empty freight containers that dominate the landscape and fill properties that otherwise might be redeveloped for more productive uses.*

If localities are to be enlisted in helping to create the kind of facilities that will be needed to ensure the efficiency of freight movement for the region, it is clear that outside support, resources and expertise must be mobilized to help them plan and develop brownfields within their borders. As noted above, improved state brownfield programs and teams of experts offering technical assistance could fulfill this need. Also, the region may have to explore new regional-level mechanisms for accomplishing comprehensive land use planning in and around the port district, as discussed in Section 6.3.2.

## 6.2.3 Container Storage on Brownfields

"Container mountains" have become a prominent feature of the port district skyline. These are the stacks of hundreds of empty containers, up to seven high, that have been created on large swaths of land near the port. This study estimates that 400 acres are now devoted to long-term storage of containers

These container mountains are the result of a shipping imbalance at the port, with a greater volume of imports than exports. Shipping companies find it cheaper to stack empty containers than to ship them back empty to their point of origin, often halfway around the globe to Asia. Terminal operators have contracted with third parties to move the empties from the terminal areas to offsite storage locations.

The practice has provoked opposition from communities, which find themselves home to huge, ugly stacks of metal that dominate the landscape and fill properties that otherwise might be redeveloped for

more productive uses. Not surprisingly, the mountains have strengthened local opposition to any and all freight related development, which officials fear will only attract more trucks and more containers storage.

The project team found evidence that the continuing build up of empty containers at the port was indeed crowding out other types of development. Because of the growing demand for land, container companies can offer property owners an immediate revenue stream, leaving the owners free to sell or redevelop their properties at a future date if more lucrative offers arise. This container storage leaves the land undeveloped for higher economic uses that would benefit the local community and region. For instance, one property owner was offered $3,000 per acre per month for a 10-year lease on 13 acres. The site is in a prime location where a developer has offered to build a 330,000-square-foot warehouse, pending environmental clearance to proceed. For the landowner, a 10-year revenue stream is an attractive proposition compared to continuing to deal with the onerous requirements of site clean up. However, for the region it means that needed redevelopment of properties is being stymied, removing the potential for jobs and tax ratables. It also has made the entire port district less attractive to some developers who are wary of having such mountains as long-term neighbors.

*The thrust of state law has been to establish a better balance between cleaning up the environment and promoting economic development . . . However, the case studies found significant barriers for redevelopment imposed by environmental regulation and bureaucracy.*

While some container storage in and around the port is inevitable, the current level of storage appears harmful to prospects for realizing and sustaining increased trade. Over the long term, the Port Authority of New York and New Jersey foresees an increase in exports that will help alleviate the problem.

Nevertheless, it appears imperative that the region take steps in the meantime to reduce and control the current volume of empty containers stored at the port. A possible approach is suggested by steps taken by the Port of Hampton Roads in Virginia. Empty containers there were accumulating in increasing numbers in terminal areas and taking up space needed for operations. Empty containers there were accumulating in increasing numbers in terminal areas taking up space needed for terminal operations. While some of the empties were shifted to offsite areas, as is done in northern New Jersey, port officials also negotiated a quota system with container carriers in early 2001. As a result, the number of containers dropped from a high of 14,000 to 6,500 several months later.

A similar quota system for northern New Jersey would require negotiations and close coordination among the state, communities, Port Authority, shippers, terminal operators and storage companies. Such an effort should be given high priority as clearing the port of growing container storage is a prerequisite for large-scale brownfield redevelopment.

## 6.2.4 Environmental Regulation

New Jersey is among the leading states in the nation in promoting the redevelopment of brownfields. The state's actions include rewriting laws and establishing major agency initiatives and programs to facilitate redevelopment. In 1998, the state legislature adopted the Brownfield and Contaminated Site Remediation Act. This Act is intended to encourage the redevelopment of brownfield sites through a variety of mechanisms. The Act addresses four main areas: 1) liability protection for innocent developers; 2) financial incentives for redevelopment of sites; 3) technological barriers to redevelopment and 4) institutional issues. To further promote brownfield redevelopment, the NJDEP recently announced the creation of a new Office of Brownfield Reuse that will implement and serve as the focal point for the departments new brownfield programs. NJDEP's new brownfield policy is focused on reducing uncertainties and inefficiencies in existing site remediation regulations, broadening the scope of potential reuses for brownfield sites and working with communities to support area wide planning and redevelopment in municipalities that have multiple brownfield sites.

In general the thrust of this law and other state laws has been to establish a better balance between cleaning up the environment and promoting economic development. One of the most important aspects of these

programs has been to provide liability protection to parties who acquire contaminated land and voluntarily undertake remediation. It allows those seeking to buy a brownfield site to enter into a Memorandum of Agreement (MOA) with the NJDEP to perform the remediation after title is acquired.

If the clean up is performed is accordance with NJDEP standards, the state can issue a NFA along with a covenant not to sue the party performing the remediation. The covenant will provide protection from claims by NJDEP for further clean up for as long as the conditions imposed by the NFA letter are met. An amendment to the liability provisions under the state's Spill Act also protects potential buyers. Taken together, the covenant not to sue and the amendment to the Spill Act provide innocent purchasers of property with substantial protection from further cleanup costs once a response action has been completed. However, even though the state has provided statutory protection to purchasers of contaminated land, the case studies have shown that there are still significant barriers for redevelopment imposed by environmental regulation and bureaucracy. Some of these have been addressed in the new policy statements. The most important are:

- Slow response by NJDEP to redevelopment proposals and remediation programs that seek to integrate redevelopment with cleanup. To developers, time is money and if they are to take on the risk of redeveloping contaminated property, they want predictability in the review and approval process, as well as case managers committed to the end goals. The recently created Office of Brownfield Reuse and the Brownfield Task Force can provide the mechanism to allow focus on the sites.

- Changing and inconsistent application/enforcement of environmental standards and remediation cost calculation criteria. Developers of W/DCs operate on margins substantially less than those for retail and office buildings and therefore cannot afford additional costs added to the project once agreements have been reached. Normally, before beginning a project a developer will prepare a pro forma analysis that will attempt to account for and estimate all costs for the project. Once this is done, they expect to work within these boundaries in order to implement a profitable project.

- A laborious and proscriptive site characterization process that relies on outdated technology and procedures. More efficient site characterization methods have become available in the last few years that can provide accurate and complete site information in a more cost effective manner. Use of these techniques will remove much of the uncertainty associated with implementing cleanups. NJDEP is considering aspects of the Triad Approach within the context of Brownfield redevelopment and the Technical Requirements for Site Remediation.

- No further action (NFA) letters are the most critical item needed by developers to define end points and secure lender funding. Recent NJDEP policy appears to provide distinction between soil and groundwater NFAs. W/DC facilities integrate well with "industrial clean" type soil/surface cleanups. The new NJDEP policy of providing soil NFAs as a separate component of the cleanup process will allow the redevelopment to proceed without having to achieve cleanup of all media. By allowing an official soil NFA to be issued, the site can start generating revenue to fund the rest of the remediation.

## 6.3 Transportation

Accomplishing large-scale revitalization of brownfields to support goods movement will require investments in the regional freight transportation network. These investments are needed to resolve current congestion and access problems and to provide new options for efficiently moving freight in and around the port district and to external markets. The needed improvements range from reconfiguration of local roadways to facilitate access to individual sites to regional-level transportation projects like Portway to improve circulation throughout the port district to entirely new systems of goods movement such as the proposed use of barges for the Port Inland Distribution Network. These needed improvements and financing options are discussed below.

## 6.3.1 Site Access Improvements

The Case Study Findings (Section 5.1) highlighted a range of transportation issues facing property owners and developers seeking to redevelop brownfield sites in the region. As was noted, "While all the selected study sites are within close proximity to major interstate highways, active rail lines, navigable waterways and the important regional international ports of entry, each of the study sites face unique challenges in directly accessing the key regional transportation network that provides the link to the port and intermodal facilities." Among the challenges faced are inactive freight rail sidings, limited connectivity from local streets to major highways, poor geometric and traffic operational features of local roads, opposition to truck use from nearby residential areas and substandard bridge structures. Each case study report includes sections discussing site-level transportation access issues and potential solutions.

Transportation improvements -- more specifically, roadway improvements such as driveways, aprons and turnouts -- needed to provide immediate site access generally are the responsibility of the developer. For "off-site" or "off-tract" improvements, towns, counties and the state have developed traffic impact mitigation criteria for developers' "fair share" contribution. While there are standard procedures and practices for allocating "fair share" costs, improvements are often negotiated. The State of New Jersey, through the adoption of the State Highway Access Code, has formalized the procedure and methodology for determining developers' "fair share."

Roadway improvements costs can escalate to the point that proceeding with development may not be financially attractive. Furthermore, developers often face delays in negotiating a satisfactory level of transportation enhancements and in submitting the necessary approval documentation (i.e. plans, studies). These are particularly relevant points for brownfield redevelopment, where owners also must consider environmental remediation costs.

While developers should be expected to construct improvements necessary to safely accommodate site traffic, mechanisms must be in place for implementing off–site improvements. The burden of these improvements cannot fall entirely on the developer of brownfield properties nor the local community. New state transportation grant programs specifically targeted to brownfield sites and technical assistance provided to developers and municipalities may help to offset these costs. Additionally, greater flexibility for potential use of federal funds to improve access to industrial/freight distribution areas could provide additional resources in blending public amd private funds into effective transportation enhancements. Finally, expediting the approval process related to transportation improvements for brownfield sites should be considered. Reduced transportation mitigation costs and more rapid turnaround from local, county and state reviewing agencies could help move brownfield redevelopment forward.

## 6.3.2 Portway/Highway Improvements

A number of transportation projects have been completed in recent years that are providing important benefits to the freight sector. A number of additional projects are underway or will be implemented with in the next few years. These include:

- Widening and rehabilitation of the Route 1/9 corridor in Newark, Elizabeth and Jersey City;
- Reconfigured ramps near the port/airport to I-78
- Replacement of the Doremus Avenue bridge (an initial element of the Portway project)
- Replacement of the Route 21 Viaduct in Newark
- Grade separation of the Express rail line in port Newark/Elizabeth
- Bridge rehabilitation and interchange redesign accessing Jersey Gardens Mall and the southern port area in Elizabeth
- Additional interchange and road improvements to separate freight and retail traffic in Elizabeth

In addition to these projects, the New Jersey Turnpike will redesign and upgrade Exit 12 specifically to facilitate truck movements. This project is key to the development of the planned Global Freight Village at Tremley Point[1] and the industrial park recently announced by the city of Carteret on one of the case study sites investigated by the BER project.

Despite this progress, additional major investments will be required to ensure that large volumes of freight can be unloaded, processed and moved efficiently. The most ambitious project on the drawing boards is the Portway Project. Portway is a 17-mile semi-dedicated trucking corridor that is intended to provide fast and efficient movement of goods between key port, airport and intermodal rail terminals. Portway will incorporate features such as overweight container handling capability and intelligent transportation systems (ITS) technology.

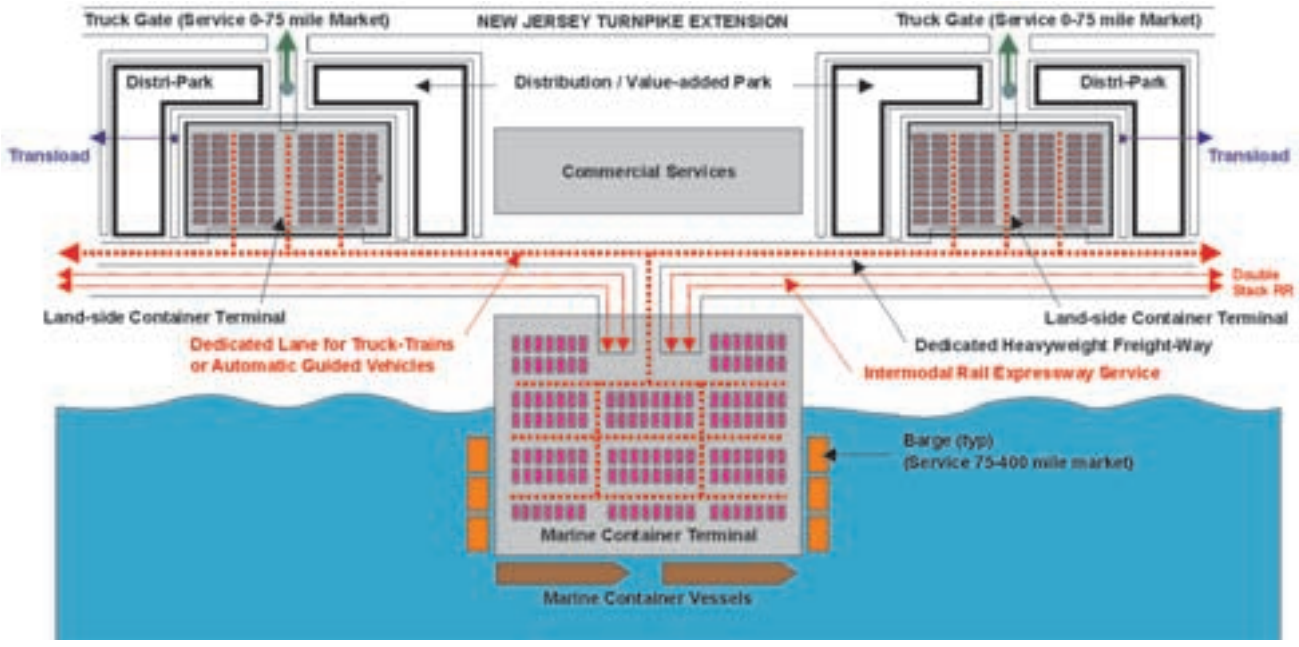
Portway potentially can provide the infrastructure backbone of a distribution corridor north and south of the Port/Airport Complex and also connect to the proposed marine terminal expansion in Jersey City and Bayonne. In the Phase I Market Analysis, Dr. Ricklefs envisioned Portway as the basis for a "string of pearls" freight distribution network. According to Dr. Ricklefs, "inland container yards surrounded by value-added distribution centers [could be] strung like 'pearls' along a dedicated freightway, or 'strand', connected to the marine container terminals" (Figure 6.1).

Portway thus could become an efficient means for moving overweight containers among freight-specialized industrial parks and distribution centers built on brownfields in the port area. At the same time it would effectively relieve mounting congestion on local roads in and around the port district.

Portway is being built as a series of discrete projects, each of which must compete with other transportation priorities for funding. Phase 1 of Portway is estimated to cost $800 million. Additionally, other major projects are under study for other phases that could potentially double or triple this cost. This funding will be difficult for the state to provide under current fiscal conditions. As discussed below in the Transportation Financing section (6.3.5), exploration of public-private financing or a fee on container movements for accelerating the Portway project appear warranted based on its potential importance.

Portway runs adjacent to a number of key brownfield sites and will enhance the redevelopment prospects for these sites by providing an efficient link to the regional transportation network (Figure 6-2). Future transportation projects should follow this example where a single improvement or set of improvements can stimulate new economic activity on a number of brownfield sites. Unfortunately, redevelopment of brownfield sites now tends to occur haphazardly with transportation improvements undertaken on a piecemeal basis. If large-scale brownfield redevelopment is

**Figure 6.1 "String of Pearls" concept for freight related redevelopment.**



to be achieved, a more orderly and proactive approach must be established. This includes greater cooperation among state, regional, local and community entities in coordinating transportation improvements with brownfield reuse proposals as well as achieving compatability with local and regional development plans. This could be accomplished through improved regional level planning in the port district as discussed in Section 6.4.

Insuring that transportation projects serving brownfields receive necessary funding may require new policies at the state and regional level. The NJTPA's project prioritization system currently awards additional points to projects serving brownfields. However, it may be warranted to develop separate criteria for projects serving freight related brownfield redevelopment in the port district given their importance to the future of the region. Similarly, NJDOT should review its planning and funding policies to give greater attention to advancing these projects.

## 6.3.3 Rail

Many of the once-productive industrial sites in and around the port district contain rail rights of way and spur lines. Reconnecting these sites to the regional freight rail system often involves difficult hurdles, including the need to upgrade or replace rail lines and connect to a main line actively serviced by the Class One railroads (CSX/NS). Property owners/developers often have to engage a shortline railroad operator to build infrastructure and provide a connection to the interchange point.

The New Jersey Department of Transportation has a dedicated freight rail program but its funding has fluctuated over the years, generally not exceeding the current $10 million per year. Most of the $10 million goes to shortline railroad capital needs, such as increasing track weight capacity, repairing old bridges, etc. In addition, the state has allocated approximately $1 billion per year for transit rail-related projects. Some of these investments indirectly aid freight traffic, as in the case where transit

**Figure 6-2. Selected brownfields along Portway route (in red) potentially available for freight related redevelopment.**

rail investments upgrade facilities that are jointly used by passenger and freight rail operators.

To provide an alternative to the inevitable reliance on trucking to serve the industrial and W/DC locations in the port area, larger freight rail capital needs must be addressed. The Class One railroads estimate that these needs will require $150 million in expenditures over the next five years. Freight rail needs include the lack of adequate freight service time on sections of track shared with passenger operations, inadequate vertical clearances that limit doublestack trains, expensive local switching services, and insufficient tracks in industrial areas and rail yards. Norfolk Southern and CSX railroads have expressed a willingness to meet the state halfway in making the needed investments. Such a public-private partnership, they argue, would effectively double rail freight capacity in the region and at the same time reduce road congestion, improve air quality, and preserve the region's highways. In return for joining with the railroads in targeted investments, the state would have a right to insist that adequate service be provided to shippers who wish to use rail and are investing in the redevelopment of brownfield locations.

The Port Authority of NY&NJ has agreed to participate in funding a substantial portion of the needed $150 million. The state has been asked to fund the remaining public sector match of $50 million over the next five years. Thus, the state would need to appropriate an additional $10 million per year over the next five years in addition to the maintaining or expanding the existing $10 million allocated to shortlines and other needs.

These investments would insure the region could efficiently handle increased goods movement processed at W/DCs on revitalized brownfields in and around the port district. Increased land in the port district will also have to be set aside to meet the current and growing need for rail car storage and dry bulk materials storage facilities (Northern New Jersey is a big mover of dry bulk materials including minerals, lumber and plastics). In addition, while some physical track may no longer be suitable to accommodate today's rail vehicles, rights-of-way should be preserved as part of brownfield redevelopment plans to enable their future use.

A rail car's capacity is the equivalent of three or more truck trailers. That means efforts by the state to work with the major freight carriers and shortlines to address these needs could have another benefit – the reduction of overall truck VMT in the region.

While these efforts provide alternatives for reducing truck related congestion, short distance (i.e. less than 100 miles) movement of freight via conventional rail is usually not cost-effective for shippers. They rely on trucks for short trips but truck weights on public roadways in the United States are limited to 80,000 pounds. These restrictions are necessary to ensure the structural integrity and safety of our roadway system. This creates inherent inefficiencies for container transport via truck.

Alternatives to conventional rail and truck modes should be explored that could meet these challenges. Some companies, such as Titan Global Technologies, have explored innovative freight mover concepts, including one system, based on a "monorail" model, that would use an overhead freight container transport system constructed within existing road rights of way. While such systems have yet to be deployed or put under design, they could offer viable alternatives for short-range freight movement especially within several miles of the port district where traffic congestion limits mobility and where impacts of truck traffic on air quality and residential areas is of particular concern. Public and quasi-public transportation providers should work together with Titan Global Technologies as well as other companies, such as ABB Daimler-Benz Transportation, Bombadier Inc and MegaRail Transportation Systems to further explore use of innovative freight mover technologies for this region.

## 6.3.4 Barge/PIDN

Several brownfield sites identified during the course of the study are located along waterways. Although not suitable for ocean going vessels, several of these sites could be served via barge, offering an opportunity to reduce truck traffic on the region's roads. Sites that process bulk goods, raw materials or goods that are not time-dependent typically are good candidates for barge service. However, some value-added W/DCs could also be served by barge, particularly if they have favorable highway access.

Barges are slated to play a key role in the Port Authority's Port Inland Distribution Network or PIDN. As previously described, the PIDN would consist of several private inland container terminals located 100 miles or more from the port. Port officials envision as much as 40 percent of cargo arriving at the port being moved by barge or rail to these terminals. The Port of Rotterdam uses a similar system. The PIDN would greatly relieve congestion on regional roads and improve the throughput of existing port terminals without extensive expansion. A June 2001 article in American Shipper magazine stated "One barge route under consideration would go along the Hudson to Albany. The other could proceed through Long Island Sound and along the northeast coast to Rhode Island. The deck barges would serve roll-on/ roll-off or lift-on/lift-off traffic. Ro/ro barges can handle about 100 TEUs per barge, while lo/lo barges can carry up to 380 TEUs, stacked three or four high."

*The Port Authority should explore an "Inner PIDN" comprised of satellite terminals near to the port that could help handle the large volume of containers destined for the local market.*

Recently, the Port Authority began exploring an "Inner" PIDN concept. This would involve establishing satellite terminals near to the port that could help handle the large volume of containers destined for the local market (within 75 miles). Containers would be transferred directly from ship to barge and moved to these nearby terminal sites, which would include distribution/value-added processing facilities served by truck and rail. In effect, the increasing volumes of port activity now concentrated in existing (and congested) terminal areas would be spread to additional sites throughout the port district and beyond that have access to the highway and rail transportation network. The BER study has identified three locations within the region that can perform this function. A concept for the Inner PIDN might include the following:

- Koppers Coke/Standard Chlorine/Diamond Shamrock tract (one of the case study sites investigated by NJTPA-NJIT) is located north of the port and can be connected by existing rail to the Keegan Landfill. Collectively this is over 200 acres of land. The Koppers site already has about 1000 feet of access to the Hackensack River just upriver of the Wittpenn Bridge. There already is a barge dock on the property. Keegan Landfill has access to exit 15W on the New Jersey Turnpike and I-280, as well as rail. Thus containers could be barged to Koppers, rail transported to Keegan and shipped out via the Turnpike, I-280 or rail.
- Tremley Point, while not specifically investigated by this study, appears to be another potential off-port distribution center that is accessible by barge. There are more than 200 acres of brownfield land with dock facilities on the Arthur Kill. The New Jersey Turnpike Authority announced a major upgrade to Exit 12 in Carteret that will provide access to Tremley Point. Thus, container freight sent to distribution centers located on Tremley Point would be able to access the turnpike through an upgraded Exit 12. In addition, Union County is going to upgrade rail service in this area by consolidating the short lines under one operator, who will provide access to the Chemical Coast Line.
- The third potential location for an off-port distribution center (which would require further study) is Raritan Center in Middlesex County. This facility is already a major warehouse and rapid freight distribution area. It was an Army munitions storage and distribution center and the Army Corps of Engineers built a large dock on the Raritan River for barge traffic. This location has immediate access to the Turnpike, Rte 287 and Rte 440. Again, freight could be barged to this location, processed and shipped out through access to major roadways and a rail line. Additionally, there are two brownfield sites in Raritan Center with direct access to Industrial Way that would link directly to Rte. 287 and the Turnpike.

The BER study identified other sites and clusters of sites that with further study could be considered for use in implementing the Inner PIDN concept. This concept appears to hold much promise for easing congestion resulting from growth of port freight and achieving greater efficiency in port operations.

Whether the PIDN concept is advanced or not, the

State should work with the Port Authority and private interests to see that barge transport becomes a viable freight mode in the near future. Barge shipment could offer an attractive alternative to reducing vehicle congestion but it can only be successful if integrated as part of the site configuration and operation.

## 6.3.5 Transportation Financing

Transportation infrastructure improvements and, in some cases, capacity expansion are necessary to unlock the economic potential of brownfield sites. However, the transportation investments needed to underpin freight related brownfield reuse in the port district will be expensive, likely totaling in the billions of dollars. Funds from transportation authorities can be depended upon to underwrite some key needs. The Port Authority, for instance, will continue a $1.8 billion agenda of improvements at port terminals (including Express Rail) and major upgrading of Newark International Airport (including air cargo facilities). The New Jersey Turnpike, in addition to its planned upgrade of Exit 12, is exploring a new or expanded exit near the port specifically to segregate port-bound freight traffic from other vehicular traffic entering a major retail centers nearby.

Other projects, however, must be funded with the limited state and federal funding available each year for transportation. Because of the many other competing state needs and priorities, this means that key freight projects – Portway, needed rail freight upgrades, interchange improvements and others – may take years to complete, threatening development of an efficient freight movement network. Options for bolstering funding for freight transportation must be seriously explored.

### *6.3.5.1 Port Fees*

One option may involve funding derived from port activities. The Port of Los Angeles/Long Beach (LA/LB) used this approach to underwrite half of the $2.4 billion Alameda Corridor project, described in the Los Angles Times as "a 20-mile rail cargo expressway linking the nation's busiest harbor complex to train yards near downtown Los Angeles." The LA/LB Port Authority issued $1.2 billion in revenue bonds backed by a $30 fee imposed on each 40-foot container passing through the port ($15 per TEU). The fee applies to all containers, even containers that do not transit the Alameda Corridor, except for containers trucked from the harbor to warehouses bound for domestic distribution. Shippers and port customers initially objected to the fees, but ultimately agreed to the additional costs because of the benefits of the Alameda Corridor project in speeding goods movement through the port.

It is not clear how such fees might be implemented in northern New Jersey. In general, courts have ruled that fees imposed by government on private businesses must be used for projects with a strong "nexus" to their business operations and impacts. LA/LB officials were able to avoid court challenges because of the demonstrable benefits of the Alameda Project for all containers moving through the port (even those moved by truck). However, the City of Los Angeles' practice of using fees provided by the port for non-related expenses was struck down by the courts. In addition, a proposal by an area legislator to impose additional fees on containers for general infrastructure improvements has been abandoned because of strong opposition from shippers. They argue that such fees make them less competitive with operators at other ports.

*A moderate container fee must be explored as a means for financing the targeted infrastructure upgrades necessary to accommodate huge future traffic growth and to take advantage of the economic promise of brownfield redevelopment.*

Northern New Jersey would likely face opposition from some shippers and port users to any fee on container movements or other port activity. However, it is not clear how strong such opposition would be and from which sectors it would come. Dr. Ricklefs in a February 2002 lecture on the "Role of Cost in Port Selection" pointed out that a number of other factors besides cost enter into decisions by shippers and companies about using particular ports. These factors include location of final consumer market, condition and availability of supporting landside infrastructure

(including intermodal options) and ability of local distribution companies to perform additional services. He noted that the market share for the New York-New Jersey port has been increasing despite the effects of the September 11 terrorist attack, the lack of a 50-foot channel depth, and higher labor and transportation costs. In effect, there is a certain price inelasticity in the demand for access to the port: companies may be willing to tolerate higher direct costs at the port in return for other advantages including the fact that the region is such a large consumer of goods, that it offers advanced intermodal infrastructure and that costs for trucking goods to the NY/NJ/CT metro region is much less than from any alternative port location. Therefore, he suggested, it might be possible to impose modest additional fees on port activities without jeopardizing the port's competitiveness.

Given port growth projections, a modest container "tipping" fee could be expected to generate millions of dollars for joint public/private improvements in nearby freight infrastructure. However, care would have to be taken in setting the fee. High fees imposed on port traffic would be sure to generate strong opposition and could lead to diversions to other ports that offer significant intermodal transportation alternatives, especially for cargo destined for hinterland markets.

Moderate container fees and other financing options must be explored as a means for achieving the targeted infrastructure upgrades necessary to accommodate huge future traffic growth and to take advantage of the economic promise offered by brownfield redevelopment. However, since financing freight infrastructure investments is a problem for ports around the country, federal legislation to authorize nationwide levies for this purpose may be warranted. These levies could be returned to the ports or the states on a prorated basis, depending on the amount of cargo generated by each port. These funds could also be allocated to special development authorities capable of providing targeted infrastructure improvements.

A national container tipping fee would put all ports on a more equal footing in their ability to undertake needed infrastructure improvements and contribute to a more efficient national goods distributions system. Such a national approach has been proposed in the context of Congressional bills requiring increased port security and the reauthorization of TEA-21. A national approach to impose container fees at U.S. ports might provide a cost advantage to Canadian ports such as Halifax and Vancouver, but long-distance drayage fees from those ports could still offset most disadvantages in the shippers' calculations.

Even if a fee structure proves unworkable at a local or national level, shipping companies may be willing to make substantial contributions that, combined with state and federal funding, will achieve major beneficial improvements. Segments of Portway and even brownfield development projects along the Portway route may be ripe for well-crafted public-private partnerships.

### *6.3.5.2 FAST Model*

Efforts to cultivate such private sector participation could draw upon the successful model developed by the State of Washington to mobilize a broad state partnership behind a specific agenda of freight projects. Recognizing the progress being made in LA/LB in developing the Alameda Corridor project, officials at the Ports of Tacoma and Seattle in 1996 initiated the so-called Freight Action Strategy or FAST corridor program to select, fund and build key transportation projects. FAST became a formal body co-sponsored by the area Metropolitan Planning Organization (the Puget Sound Regional Council) and the Washington State Department of Transportation (WSDOT). It includes three counties, a dozen cities and towns, the ports of Tacoma, Seattle and Everett, state funding agencies, and the two major railroads (ex officio members). A multi-agency staff team known as the FAST Cast manages FAST. It consults with a Regional Freight Mobility Roundtable that includes many public and private sector participants.

FAST identified 15 projects — three truck access projects and 12 railroad grade separation projects — for a first phase totaling $470 million. Originally, state legislators had intended to provide funding for the projects from motor vehicle excise taxes but a state anti-tax initiative in 1999 overturned these plans. Subsequently, FAST participants prepared a multi-year plan for funding the projects drawing upon state, federal, local and private sources. The high visibility given to the projects and the organizational resources focused on advancing them was responsible for garnering much of the needed fund-

ing, some of which came from Congressional earmarks. Most of the Phase I projects began construction in 2001. A Phase II agenda of projects is being formulated, valued at over $400 million and focusing on truck mobility and access. The Regional Council calls FAST "a model for results-oriented planning based on broad-based partnerships including government and business."

New Jersey already has many of the elements in place for replicating the FAST model. Like FAST, the IITC has been designated in TEA-21 as a national priority corridor eligible for special funding. Many of the public and private sector interests have participated in IITC and other forums discussing freight needs. The NJTPA (the region's Metropolitan Planning Organization) has formed a Freight Initiatives Committee to begin prioritizing regional freight needs. State and local agencies and the region's transportation authorities are actively involved in planning and addressing freight needs. What is required is to pull all these elements together to develop a common agenda of needed projects and concerted efforts to fund and implement them. The great economic stakes in improved freight transportation – revitalized brownfields supporting new economic opportunities and a cleaner environment — justifies extraordinary efforts to mobilize state resources behind a common freight vision.

## 6.4 - Comprehensive Planning

The dramatic growth of trade expected in the region will eventually induce the private sector to put in place many of the warehouse and distribution facilities needed near the port, airport and rail terminals. Government can accelerate this development activity by addressing the barriers to brownfield reuse and by implementing needed infrastructure improvements, as discussed above. Yet market forces alone may not create the kind of efficient freight distribution system needed in the region. The case studies have shown that private developers are best equipped to redevelop small and medium sized sites; large sites approaching 100 acres may remain vacant due to the scale of contamination and other complications facing developers. In addition, private-led redevelopment will tend to take place on a piecemeal basis, one or two properties at a time, potentially perpetuating the haphazard and inefficient pattern of land use in and around the port district. Private-led development will also tend to lag behind the market, meaning that the region may not gain the capacity – or the ability to quickly create capacity – needed to attract and cultivate new business and achieve its full potential as an East Coast hub.

To address these issues, there is growing recognition of the need for comprehensive planning by government in partnership with the private sector to realize an overall vision for redevelopment in the port district. This vision would include orderly redevelopment of brownfields to take advantage of synergies between various types of land uses and freight businesses. It would also include upgraded infrastructure and new technologies to speed the circulation of goods within the district and to national and international markets.

*Comprehensive planning by government in partnership with the private sector can realize an overall vision for port district. This would include orderly redevelopment of brownfields to take advantage of synergies between various types of land uses and freight businesses.*

A framework for comprehensive planning in the port district was designated under federal legislation as the International Intermodal Transportation Corridor (IITC). The IITC initially centered on the port district in its first phase and was later extended from the George Washington Bridge along the I-95 corridor to Camden. It is seen as an economic zone of interlinked businesses including major New Jersey industries such as transportation, pharmaceuticals, telecommunications, petrochemicals and others, served by efficient goods movement infrastructure. The IITC contains most of the state's freight terminals and has numerous brownfield sites throughout. NJIT has been designated as the research and resource center for studying the development of the IITC. Reclaiming brownfields and realizing more efficient land use are important goals of the IITC

Another comprehensive planning initiative is the Comprehensive Port Improvement Plan. This is a multi-jurisdictional analysis of landside and harbor needs related to the growth of the port. It will develop a broad based analysis and regional plan encompassing the entire bi-state port district and adjacent areas and conduct an Environmental Impact Statement under the guidance of the USEPA and the Army Corps of Engineers. Its management structure also includes a consortium of New York and New Jersey agencies.

The IITC and CPIP are intended to be advisory to local and regional planning bodies and have thus far focused on gathering data and analyzing trends to better understand issues affecting goods movement in the port district. They also have consulted widely with officials and stakeholders in the port area. Increasingly, however, both efforts will have to grapple with more difficult "on the ground" matters – that is, looking at physical changes and transportation and land use issues in the port district and how can they be addressed. Some important considerations for shaping the future of the port district are present below.

*The Port of Rotterdam's Distriparks are oriented towards processing the massive volume of containerized goods passing through the port for distribution throughout Europe. The Distriparks can serve as models for the redevelopment of brownfields in the northern New Jersey port district.*

## 6.4.1 Development Models

A number of public-private partnerships for freight distribution elsewhere in the United States and in Europe can serve as models for large-scale freight related brownfield reuse in the port district. The most familiar model is that of the industrial park. This is a cluster of modern buildings constructed based on a pre-existing plan, usually on 100 or more acres. Typically, the buildings have a uniform design and landscaping. Often a single owner or management company provides security, maintenance of roads and common areas and other services. Industrial parks are often given a special zoning status as "Planned Unit Developments" by local governments allowing for expedited permitting and building approvals.

The Market Analysis conducted for Phase I pointed to the 350-acre Watson Industrial Center South property in the City of Carson, California (close to the Ports of Los Angeles and Long Beach) as a promising model for northern New Jersey. It includes 6.67 million square feet of space for numerous businesses engaged in valued-added processing of goods arriving in containers from the port. These businesses are housed in clean, modern buildings, ranging in size from 29,000 to 435,000 square feet, in a landscaped setting.

A number of industrial/office parks on the scale of the Watson Center exist in northern New Jersey. This includes major warehouse/distribution centers in the Meadowlands, Bayonne/Jersey City and Edison (Raritan Center). Public-private partnerships to develop additional centers on brownfield properties specifically for goods movement appear promising. Some of these parks could specialize in air cargo. In the "State of the Market Report" prepared for NJTPA-NJIT, Ann Strauss Weider cited the concept of an "aerotropolis" – "a cluster of logistics-related facilities around an air cargo hub used for shippers for just-in-time response" – which has been used in other regions of the country. The rail industry has its own vision. It has proposed creating a series of "Integrated Logistic Centers" along the rail spine of the Mid-Atlantic region containing light manufacturing, distribution centers, and storage facilities.

While the private sector is experienced with developing industrial parks, joint public-private comprehensive planning could guide where and how they are implemented, including siting along key transportation infrastructure to optimize goods movement efficiency (the "String of Pearls" concept discussed in Section 6.3.2). Government would have to play a key role in assembling properties, assisting in the creation of site plans, providing infrastructure, guiding and supporting environmental clean up and working closely with banks and private developers. Such industrial parks would insure systematic clean up of key brownfields and promote efficient use of land resources.

More ambitious models of development seek to adapt

industrial parks specifically to the needs of the freight industry and guide how and where business activity takes place to optimize goods movement logistics:

**Global Freight Villages:** Union County is currently pursuing the implementation of a "Global Freight Village (GFV)" in the Tremley Point area, which includes 150 to 200 acres of brownfields. A June 2001 report for the county pointed to the GFVs developed near major urban areas throughout Europe as a viable model for the county. Unlike industrial parks, the report notes, a Global Freight Village "is not a collection of independent operations in a defined geographic area. Rather, [it] represents a coherent and coordinated effort to provide transportation services" for freight purposes.[2]

Germany has established a network of Global Freight Villages. They are developed through a partnership between government and the private sector, which share both costs and profits. Companies in the villages coordinate their shipping operations. For instance, two companies serving the same area can combine deliveries in a single truck, avoiding "sending half-empty trucks to these areas and empty backhaul movements."[3] The GFV (Guterverkehrszentren) in Bremen occupies 300 acres and is currently home to 40 companies employing 2,000 workers. Because of its proximity to the port of Bremerhaven, the Bremin freight village serves as a hub for distribution of international goods over a wide area. Other villages in Europe are more locally oriented, focusing on serving the freight needs of a single metropolitan area.

**Distriparks:** Three "Distriparks" have been established in the Netherlands adjacent to the Port of Rotterdam, which is Europe's largest port and the freight hub for much of the continent. The Distriparks are similar to GFVs but oriented towards processing the massive volume of containers passing through the port. As such they have potentially great relevance to the northern New Jersey port district.

Established within the port's Free Trade Zone, the three Rotterdam Distriparks at Maasvlakte, Botlek, and Eemhaven occupy 309 acres, 215 acres and 124 acres respectively. They are described as "Logistic parks with extensive facilities in a concentrated area."[4] The Distriparks have become the principal European distribution centers for a number of large corporations that either operate facilities there or contract with third party logistics companies for processing and distribution services. A key attraction is the availability of multiple modes of transportation: companies can use trucks, rail and barges to reach inland destinations and coastal shipping to reach smaller ports.

The Port Authority of Rotterdam has specifically encouraged value added operations in the Distriparks as a way to capture jobs and economic benefits from the flow of containers that otherwise might pass through the port unopened. These operations include repacking, labeling, weighing, assembling, quality control, just-in-time distribution, customs clearance etc. [5] The Port Authority has also established smaller industrial parks, called "Trade and Distribution Centres," some miles away from the port to provide space for international companies that are not yet big enough for one of the Distriparks.

## 6.4.2 Planning Responsibilities

With appropriate commitments to comprehensive planning, there is little doubt that the northern New Jersey region could replicate aspects of the phenomenal success of the Rotterdam hub port. The region's key assets for doing so include a confluence of multiple modes of transportation – rail, sea and air – in proximity to thousands of acres of available land – mostly brownfields – that could be redeveloped based on the models of Distriparks, Global Freight Villages or California-style value-added industrial parks. Among other benefits, comprehensive planning could open up opportunities to use environmentally clean technologies, such as alternative fuel vehicles, "truck trains" and barges, for container movements within the port/airport district and nearby areas.

*To maximize brownfield reuse and goods movement efficiency, coordination of local plans and economic development policies with a comprehensive plan for the port district must be achieved. To this end, a planning entity for the port district could be designated.*

However, given the evolving real estate market in and around the port district and the lack of coordinated planning and institutional support, redevelopment by the private sector will continue to occur on a piecemeal basis. The window of opportunity for comprehensive planning may be short. Plans must be developed, funded and put into action over the next several years if a comprehensive vision for the port is to be realized.

Far-reaching institutional changes may have to be considered. One developer has suggested that local control over land use, permitting and other matters is at the root of many difficulties. Localities, he says, are too often guided by parochial considerations rather than regional interests and many times lack the expertise to adequately evaluate development plans. He suggests the state establish a development commission, similar to the New Jersey Meadowlands Commission, for the port district, with powers over land use and transportation. He also raised the possibility of establishing an authority with bonding capabilities for the port district. Such an authority could be the recipient of dedicated transportation fees discussed earlier in this chapter.

Establishing such an authority or commission would no doubt face very tall hurdles given state "home rule" policies governing development. Yet, if the region is to pursue comprehensive plans for the port district to maximize brownfield reuse and goods movement efficiency, coordination of local plans and economic development policies with the port wide plan must be achieved. To this end, a planning entity for the port district could be designated and possibly legally empowered by the state legislature. The comprehensive planning in the port district need not involve sacrificing the prerogatives of local jurisdictions. Instead, a "cross acceptance" approach, similar to that used in the State Development and Redevelopment Plan, could be pursued.

A high-level state commitment – accompanied by funding, staffing, legislated authority and mandates for interagency coordination – would be required to empower such an authority or planning entity. Even if such a commitment is not forthcoming, however, it appears essential to strengthen and expand the mandate of an existing state agency or other institution to provide the coordination among all levels of government and the technical resources and expertise in planning, transportation modeling, environmental clean up and financing needed to support economic development in the port district.

The NJTPA, as the federally designated Metropolitan Planning Organization for the region, will continue to provide technical support, oversight and guidance for transportation planning and project development in the port district and wider region. It will work closely with its neighboring MPOs (the New York Metropolitan Transportation Council and the Delaware Valley Regional Planning Commission), as well as state and regional planning agencies to accomplish the best planning practices within the port district, the IITC and other freight-intensive areas.

Whatever institutional arrangements are ultimately made for shaping the future of the port district, it appears essential that the state begin now to give priority attention to addressing the needs in the district. Forces must be put in motion to ensure that the current unprecedented opportunities for brownfield reuse and economic growth are not squandered.

[1] Plans for a transfer station for New York City garbage at Tremley Point had been expected to accomplish extension of rail service to area. With the increasing likelihood that these plans will not be realized, the county is investigating other approaches to funding the needed rail access.

[2] Planners Diversified. *An Analysis of the Potential for a Global Freight Village in the Tremley Point Area of the City of Linden*. Prepared for the Union County Department of Economic Development. June, 30, 2001.

[3] Roberts, Richard. A *Commentary on the Draft Final Market Analysis Report*. Evaluation report prepared for NJTPA-NJIT Brownfield Economic Redevelopment Project, Phase I. March 2001.

[4] Port of Rotterdam: www.portofrotterdam.com

[5] Abbey, Douglas D.; Twist, David C. and Koonmen, Leo J. (of AMB Investment Management, Inc.), "The need for speed: Impact on Supply-Chain Real Estate." Future, (A Publication of the Urban Land Institute) January 2001.

# Section 7 - Conclusions & Recommendations

## 7.1 Conclusions

The following statements identify the main conclusions drawn from the two phases of the BER study. These conclusions are the basis for the position that redevelopment of brownfield sites in the port district is essential for continued development of the port, airport and rail terminals and the economic health of New Jersey.

**1. A network of warehouse/distribution centers (W/DCs) is needed near the port, airport and rail terminals to support the projected growth of goods movement.**

All projections indicate that the port, airport and rail terminals will continue to experience increased freight volumes. This growth will accelerate once the channels are dredged. A network of modern W/DCs in the port district is needed to process and distribute the freight efficiently to the consumer base.

**2. There is sufficient brownfield property within the port district (25 mile radius) to provide the land necessary to build the required W/DCs.**

The port district is one of the industrial cores of northern New Jersey. Inventories compiled as part of this study have shown that within the urban environment of the port district thousands of acres of former industrial sites are available to build the required network of W/DCs.

**3. The economic, environmental and social benefits that can be realized by New Jersey from linking brownfield site reuse with trade growth (freight related reuse) are tremendous.**

The redevelopment of brownfield sites in the port district for freight uses will allow New Jersey to derive greater economic benefits from increased international trade flowing through its terminals. Modern W/DCs have few negative environmental impacts, are well designed and provide needed jobs for low to moderate-income urban workers.

**4. Market demand for modern high tech W/DCs in close proximity to the port, airport and rail complexes is strong and growing**

Discussions with developers, realtors and end users during the preparation of the case studies indicate there is a growing demand for modern high tech distribution centers close to the port, airport and rail terminal complexes. This demand is driven by improvements in logistics technology/management, increasing costs to transport goods to and from W/DCs on the urban fringe, "time definite" business practices and the need for ready sources of labor.

**5. Transportation access is critical for freight related redevelopment of brownfield sites.**

Northern New Jersey has a very sophisticated highway transportation system. Additionally, rail and marine transportation are also available. However, the transportation infrastructure serving many of the brownfield sites in the port district identified by this study has fallen into disrepair and may be only marginally suitable for new development. Therefore, regional transportation projects, such as Portway and the upgrade of New Jersey Turnpike Exit 12, are critical to providing improved access to these sites and integrating them back into the regional transportation system.

**6. Substantial barriers to freight related reuse must be overcome to realize large-scale brownfield redevelopment.**

The case studies identified an array of barriers that must be addressed and remedied before freight related brownfield reuse can be fully realized. These are identified and discussed in detail in this report and recommendations are provided to address them. Public officials must act on these recommendations if the region is to realize the economic, environmental and social benefits provided by an efficient freight dis-

tribution system supported by brownfield redevelopment.

**7. Coordinated and comprehensive regional and state level planning is needed to assure that sufficient W/DCs are built on brownfield sites in the port district to support the growth of freight traffic through the region.**

While it is likely that market demand alone will prompt some freight related brownfield redevelopment, it will likely be done in a poorly coordinated manner that will mean higher costs and lost opportunities for realizing synergies in redeveloping properties and building supporting infrastructures. However, if the anticipated development can be managed on a comprehensive regional scale, then the ports, rail terminals and W/DCs can be linked to an integrated system that will benefit all of northern New Jersey.

# 7.2 Recommendations

The following recommendations are based on and summarize key points discussed in Section 5 - Analysis of Findings. They are intended to spur further study and action by public and private entities with jurisdiction over brownfield reuse. The recommendations are organized into three areas (reflecting the topic headings in Section 5): Barriers, Transportation and Comprehensive Planning.

## 7.2.1 Barriers

### *7.2.1.1 Redevelopment Climate*

***Narrow the "development gap" between brownfield and greenfield properties by passage of Assembly Bill 2585 and other measures.*** State agencies and local governments should do more to see that the costs of redeveloping brownfield properties are reduced to make them more competitive with greenfield properties. Assembly Bill 2585 will improve financing options and other policies to facilitate brownfield reuse.

***Provide the resources, staff and authority necessary to ensure the effective implementation of the initiatives of the McGreevey Administration to promote brownfield redevelopment.*** A range of recent initiatives by the Administration appear promising for facilitating brownfield reuse including new policies and programs within NJDEP, a new cabinet level body on Smart Growth, a new Office of Smart Growth, and revitalization of the State Brownfield Redevelopment Task Force. These are very ambitious initiatives that must be provided sufficient resources, staff and authority to make them effective. Brownfield redevelopment must also be made a priority throughout state government.

***Establish a state supported multi-disciplinary brownfield technical assistance center to advance redevelopment of key properties.*** The NJTPA-NJIT study has demonstrated that multi-disciplinary teams of experts – knowledgeable in environmental cleanup, transportation, real estate marketing, architecture, financing etc. – can be effective in helping private owners and developers address issues at particular sites. Such teams should be formalized and funded to see that freight related brownfield reuse is accomplished in the port district.

### *7.2.1.2 Local Acceptance*

***Educate public and private officials on the benefits of clean, modern freight facilities on brownfields.*** Education and outreach activities are needed to counter the negative perceptions about freight related redevelopment. Attractive, modern and well-managed freight facilities can help address critical needs, including providing recession-resistant jobs (with a range of skill levels) and tax ratables. Such an approach can lead to better, updated local development plans.

***Take innovative approaches to addressing negative impacts of freight.*** Well planned transportation improvements can remove truck traffic away from residential areas. Innovative approaches, such as the use of short rail links, barges and even freight monorails, can be explored for the movement of containers in the port district. Natural gas-powered truck drayage of freight containers can help address air quality issues, especially over short distances.

### 7.2.1.3 Container Storage

***Reduce container storage on vacant land in the port district.*** While some containers storage in and around the port is inevitable, the current level of storage is harmful to prospects for brownfield redevelopment and sustaining increased trade. One approach would be to make long-term container storage financially unattractive through taxes or fees on stored containers. An alternative would be for the state, communities, Port Authority, shippers, terminal operators and storage companies to cooperate to reduce and control the current volume of empty containers, possibly replicating the quota system used by the Port of Hampton Roads in Virginia. Local zoning could also be employed. Over the long-term, the region should explore technology solutions such as recycling containers as scrap metal or for other uses.

### 7.2.1.4 Environmental Regulation

***Create incentives and policies within NJDEP to "champion" priority brownfield sites.*** Currently all contaminated sites within the NJDEP Site Remediation Program are handled through the case management system. Many case managers are overwhelmed or do not see the need to expedite a particular site at the expense of others. However, all the case study sites have a substantial potential, if reused, to provide economic development for surrounding communities and the northern New Jersey region, particularly if they are linked to freight and logistics growth. Thus there is a need for a program and policies that will allow key sites to be "championed" so their redevelopment can be expedited. The new NJDEP Office of Brownfield Reuse and the revitalized Brownfields Task Force may be the solution, but they need to be empowered with the authority to take on the key sites and make important decisions.

***Improve the characterization approach for brownfield sites.*** The key to brownfield redevelopment is time and cost management. The current site characterization process is laborious, costly and time consuming. New technologies have become available in the last few years that if used in a strategic manner can vastly improve the site characterization process. We recommend that the Triad Approach be strongly considered as an alternative to traditional characterization method for brownfield sites. If used correctly by experienced practitioners this process will increase the level of information collected, allow for more precision in remedial design and costing and reduce time and cost of site investigations. Perhaps, a separate brownfield "path" can be established that will allow practitioners to use these methods under certain circumstances. Additionally, the "Star Program" can be a mechanism for certifying practitioner expertise in the area.

***Effectively implement the new policy of issuing media-specific NFAs.*** Media specific No Further Action letters (NFAs) should be issued as elements of the remediation process are completed. These should be specific enough to give developers the confidence that they can move forward with the construction of a building. With regards to W/DC redevelopment, since the building and paved areas will become important components of the engineering controls, the remediation should be integrated with the redevelopment design and a soil NFA issued once a base cap has been completed. Recently NJDEP has issued Policy Directive 2002-003 which among other things, specifically states:

> The Department shall issue No Further Action Letters for soils when remediation of soils at a brownfield property is complete, but groundwater contamination may remain. The Department shall issue No Further Action Letters for groundwater when a Classification Exception Area has been established for a brownfield site and natural attenuation has been approved as the appropriate remedial action.

Thus the NJDEP has taken steps to solve this situation. The policy change is a positive step directly supported by the case study findings and steps should be taken to insure it is effectively implemented.

***Integrate NJDEP brownfield programs and activities with those of state entities responsible for brownfield redevelopment.*** Case studies have demonstrated that comprehensive coordination of the various state programs is necessary to expedite brownfield projects with freight related reuse. The revitalized Brownfield Task Force will allow for the integration to take place if it is empowered with the ability to focus on sites and bring all state resources to bear. Furthermore, NJDEP must consult closely with its

partners in brownfield redevelopment, which are the Office of Smart Growth, the Economic Development Administration, the Brownfields Taskforce and NJDOT.

## 7.2.2 Transportation

### 7.2.2.1 Site Access

***Provide public funding to help offset costs for brownfield access improvements.*** New state transportation grant programs specifically targeted to brownfield sites and technical assistance provided to developers and municipalities may help to offset the cost of transportation improvements which sometimes are a barrier to redevelopment.

***Advocate greater flexibility in the use of federal transportation funding for brownfields.*** Greater flexibility for potential use of federal funds to improve access to industrial/freight distribution areas through the federal TEA-21 process could provide additional resources for blending public-private funds into effective transportation enhancements.

### 7.2.2.2 Portway/Highway Improvements

***Better coordinate transportation improvements with brownfield redevelopment.*** Transportation improvements in the port district are often undertaken on a piecemeal basis. A more orderly and proactive approach must be established to insure that transportation improvements contribute to brownfield reuse. This includes greater cooperation among state, regional, local and community entities. This could be accomplished through improved regional level planning in the port district.

***The Portway project should be accelerated and the Portway concept development study should incorporate a brownfield redevelopment perspective in its route and infrastructure assessments.*** This project could become the efficient means for moving overweight containers among freight-specialized industrial parks and distribution centers built on brownfields in the port. At the same time it would effectively relieve mounting congestion on local roads in and around the port district. Measures to finance an accelerated schedule should be explored.

***Give funding priority to transportation projects serving freight related brownfield reuse in the port district.*** To accomplish this, these projects could be accorded greater weight under NJTPA's project prioritization system. In addition, NJDOT should review its planning and funding policies affecting these projects.

### 7.2.2.3 Rail Improvements

***Expand funding for rail freight.*** The state has been requested to fund a substantial portion of the estimated $150 million needed to upgrade the regional freight rail system. These investments would ensure the region could efficiently handle increased goods movement processed at W/DCs on revitalized brownfields. In addition, increased funding is needed to fund shortlines, which are crucial to providing rail access to smaller companies.

***Preserve rail rights-of-way.*** While some physical track may no longer be suitable to accommodate today's rail vehicles, rights-of-way should be preserved as part of brownfield redevelopment plans to enable their future use.

***Explore alternative innovative freight transportation modes.*** Within this region, trucks provide the principal mode for transporting freight short distances. Unfortunately, roadways are becoming increasingly congested, making such movements costly and inefficient. Short line rail can divert some truck trips, but only on a very limited basis. Therefore, other means of transporting goods safely and efficiently such as freight "monorails" and other innovative technologies should be explored.

### 7.2.2.4 Barge/PIDN

***Implement the use of barges for moving freight containers and give priority attention to developing the Inner PIDN concept.*** Freight barges hold great promise for providing fast and cost-effective means for goods movement. The state should work with the Port Authority and private interests to see that barge transport begins in the near future so that this mode of transportation will be available for integration by private developers into future freight facilities throughout the region. The Inner PIDN concept of using barges to feed satellite container terminals/distri-

bution centers in and around the port district deserves priority study.

#### 7.2.2.5 Transportation Financing

***Explore supplementing public funding for freight infrastructure with a modest fee on container movements or other port activity.*** While such a fee may present legal and competitive difficulties, similar levies have been imposed elsewhere, notably for the Alameda rail corridor project at the port of Long Angles/Long Beach. A modest fee is unlikely to result in an appreciable loss of trade given the locational and other advantages offered by the port.

***In concert with other states, pursue new national funding programs for freight infrastructure.*** A national port user fee to fund infrastructure projects would help bolster the ability of all ports to accommodate increased trade. This and other new funding policies should be explored as part of the reauthorization of TEA-21, the nation's principal surface transportation law.

### 7.2.3 Comprehensive Planning

#### 7.2.3.1 Development Models

***Encourage development of freight related industrial parks.*** Public-private partnerships could establish strategically placed freight industrial parks to optimize goods movement and realize large-scale value-added goods processing, creating new jobs for urban residents. Viable models for this development are the industrial parks near West Coast ports and the Global Freight Villages in Europe – particularly the Distriparks near the Port of Rotterdam.

***The Port Authority should explore expanded hours of operation at the port to maximize the opportunity for freight transportation during non-peak periods.*** This will not only help reduce traffic congestion and increase port efficiency but allow the port to support the operation of nearby warehouse/distribution centers which will operate on multiple shifts.

#### 7.2.3.2 Planning Responsibilities

***Establish a mechanism to achieve comprehensive planning in the port district.*** This could involve creating a new body or designating an existing agency to guide the development and implementation of a comprehensive plan and to coordinate this plan with local master plans and economic development policies. The body could be a formal authority, with bonding capabilities; a land use commission similar to those now in place in the Meadowlands and Pinelands areas; or a more limited coordinating entity possibly using a "cross acceptance" approach to coordinating development activities.

## 7.3 - The Case for Freight Related Brownfield Reuse

This report has made clear that there is a vital need to accomplish increased redevelopment of brownfields for freight purposes near the port, airport and rail terminals in northern New Jersey. Private sector companies, responding to market forces, are already leading the way in developing these facilities. Yet the extent of this reclamation activity – together with the form it takes, its location and its timing – could still leave the region without the kind of efficient landside freight distribution system needed to support and sustain its role as a East Coast "hub port."

The private sector faces many difficult barriers – environmental, financial, legal and logistical – to accomplishing brownfield redevelopment. Left unaddressed, these barriers are likely to leave many key properties, particularly the largest and most contaminated, undeveloped. In addition, there is growing pressure to redevelop prime properties for purposes other than freight handling, including retail outlets and offices. The region has a window of opportunity over the next several years to achieve large-scale and well-planned freight related redevelopment in and around the port district. The stakes for doing so are potentially great:

**Economy** - The northern New Jersey port (together with the nearby airport and rail terminals) is a powerful economic engine for the region that has

continued to grow even through the current economic downturn. The dramatic growth in trade projected to accompany the completion of dredging could provide even wider economic benefits. Yet the port is facing stiff competition from other East Coast ports that have the land and infrastructure near to port facilities to move large volumes of goods quickly and efficiently. Failure to use close-in brownfields to match these advantages could greatly dampen future growth, leaving the northern New Jersey as a regional rather than national freight hub.

**Transportation** - Development of port district W/DC facilities engaged in receiving containers, sorting contents, performing value-added activities and reshipping goods via truck or rail, promises an efficient use of the region's transportation system. The alternative is transporting containers over already congested roads to far-off facilities and later shipping a large share of the goods back over these same roads to the core of the metro area. The increased miles of vehicle travel will add to infrastructure maintenance costs, harm regional air quality and worsen roadway congestion.

**Smart Growth** - Facilitating the W/DC development near the port and airport will reduce pressures for greenfield development in environmentally sensitive areas of the state. Such development is now threatening to overtake wider and wider areas. Bringing brownfields back to productive use will help revitalize urban areas.

**Employment** - Development of new W/DC facilities engaged in value-added processing of goods promises to provide a large pool of unskilled and semi-skilled jobs within easy commuting distance of urban areas where unemployment is the highest. It will help offset the continuing steep decline in manufacturing jobs.

**Community Development** - Towns near the port and airport can realize new, secure (recession-resistant) ratables and jobs for residents from the development of modern W/DC facilities. The experience on the West Coast indicates that such facilities typically are clean and well run to insure efficient operations. Potential negative impacts, such as increased truck traffic over local roads, can be minimized through planning and strategic infrastructure investments.

These stakes were starkly depicted in the original proposal for this study by considering two alternative futures for the region:

1) Freight traffic doubles over the next decade creating welcome economic benefits for some business sectors but many freight businesses move operations to "greenfields" on the fringes of the region and in neighboring states. Open space in these areas is consumed by sprawl development. Long-distance trucking of goods to and from the core port district increases, compounding already difficult congestion, worsening air quality and wearing out aging infrastructure. Residents of urban areas near the port are left with precious few job opportunities as former industrial sites sit idle and crumbling. Ultimately, the region's problems depress further growth in trade and economic development.

2) Many businesses taking part in the expansion of trade in the region redevelop and locate in abandoned industrial brownfield sites scattered in and around the port district and along major routes leading to it. Upgraded transportation infrastructure allows goods from these businesses to move efficiently around the region with truck trips kept to a minimum distance while facilitating maximum use of rail intermodal services to more distant markets. Regional air quality improves. Residents of Newark, Elizabeth and other urban areas gain access to a host of new job opportunities as warehousing, packaging and other freight related companies expand operations nearby. Cities gain new ratables allowing reinvestment in infrastructure, school systems and neighborhoods. Ultimately, the progress of the region attracts further growth in trade and economic development.

The first scenario is the likely outcome of an unguided and haphazard response to events. The second scenario, as discussed in this report, can be achieved through a broad-based, coordinated planning effort to encourage freight businesses to locate in the region's brownfield sites.

# APPENDICES

# Appendix A
# GLOSSARY OF TERMS -ABREVIATIONS

**BER - Brownfield Economic Redevelopment:** The joint study conducted by the North Jersey Transportation Planning Authority and the New Jersey Institute of Technology on the feasibility of linking the growing freight traffic moving through northern New Jersey's major freight terminals to the redevelopment of old industrial sites for freight related activities such as warehousing, distribution, and value-added services.

**Brownfields:** Defined by the U.S. EPA as "abandoned, idled or under-used industrial or commercial properties where expansion or redevelopment is complicated by real or perceived environmental contamination that can make redevelopment of the property financially or logistically prohibitive."

**Cross-Docking:** Warehouse operation in which cargo comes in on one side of the building and re-loaded and trucked out on the other side. Cross-dock operations typically call for long, narrow buildings of 100 ft width, with many loading docks running along both long sides of the warehouse. Some manipulation of the cargo, such as sorting, minor assembly and packaging is possible in cross-docking operations.

**Drayage:** A service offered by a motor carrier (usually trucking company) for the cartage of rail or ocean containers from a dock to an intermediate or final destination, or the charge for such cartage.

**Intermodal Transport:** The coordinated passage of goods by way of two or more primary modes of transport (sea, air, rail, road) from origin to destination, as defined by the shipper and consignee. For example, a freight container may move from ship to train to truck before being delivered to final customer.

**Kitting:** A specialized logistics process in which a specified number of components are put together in a sequenced manner into pre-packaged kits from bulk inventory. Most commonly performed on items that are shipped in bulk but sold individually, such as with electronics parts.

**Landbridge:** Typically, the movement of Pacific Basin cargo to the East Coast by land originating from West Coast ports. Developed as an alternative to an all-water route direct to the East Coast from Asia. See stack trains below. Goods typically move by rail and are off-loaded at a final rail terminal for local or regional delivery. Some landbridge moves will originate at West Coast ports, move cross-country and be reloaded for further ocean voyage on the East Coast.

**Port District:** Usually defined as the Port Authority of New York and New Jersey operational area that extend on a twenty-five mile radius from the Statue of Liberty. For the BER study, it s defined as an area that extends roughly twenty-five miles from Ports Newark and Elizabeth.

**PUD** – Planned Unit Development: Master-planned warehousing and distribution facilities providing space for a number of individual tenants sharing roads, maintenance, security, and other services. Modern PUDs also include aesthetic landscaping on the grounds and flexible building design.

**Remediation:** In environmental usage, the act of repairing or rendering physically safe a site or location that has been damaged by pollution, injury, or neglect. In the brownfield context, remediation usually involves ground (soil) and water (including groundwater) aquifers.

**TEA-21 – Transportation Efficiency Act for the 21st Century:** The principal federal transportation law that funds surface transportation projects and programs.

**TEU – Twenty-foot equivalent unit:** Standardized unit for measuring container capacity on ships, railcars, etc. A twenty-foot container; most marine containers are forty-feet in length, i.e. the equivalent of two TEUs.

**Third-Party Logistics Provider:** Independent company providing logistics-related services. Different types include brokers, forwarders, intermodal marketing companies, freight bill payment firms, carriers, or various combinations of these. The range of services provided is limited only by the agreements with clients. For the purposes of this study, 3PLs specifically refer to those specializing in the warehousing and distribution segment of the market.

**Throughput:** The volume of goods or containers moved through a facility or terminal. Usually measured against a time standard, i.e. day, week, year, etc.

**Time-Definite Service:** Logistics practice that calls for the delivery of products at each step of the distribution process at a specified time and date, usually under a contract between shippers and consignees. Time definite service has revolutionized inventory and distribution practices to result in a greatly increased rate of movement of product and an associated decrease in required storage space at every step in the process.

**Transloading:** Processing of contents of containers in and out of a warehouse/distribution facility within 24 to 48 hours.

**Value-Added Services:** Activities performed to increase the potential resale value of the commodity being handled. Sample activities include barcoding, kitting, product manipulation, pick & pack and assembly of marketing materials.

**W/DC: Warehouse/Distribution Center.** The modern W/DC is capable of hosting a number of freight activities, ranging from value-added assembly, distribution, special order processing to direct order fulfillment for consumers.

# Appendix B
# Details of Site Selection and Field Validation Methodology

The following provides details on the methodology used in the BER study supplementing the methodology summary presented in Section 3.

In order to achieve the objectives of this project it was realized that a comprehensive GIS database would be needed for the 13-county NJTPA region. GIS coverage of known contaminated sites was known to exist and it was decided to use it as the starting point for assembling coverage of potential Brownfield sites. Most of the sites in the initial site database came from the NJDEP Known Contaminated Sites List (KCSL). It was widely acknowledged by team members that the KCSL was not a Brownfield site list. Thus, although 1150 sites had been identified, it was acknowledged that many of these sites would not qualify as "Brownfields". The only way to verify this was through field visits.

For this purpose, two teams of NJIT graduate students/undergrad interns were assembled and charged with visiting each of the 1150 sites over a 5-month period. (April-August, 2000). They photographed the sites, noted the level of activity and recorded the location of the site using hand-held Geographic Positioning System (GPS) units. It should be noted that the Department of Defense's GPS "Selective Availability" had been deactivated by this time. Thus, hand held units gained considerable positional accuracy. After field visits, these teams would visit county assessor's offices to acquire more information regarding property ownership and size.

The data thus collected were assembled and entered into the site database. It should be noted that there were some issues of inconsistent reporting methodologies and errors in transferring the collected data to the database. These issues were resolved as the program progressed by having the teams enter data in pre-formatted spreadsheets matching the database schema and reducing the number of data submissions.

Using existing information on record about sites was found to be quite difficult. In some cases, sites did not exist or could not be located. In other cases street names were incorrect (i.e. Dekalb Drive was listed instead of Dekalb Road). Also, addresses were difficult to read on existing buildings. Some towns did not have a good street map to guide the students. Some of the street maps were recently updated and street names or locations were no longer valid. The students partially overcame these barriers by talking to neighborhood people in order to obtain their recollection of sites. Also, they made assumptions and took many detailed notes, which became helpful in resolving the locations and the site's lot and block later in the local tax assessor's office. In not all cases did these techniques work. Some of the smaller sites had to be written off as "not found."

GPS was found as an invaluable tool for accurately positioning the sites on the GIS coverage. In some cases, however, the students were surprised to find that they had located sites in precarious locations (on major highways) or that sites in different towns had the same GIS readings. Some of these errors were attributed to technique problems the students had in the early days of the field investigation. Others are probably due to the limited accuracy of the handheld GPS instruments used for the project. To address some of these errors, the students learned to improve their technique of taking GPS readings, especially by allowing more time for the GPS to reposition itself for each reading. Some of the sites were revisited and discrepancies were address by taken new readings.

Students were instructed to take digital photographs of sites to be stored in the database. This often became difficult because of the size of the site, access to it, and other structures being in the way. Their technique improved as they learned to take a combination of still and "moving in a car" pictures.

Data regarding site status, area, number of buildings present, etc. for the investigated sites were then added to the sites database.

A secondary benefit to the field verification was the identification of new potential sites. Student field teams would record data for any site that appeared to be abandoned and was located in proximity to sites that had passed the second screening. Because of their proximity, these sites had essentially already passed the second screening criteria. One hundred and fourteen additional sites were added to the database and GIS coverage as a result of the field verification.

Determining the activity level of the site became one of the most challenging tasks. Many of these were made as judgment calls because of the high degree of underutilization or mothballing of the sites, which is the nature of Brownfields. The team provided the students carefully developed criteria to use in making calls on whether or not sites were inactive. Still, some sites were probably characterized as active when, in fact, they were inactive. For purposes of not defining erroneously a site as Brownfield, with its legal implications, this conservative call was appropriate.

A relational database was developed to store and manage the attributes of the sites being depicted in the GIS coverage. Field data was included with other available site-specific information such as zoning, block/lot and ownership. Other features, including the following were also added:

- Transportation Infrastructure
- Land Use
- Proximity to Sensitive Geographic Locations
- Environmentally Sensitive Protected Areas
- Unemployment Percentages
- Total Warehouse Area
- Proximity to the Portway Alignment
- Proximity to Newark International Airport
- Location within Economic Redevelopment Zones

A decision was made by the team to channel the expanded freight business to Brownfield sites near to the port district. This focus would have important benefits, including creating new redevelopment prospects for depressed urban areas, providing much needed job opportunities for urban residents, reducing truck traffic on the region's highways and preserving open space. The following additional factors were also considered in the selection of potential candidate sites for Phase 2:

- The site must contain a minimum of 10 acres.
- The site, be it publicly or privately owned, must have express agreement from the owner to be included in the study.
- The site must be located within 35 miles and ideally within 10 miles of the port district.
- The site must present a challenge in terms of transportation access, real estate concerns, and environmental mitigation. Proximity to truck, water, and rail routes; proximity to other warehousing and manufacturing operations; proximity to urban populations with significant underemployment, will all be given strong consideration.
- Transportation investments would have a significant impact on site rehabilitation.
- The site would not present a problem to access by public transit.
- The site must be served or be capable of being served by public utilities for water, gas, and

electric.
- The site must have the potential for communications, and fire, and police protection.

Other general criteria were used to select the case study sites:

- Suitability for freight related re-use – Rail and highway transportation infrastructure was overlaid onto large sites (greater that 10 acres) located in designated industrial zoned areas. Sites within close proximity to schools, churches and surrounded by highly developed residential areas were not considered.

- Variety – In order to gain a comprehensive look at the full array of the issues facing a range of brownfield sites it was desirable to select sites with a variety of size range (between approximately 10 acres to over 100 acres) and with varying degrees of environmental contamination and transportation access complexity.

- Owner willingness – For each site, it was necessary to obtain owner consent in performing the site investigation. While much of the environmental data is public record, it was believed that a much more detailed study could be conducted with owner consent. In addition, with owner buy in, redevelopment of the site could be achieved more realistically and in less time. The Project Team has coordinated with property owners to obtain access to the site for environmental sampling purposes. The Project Team, with the help of NJIT in-house attorneys developed both a "Sampling Agreement" and a "No Sampling" agreement: the former allows access to sites for the purpose of carrying out soil sampling, while the latter permits the Project Team to obtain and review existing available environmental information from the property owner. ( A Performa copy of both documents is attached.) Property owners were given an opportunity to review the report to ensure the information was accurate and that there is no breach of confidentiality.

- Status of Property - Properties where redevelopment plans that have some level of local approval or properties zoned for residential, recreational or other non-industrial use were also not considered.

## STUDY METHODOLOGY LESSONS LEARNED

Agencies striving to successfully redevelop can benefit from the experiences of the Project Team in its effort to advance brownfields redevelopment for freight related re-use. The following summarizes some of the key lessons learned that apply to the study methodology:

- **Make data entry easy.** Future researchers are advised to develop a simple data entry program for field teams to manage the one-to-many relationships that are typically present within the database structure. (For example, many images associated with a single site.) Although the spreadsheets were formatted to accommodate these relationships (multiple sheets representing the database tables) the relational table concept and purpose was not initially well understood by the field teams and thus were not always completed properly.

- **Ensure current data is input.** Future researchers are advised to have only updated records submitted to data management personnel with unchanged records eliminated from submissions. There was some confusion over what records supplied in the spreadsheets represented updates and which did not. This is more of an issue if the field teams do not use a data entry program.

- **Obtaining owner consent may be difficult but is worthwhile.** Unfortunately, formally

obtaining permission proved more difficult than originally expected, even with incentives of offering "free" professional assessments and services needed to successfully develop these properties. The project team had to contact and meet with numerous parties including property owners, lawyers, previous consultants, municipal officials, developers and others. Legal agreements based on the foregoing proforma's had to be drawn up and signed to give the project team physical access to the sites and allow them to carry out study activities. The process of obtaining formal consent resulted in delays to the completion of this project. However, this effort was very much worthwhile as greater information can be obtained through the consent of property owners.

- **Engage public assistance.** Large initiatives are being advanced to assist in redevelopment of brownfields. Work with local, state and federal staffs in searching for program grants directed towards brownfield rehabilitation studies. Get to know them and keep them apprised of your actions. Scour the Internet brownfield web sites for the latest developments both nationally and internationally. Become familiar and meet with your state departments of Transportation, Environmental Protection, and your state's economic development authority or its equivalent. At the federal level, the local offices of the Department of Transportation (Federal Highways Administration) and Environmental Protection Agency proved to be invaluable to our endeavors.

- **Carefully consider the study budget.** Do not bite off more than you can chew. You will need a consultant and there will be the unexpected expenses from computers, to travel to printing expense. Be conservative on the budget and stick to it as closely as possible. It will do you no good to be half way through a study and then have to fold your tents due to lack of funds. Budgeting is an art form and should not be left to amateurs. From the onset, involve a professional which knowledge of government grant accounting.

- **Engage in partnering and collaboration with a "neutral" entity.** The team strongly advises engaging a neutral entity, such a university, to assist in brownfields redevelopment. The public is wary of government agencies, as they are often perceived as having "hidden agendas". We found officials were generally more receptive to some of the more controversial issues with the inclusion of university representatives to the study team. In the case of our study, the team is evenly divided between North Jersey Transportation Planning Authority (MPO) and New Jersey Institute of Technology (university) employees. The university not only administers grant funds, but also provides professional and technical support. As a bonus, NJIT serves as the National Center for Transportation and Industrial Productivity (NCTIP). The university connection also provides a unique learning opportunity for students while providing an excellent resource for our study effort. For example, student interns proved to be the "legs" of our project; physically visiting over 1,000 sites, photographing them, recording their location via GPS, cross checking ownership with the local tax offices, and preparing databases from the information derived. At the same time, students obtained first hand knowledge of the environmental and transportation challenges and issues associated with brownfields redevelopment.

- **Be prepared to sell.** It is essential that at least two members of the team be prepared to make presentations on the project before public and private groups in order to spread the word and build consensus. The presentations must be motivational and leave the audience with the feeling that they too, are a part of, and welcomed to the process. Every opportunity must be seized to promote the study, including media contact.

- **Emphasize public participation.** You are working on a public project using public funds. Outreach to community groups on your mission is as important as site selection. Bring into the process not only the obvious benefactors but also community watch groups who may not buy into the brownfield concept at the study's inception.

# Appendix C: Case Study Legal Agreements

## Environmental Study Agreement

This Agreement, dated _____ , 2001, is entered into between the **North Jersey Transportation Planning Authority** , the Metropolitan Planning Organization for the Northern 13 counties of New Jersey, in conjunction with the **New Jersey Institute of Technology**, a body corporate and politic of the State of New Jersey (collectively referred to as the "Study Team"), and the undersigned owner of real property (the "Landowner").

***WITNESSETH*:**

**WHEREAS**, the Study Team consists of non-profit entities involved in a project to examine the relationship between transportation infrastructure and the redevelopment of properties for freight related business. The properties of primary focus are located near Newark airport and the water ports of Newark and Elizabeth, New Jersey;

**WHEREAS**, the Landowner's property has been identified as one of the sites that may have the potential for redevelopment as freight related business. Consequently, the Study Team desires to perform environmental surveys, real estate market analysis, transportation improvement evaluations, and other detailed studies of the same;

**WHEREAS**, the Landowner wants to make the subject property available and/or accessible to the Study Team under the conditions described herein;

**WHEREAS**, the activities contemplated by this Agreement are of mutual interest and benefit to the Study Team and the Landowner, and will further the objectives of both;

**NOW, THEREFORE**, in consideration of the promises and mutual covenants herein contained, the parties hereto agree to the following:

***Right Of Entry/ Use of Lot***

Landowner licenses and/or grants to the Study Team, the use of and/or a right of entry to Landowner's property (the "Lot"), commonly known as:_____ , Newark/Elizabeth, New Jersey, for the sole purposes of performing environmental surveys, real estate market analysis, transportation improvement evaluations, and other detailed studies of the same. This license includes any designated representative of the Study Team (such as consultants, advisers and/or other retained experts) and full access during normal business hours (8:00 a.m. to 5:00 p.m.), Monday through Friday. The Study Team shall also be permitted to diagram, map, photograph and/or sketch the Lot.

***Consideration***

In consideration of the above-referenced license, the Study Team shall provide the Landowner with valuable information and a report that may include, at the option of the Study Team: (i) the current environmental conditions at the Lot and extent of remediation required to obtain NJDEP approval for redevelopment; (ii) a preliminary transportation analysis; and (iii) the results of a real estate market analysis.

The Study Team further agrees that, during the term of this and any successor license, the Study Team will be solely responsible for: (i) restoring the Lot to its condition prior to entry (only as a result of the activities of the Study Team); (ii) required off-site transportation; and (iii) disposal of any hazardous/toxic material produced through sampling.

The Study Team shall not be obliged or required to: (i) replace, improve or repair any part of the Lot dam-

aged by parties other than the Study Team and/or its designated representatives; (ii) perform any environmental remediation and/or cleanup activities at the Lot; and (iii) obtain any Federal, State and/or local environmental permits and/or approvals for remediation, property transfer and/or site development.

***Landowner's Full Cooperation***

Landowner agrees to fully cooperate with the Study Team at all relevant times, including the instruction by the Landowner of such full cooperation to any present and/or past environmental consultant. Landowner agrees to provide the Study Team with all necessary background information and/or documentation relating in any way to the past and/or present environmental condition of the Lot, previous uses, prior owners, buried tanks and/or structures, assessment and/or remediation activities, penalties and/or violations, deed restrictions, or the like.

***Representations/Warranties***

The Study Team shall perform the work contemplated by this Agreement in conformance with generally accepted standards of good practice, and with all applicable State and federal laws and regulations governing the performance of such work. EXCEPT FOR THE FOREGOING COVENANTS, THE STUDY TEAM MAKES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, AS TO ANY MATTERS COVERED BY THIS AGREEMENT.

***Consent To Full Disclosure/Dissemination Of Information***

The parties agree and acknowledge that as a result of entering into and performing this Agreement, the Study Team will obtain and/or produce information concerning the Lot and/or the environmental condition of the same considered confidential to the Landowner. Accordingly, the Landowner agrees that, during the term of this Agreement and thereafter, the Study Team shall be permitted to use, disclose, reproduce, publish, disseminate, distribute, and/or report such confidential information

for any purpose related to this Agreement and to the extent necessary for the Study Team to comply with any Federal, State and/or local law, statute, regulation, ordinance or the like, or if required to do so under law or in a judicial or other governmental investigation or proceeding, without the prior written approval of the Landowner.

***Alterations***

The Study Team shall not alter, add to, deface, improve or in any way change the Lot (except to the limited degree necessary to accomplish the aforementioned tests, samples, surveys, etc.) without the prior written consent of Landowner. The Lot shall be maintained and vacated, as and when required by the Study Team, in as good condition as upon entry of the Study Team thereon.

***Term of Use/Renewal/Termination***

This Agreement shall commence upon the Landowner's execution of this Agreement, and shall continue for a period of one year. The Agreement shall renew automatically for successive one-year periods unless either party, upon not less than thirty (30) days prior written notice, advises the other of its intention not to renew.

Either party may terminate this Agreement for any reason or no reason upon ten (10) days prior written notice to the other. In the event of termination, the Study Team shall immediately remove itself and/or all equipment, vehicles, machinery, tools, and other property located at the Lot.

***Landowner's Right to Enter***

Landowner reserves the right to enter the Lot for any purpose deemed germane by the Landowner and to do therein anything Landowner deems necessary or appropriate to maintain, repair, improve, secure, or alter the Lot, to comply with any governmental or judicial requirement or direction, or to post notices. Nothing in this paragraph shall be construed or interpreted to require Landowner to do any of the foregoing.

***Reasonable Use***

The Study Team agrees that it will not do or permit anything to be done in or about the Lot nor bring or keep anything thereon which might impair the condition, maintenance or operation thereof, create a risk of nuisance, casualty, injury, death, or environmental hazard, violate any law, statute, ordinance, regulation, code or other governmental or judicial requirement or limitation, or that would otherwise be detrimental to the Landowner.

***Independent Status/No Agency***

Neither party nor any of their respective members, employees or independent contractors is authorized or empowered to act as agent for the other for any purpose and shall not on behalf of the other enter into any contract, warranty, statement or representation as to any matter. Neither shall be bound by the acts or conduct of the other.

***Defense And Indemnification***

The Study Team shall defend, indemnify and save harmless the Landowner, from and against all suits, claims, losses, fees, fines, charges, demands or damages, including without limitation those asserted by employees, contractors or agents of the Study Team, connected with or arising out of the Study Team's breach of this Agreement or its own negligent activities at or about the Lot, or the negligent acts or omissions of the Study Team, its guests, invitees, officers, agents, employees, contractors or vendors. The Study Team shall, at its own expense, appear, defend and pay all charges for attorneys and all costs and other expenses arising from such suit or claim incurred in connection therewith.

***Insurance***

The Study Team shall procure and maintain, and require its contractors and subcontractors to procure and maintain, insurance to adequately protect Landowner and itself from claims for bodily and personal injury, including death, and damage to property which may arise or result from the use of the Lot. The type, form and minimum amount of coverage of this insurance is as follows:

a. Commercial General Liability coverage, in an amount not less than ONE MILLION and 00/100 ($1,000,000.00) DOLLARS per occurrence;

b. Automobile and/or non-owned automobile insurance, including without limitation bus coverage, providing coverage with a minimum liability limit of ONE MILLION and 00/100 ($1,000,000) DOLLARS for personal injury or death of each person and FIVE HUNDRED THOUSAND and 00/100 ($500,000) DOLLARS for property damage; and

c. Worker's Compensation and Employers' Liability coverage at New Jersey statutory limits and Employers' Liability coverage of not less than ONE MILLION and 00/100 ($1,000,000) DOLLARS per accident.

The Study Team shall submit to Landowner within thirty (30) days certificates of all insurance required to be maintained by the Study Team, such certificates to specify that the insurer will provide the Landowner with thirty (30) days prior written notice of any material change, cancellation or intent not to renew such coverage. The foregoing statement of insurance requirements shall in no way relieve or limit the Study Team's obligation to defend, indemnify and save harmless the Landowner.

***No Assignment***

The Study Team shall not voluntarily, involuntarily or by operation of any laws sell, convey, mortgage, assign, sublicense or otherwise transfer or encumber all or any part of the premises licensed hereunder or any right granted hereunder without Landowner's prior written consent, and any attempt to do so without this consent shall be null and void.. In each instance, the Landowner may withhold consent in its sole and absolute discretion The Study Team shall also not record this Agreement with the Register of the county in which the Lot is located.

***No Waiver/Severability***

No failure by either party to enforce any provision of this Agreement shall constitute or be construed, either individually or in the aggregate, as a waiver or limitation of any future right to enforce any contractual provision. If any aspect of this Agreement is held by a court of competent jurisdiction to be void, invalid or unenforceable, the remainder shall remain in full force and effect.

***Choice of Law/Venue/Jurisdiction***

The parties agree that this Agreement, including its validity, interpretation and enforcement shall be governed by the laws of New Jersey, without regard to its choice of law principles. Any dispute arising out of this Agreement shall be resolved in the appropriate division of the Superior Court of New Jersey, venued in Essex County. To the extent necessary, Star hereby submits the jurisdiction of the courts of the State of New Jersey.

***No Third Party Beneficiary***

Except as provided herein with regard to *Defense and Indemnification*, this Agreement gives no right or benefit to any party except the Study Team and the Landowner.

***Entire Agreement***

This Agreement constitutes the entire understanding between the parties regarding this matter and merges all prior discussions. There are no representations, warranties or promises not expressly set forth in this Agreement. This Agreement may not be modified, amended or renewed except by writing, signed by both parties.

***Marginal Headings***

The headings set forth in this Agreement are offered for the convenience of the reader nly and are intended to have no substantive effect whatsoever.

AGREED TO AND ACCEPTED BY:

**LANDOWNER:**

By: _____

**NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY:**

By: _____

**NEW JERSEY INSTITUTE OF TECHNOLOGY**

By: _____

# Environmental No-Sample Study Agreement



This Agreement, dated _____ , 2001, is entered into between the **North Jersey Transportation Planning Authority** , the Metropolitan Planning Organization for the Northern 13 counties of New Jersey, in conjunction with the **New Jersey Institute of Technology**, a body corporate and politic of the State of New Jersey (collectively referred to as the "Study Team"), and the undersigned owner of real property (the "Landowner").

***WITNESSETH*:**

**WHEREAS**, the Study Team consists of non-profit entities involved in a project to examine the relationship between transportation infrastructure and the redevelopment of properties for freight related business. The properties of primary focus are located near Newark airport and the water ports of Newark and Elizabeth, New Jersey;

**WHEREAS**, the Landowner's property has been identified as one of the sites that may have the potential for redevelopment as freight related business. Consequently, the Study Team desires to perform environmental surveys, real estate market analysis, transportation improvement evaluations, and/or other detailed studies utilizing only the results of earlier environmental studies and/or investigations conducted by other parties;

**WHEREAS**, the Landowner wants to make available to the Study Team the results of earlier environmental investigations and/or studies concerning the Landowner's property under the conditions described herein;

**WHEREAS**, the activities contemplated by this Agreement are of mutual interest and benefit to the Study Team and the Landowner, and will further the objectives of both;

**NOW, THEREFORE**, in consideration of the promises and mutual covenants herein contained, the parties hereto agree to the following:

***Production And Use Of Earlier Environmental Investigation Results***

Within thirty (30) days of the execution of this Agreement, Landlord agrees to provide the Study Team with copies of any and all records, documents, files, reports, correspondence, or the like, pertaining to earlier environmental investigations (whether conducted by a private and/or governmental entity) of the Landowner's property (the "Lot"), commonly known as:_____ , Newark/Elizabeth, New Jersey.

Such documentation may include but not be limited to: (i) soil/sediment samples; (ii) remediation plans; (iii) investigation reports; (iv) site historical data; (v) governmental submissions pursuant to any environmental law and/or regulation; (vi) groundwater analysis; (vii) aerial photographs; (viii) ownership records; (ix) magnetometer surveys; (x) excavation findings; or (xi) other relevant documents and/or data of any kind.

The Study Team shall be permitted to review, examine and use all of the aforementioned documents and/or data for the sole purposes of performing environmental surveys, real estate market analysis, transportation improvement evaluations, and/or other detailed studies of the Lot. Landowner also grants such permission to any designated representative of the Study Team (such as consultants, advisers and/or other retained experts).

Under the terms of this Agreement, the Study Team shall not physically enter onto the Lot to conduct any independent environmental testing and/or investigation on its own.

***Consideration***

In consideration of the Landowner's promises set forth herein, the Study Team shall provide the Landowner with valuable information and a report that may include, at the option of the Study Team: (i) the

current environmental conditions at the Lot and extent of remediation required to obtain NJDEP approval for redevelopment; (ii) a preliminary transportation analysis; and (iii) the results of a real estate market analysis.

The Landowner acknowledges and understands that the Study Team shall not be obliged or required to: (i) perform any environmental remediation and/or cleanup activities at the Lot; and (ii) obtain any Federal, State and/or local environmental permits and/or approvals for remediation, property transfer and/or site development.

***Landowner's Full Cooperation***

Landowner agrees to fully cooperate with the Study Team at all relevant times, including the instruction by the Landowner of such full cooperation to any present and/or past environmental consultant. Landowner agrees to provide the Study Team with all necessary background information and/or documentation relating in any way to the past and/or present environmental condition of the Lot, previous uses, prior owners, buried tanks and/or structures, assessment and/or remediation activities, penalties and/or violations, deed restrictions, or the like. Landowner also agrees to execute any and all other necessary documents, consents, releases, etc., required to permit the Study Team to perform its obligations under this Agreement.

***Representations/Warranties***

The Study Team shall perform the work contemplated by this Agreement in conformance with generally accepted standards of good practice, and with all applicable State and federal laws and regulations governing the performance of such work. EXCEPT FOR THE FOREGOING COVENANTS, THE STUDY TEAM MAKES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, AS TO ANY MATTERS COVERED BY THIS AGREEMENT.

***Consent To Full Disclosure/Dissemination Of Information***

The parties agree and acknowledge that as a result of entering into and performing this Agreement, the Study Team will obtain and/or produce information concerning the Lot and/or the environmental condition of the same considered confidential to the Landowner. Accordingly, the Landowner agrees that, during the term of this Agreement and thereafter, the Study Team shall be permitted to use, disclose, reproduce, publish, disseminate, distribute, and/or report such confidential information for any purpose related to this Agreement and to the extent necessary for the Study Team to comply with any Federal, State and/or local law, statute, regulation, ordinance or the like, or if required to do so under law or in a judicial or other governmental investigation or proceeding, without the prior written approval of the Landowner.

***Term of Use/Renewal/Termination***

This Agreement shall commence upon the Landowner's execution of this Agreement, and shall continue for a period of one year. The Agreement shall renew automatically for successive one-year periods unless either party, upon not less than thirty (30) days prior written notice, advises the other of its intention not to renew.

Either party may terminate this Agreement for any reason or no reason upon ten (10) days prior written notice to the other. In the event of termination, the Study Team shall be permitted to retain all documentation and/or information pertaining to the Lot and continue use of the same pursuant to the terms and conditions of this Agreement.

***Future Right To Enter***

Landowner agrees not to unreasonably withhold from the Study Team a future license for the use of and/or a right of entry to the Lot, for the sole purposes of performing environmental surveys, real estate market analysis, transportation improvement evaluations, and other detailed studies of the same. The terms and conditions of such use and/or right of entry shall be determined and/or memorialized in a subsequent agreement to be executed by the parties.

***Independent Status/No Agency***

Neither party nor any of their respective members, employees or independent contractors is authorized or empowered to act as agent for the other for any purpose and shall not on behalf of the other enter into any contract, warranty, statement or representation as to any matter. Neither shall be bound by the acts or conduct of the other.

***No Assignment***

The Study Team shall not voluntarily, involuntarily or by operation of any laws sell, convey, mortgage, assign, sublicense or otherwise transfer or encumber all or any part of the premises licensed hereunder or any right granted hereunder without Landowner's prior written consent, and any attempt to do so without this consent shall be null and void.

***Choice of Law/Venue/Jurisdiction***

The parties agree that this Agreement, including its validity, interpretation and enforcement shall be governed by the laws of New Jersey, without regard to its choice of law principles. Any dispute arising out of this Agreement shall be resolved in the appropriate division of the Superior Court of New Jersey, venued in Essex County.

***No Third Party Beneficiary***

This Agreement gives no right or benefit to any party except the Study Team and the Landowner.

***Entire Agreement***

This Agreement constitutes the entire understanding between the parties regarding this matter and merges all prior discussions. There are no representations, warranties or promises not expressly set forth in this Agreement.

AGREED TO AND ACCEPTED BY:

**LANDOWNER:**

By: _____

**NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY:**

By: _____

**NEW JERSEY INSTITUTE OF TECHNOLOGY**

By: _____

]

# Appendix D: NJDEP Brownfields Policies

**NJ DEPT. OF ENVIRONMENTAL PROTECTIONIMMEDIATE RELEASE**
**11/25/02**

**Contact:** Fred Mumford
(609) 984-1795

***Adds Incentives to Redevelopment Efforts, Areawide Pilot Projects Planned in Three Cities***

(02/127) TRENTON — New Jersey Department of Environmental Protection (DEP) Commissioner Bradley Campbell today announced a new brownfield policy to bolster redevelopment of contaminated sites in New Jersey, accelerating the process and making it more efficient and predictable. DEP also announced the creation of a new Office of Brownfield Reuse that will implement and serve as the focal point for the department's new brownfield programs..

"A strong brownfield reuse program is a vital component of Governor McGreevey's smart growth efforts to stem the tide of sprawl, channel new development to cities and towns and create a broader range of choices and more livable communities for businesses and families in New Jersey," said Campbell. "New Jersey is plagued with thousands of sites that are or may be contaminated and serve as a drain on the economy and quality of life in our urban centers. Our new brownfield programs will help better coordinate and accelerate the work of state, municipal, business and community partners who want to clean up and return of these properties to productive use."

DEP's new brownfield policy is focused on reducing uncertainties and inefficiencies in existing site remediation regulations, broadening the scope of potential re-uses for brownfield sites and working with communities to support areawide planning and redevelopment in cities that have multiple brownfield sites.

DEP has selected the cities of Trenton, Elizabeth and Camden to pilot this comprehensive approach to revitalize entire neighborhoods through partnerships among local communities, local and state officials and private parties. The initial pilot projects will focus on Trenton's Monument neighborhood, Camden's Cramer Hill and North Camden neighborhoods and Elizabeth's E-port neighborhood.

"Partnering with DEP under its new areawide program will bring much needed housing, commercial and open space development to Trenton's Monument neighborhood," said Trenton Mayor Douglas Palmer. "The new Marriott at Lafayette Yard is a prime example of a brownfield success for our city."

The following are additional reforms and programs included in the DEP brownfield policy:

**Liability Reform**: DEP will not assert liability for damages or compensatory restoration against non-liable brownfield developers at sites at which there is historical natural resource injury.

**No Further Action Letters**: DEP will issue No Further Action (NFA) letters for soils when soil cleanup at a brownfield property is complete, but groundwater contamination may remain. DEP will also issue NFA letters for groundwater when a Classification Exception Area has been established for a brownfield site and natural attenuation has been approved as the appropriate remedial action.

**Letting Developers Get to Closing**: DEP will permit non-liable brownfield developers to per-

form, as necessary, a well survey and potable well sampling and analysis and determine groundwater flow direction, promptly after purchasing a brownfield property, rather than requiring such developers to perform these activities prior to purchase.

**Expanded Use of Market Tools**: DEP will encourage the use of financial and market instruments to help manage financial uncertainties associated with complex and long-term cleanups while providing community assurance that cleanup requirements will be met. These mechanisms include allowing brownfield developers of single sites in areas affected by ubiquitous groundwater contamination to resolve their groundwater liability through establishment of a groundwater trust for DEP to use for future and comprehensive groundwater remediation efforts; ensuring the reliability of institutional and engineering controls; and, where appropriate, reducing the burden on the regulated community of maintaining these controls.

**"Cleanup Star" Program**: DEP will develop this program, which will reform the role of environmental consultants by allowing developers and responsible parties to contract with consultant professionals pre-qualified by DEP. These pre-qualified consultants will work under the direction of the DEP and will help expedite remedial analysis, evaluation, and decisions. DEP will public notice the selection criteria and expected qualifications for consultant participants. DEP will also develop appropriate auditing requirements and other safeguards to ensure that public health and environmental standards are rigorously enforced, and that pre-qualified professionals who perform inadequate work are removed promptly from the pre-qualified list.

**Technical Review Panels**: DEP will establish a technical review panel comprising senior DEP technical staff who will expedite final cleanup decisions where remedial action has been delayed or potentially may be delayed by disagreements between brownfield developers (or other responsible parties) and DEP case managers on the best approach to meeting standards and technical requirements to protect public health and the environment.

**Brownfields to Greenfields**: DEP's Brownfield Reuse Office will work with the Green Acres Program, the Division of Fish and Wildlife, municipal officials, and community and environmental leaders to identify opportunities to pilot new potential reuses of brownfield sites. This effort shall focus particularly on identifying brownfield sites that may be used for residential development projects, for local and regional parks, for recreation areas, including off-road vehicle use areas, and for natural resource restoration. Where bona fide conservation groups have an interest in stewardship at sites being restored for these purposes, DEP shall develop appropriate prospective purchaser agreements to address potential liability arising from ownership. The Office of Brownfield Reuse shall identify at least two "brownfield to greenfield" pilots over the next twelve (12) months.

**Zero Tolerance for "Warehousing"**: Where industrial owners of contaminated brownfield sites have chosen to "warehouse" the brownfield properties by leaving them abandoned and avoiding or delaying remediation, DEP will assist impacted communities to ensure that a beneficial reuse occurs. Where appropriate, DEP will use its enforcement authorities to require remediation. Where a municipality acquires a warehoused property through condemnation, DEP will partner with the municipality by allowing the local government to take the lead in cleaning up the site, by providing appropriate assurances concerning the scope of liability, and by ensuring that responsible parties pay for the cost of remediation.

Commissioner Campbell made the announcement today at the Marriott at Lafayette Yard Hotel and Conference Center, a brownfield project selected for a national 2002 Phoenix Award recognizing excellence in community redevelopment at a brownfield site. Joining Commissioner Campbell at today's event were city of Trenton Mayor Douglas Palmer, city of Elizabeth Mayor Chris Bollwage, Department of Community Affairs Commissioner Susan Bass-Levin and several leaders of New Jersey's business and development, environmental and local communities.

**New Jersey Department of Environmental Protection**

**Policy Directive 2002-2003**

**Acceleration of Brownfield Cleanup and Reuse**

New Jersey is plagued by more than 12,000 properties that are or may be contaminated by hazardous substances. These brownfield sites are unhappy legacies of New Jersey's industrial history and poor waste management practices in the past, but many of these sites can be transformed into centerpieces of economic and community renewal. These properties must be remediated and reused to fulfill Governor James E. McGreevey's goals to control sprawl, promote redevelopment, and reform dated regulatory practices. In Executive Order No. 38 (Oct. 22, 2002), Governor McGreevey focused the Department of Environmental Protection (DEP) and other agencies on redevelopment of idle sites in already developed areas. This focus is central to the Governor's objectives of promoting smart growth and creating a broader range of choices and more livable communities for businesses and families in New Jersey.

While New Jersey's brownfield programs to date have made progress in accelerating the cleanup and redevelopment of those brownfield sites most suited to redevelopment, DEP's programs require further reform and improvement to address those sites where the technical, practical, and environmental challenges are more complex. Sites have languished, and communities have been blighted, due to the failure to work effectively with the business community and municipalities and to undertake reforms that will accelerate public health protection and economic renewal that come with returning these idle sites to productive use. The assumption that brownfield sites should be used only for commercial or residential redevelopment has limited potential use of these sites for residential, recreational, open space, and other uses. In some cases, the absence of adequate enforcement and safeguards has allowed responsible site owners to "warehouse" sites - to defer needed cleanup by choosing to keep the sites idle rather than having responsible parties own up to their cleanup obligations.

This directive identifies and directs, pursuant to Executive Order No. 38, implementation of the policy and program changes needed to reduce regulatory uncertainty, to reconcile business and regulatory decision time frames, to expand potential reuses of brownfield sites, and to ensure that owners responsible for contamination no longer have the option of leaving their sites idle rather than meet their cleanup obligations. Each of these changes will be undertaken in consultation with DEP's partners in brownfield redevelopment: the Office of Smart Growth and other offices of the Department of Community Affairs; the Economic Development Administration and other offices of the Department of Commerce, the State Planning Commission, the Brownfields Taskforce, municipalities, and interested constituencies.

**Definitions**

The term "brownfield" refers to abandoned, idled, or underutilized industrial or commercial sites where expansion, redevelopment or reuse is complicated by actual or perceived environmental contamination. Brownfield sites may also include sites that were once heavily contaminated and where cleanup has been completed but redevelopment has not been initiated.
The term "smart growth area" means the State's urban, suburban and rural population centers, the revitalization of which is essential to the prevention of sprawl and the degradation of natural and agricultural resources and environmental quality. Smart growth areas shall be identified in coordination with the Office of Smart Growth in the Department of Community Affairs, the Economic Development Administration in the Department of Commerce, the State Planning Commission, municipalities, and interested constituencies.

**Policy**

The Department shall implement the following measures prospectively to encourage the remediation and reuse of brownfield sites, particularly in smart growth areas:

***Reducing Regulatory Uncertainty***

**1. Office of Brownfield Reuse:** The Department shall establish, within the Site Remediation Program, an Office of Brownfield Reuse. This Office shall serve as the focal point for the Department's brownfield programs, and shall be charged with informing the public and those interested in brownfield reuse about these programs. Furthermore, this Office shall develop and implement new policies and programs to encourage brownfield remediation and reuse, shall set priorities among brownfield sites that may be appropriate for accelerated cleanup and redevelopment and shall directly oversee the remediation of high priority brownfield projects identified by the Department.

**2. Liability Reform:** The Department shall not assert liability for damages or compensatory restoration against non-liable brownfield developers at sites at which there is historical natural resource injury. This policy shall not diminish responsibility for restoration actions that are inherent in remedial activity.

**3. No Further Action Letters:** The Department shall issue No Further Action Letters for soils when remediation of soils at a brownfield property is complete, but groundwater contamination may remain. The Department shall also issue No Further Action Letters for groundwater when a Classification Exception Area has been established for a brownfield site and natural attenuation has been approved as the appropriate remedial action.

**4. Letting Developers Get to Closing:** The Department shall permit non-liable brownfield developers to perform, as necessary, a well survey, potable well sampling and analysis, and a determination of groundwater flow direction, promptly after purchasing a brownfield property, rather than requiring such developers to perform these activities prior to purchase. The procedures of current and proposed technical regulations and manuals shall conform to this policy.

***Aligning Regulatory and Redevelopment Objectives and Timetables***

**5. Areawide Brownfield Reuse Program:** The Department shall establish an areawide brownfield development program that will enable communities to plan comprehensively for the remediation and reuse of multiple brownfield sites. The Department will assist these communities through coordinated remediation oversight of the brownfield properties and assist with coordination of relevant programs both within the Department and within other federal and state agencies. The first sites selected for this program shall be in Camden, Elizabeth, and Trenton, with further sites to be selected through application to the Department. This program shall complement other applicable brownfield programs and incentives.

**6. Expanded Use of Market Tools:** The Department shall encourage the use of financial and market instruments to help manage and allocate financial risks associated with the uncertainties of complex and long-term cleanups while providing communities with greater assurance that cleanup requirements will be met. These may include the use of sureties, insurance products, and trust fund mechanisms to: a) manage or reduce risks of uncertainty concerning potential costs of future remedial decisions; b) allow brown-

field developers of single sites in areas affected by ubiquitous groundwater contamination to resolve their groundwater liability through establishment of a groundwater trust for DEP to use for future and comprehensive groundwater remediation efforts; c) ensure the reliability of institutional and engineering controls and, where appropriate, to reduce the burden on the regulated community of maintaining these controls; and d) otherwise provide greater certainty to potential developers and greater assurance to communities that cleanup needs will be met.

**7. "Cleanup Star" Program:** The Department shall develop a "Cleanup Star "program to reform the role of environmental consultants and to accelerate brownfield site redevelopment. This program shall include the following elements:

a. Following reasonable public notice of selection criteria and expected qualifications, DEP will establish a list of pre-qualified consultant professionals sufficiently qualified to oversee remedial work with minimal oversight.

b. For developers and responsible parties willing to select and fund the use of consultant professionals from the pre-qualified list and provide by contract with the consultant that the consultant will act at the direction of DEP, DEP will make use of the consultant to expedite remedial analysis, evaluation, and decisions.

c. DEP will make this option available initially at sites presenting relatively low or moderate risk and less complex cleanup challenges.

d. DEP shall develop appropriate auditing requirements and other safeguards to ensure that public health and environmental standards are rigorously enforced, and that pre-qualified professionals who perform inadequate work are removed from the list promptly.

e. DEP shall convene an advisory group of interested constituencies and appropriate representatives of interested labor organizations to oversee and guide implementation of this initiative.

f. The DEP labor-management committee shall audit the program annually to ensure that it is not used to reduce or divert the internal staffing and resources devoted to site remediation.

**8. Technical Review Panel:** The Department shall establish a technical review panel, comprised of senior DEP technical staff, to expedite final cleanup decisions where remedial action has been delayed or potentially may be delayed by disagreements between brownfield developers (or other responsible parties) and DEP case managers on the best approach to meeting standards and technical requirements to protect public health and the environment.

***Expanding Potential Reuses of Brownfield Sites***

**9. Brownfields to Greenfields:** The DEP Office of Brownfield Reuse shall coordinate with the Green Acres Program, the Division of Fish and Wildlife, municipal officials, and community and environmental leaders to identify opportunities to pilot new potential reuses of brownfield sites. This effort shall focus particularly on identifying brownfield sites that may be used for residential development projects, for local and regional parks, for recreation areas, for off-road vehicle use areas, and for natural resource restoration. Where bona fide conservation groups have an interest in stewardship at sites being restored for these purposes, DEP shall develop appropriate prospec-

tive purchaser agreements to address potential liability arising from ownership. The Office of Brownfield Reuse shall identify at least two "brownfield to greenfield" pilots over the next twelve (12) months.

***Promoting Cleanup and Re-use of "Warehoused" Sites***

**10. Zero Tolerance for "Warehousing":** Where industrial owners of contaminated brownfield sites have chosen to "warehouse" the properties by leaving them abandoned and avoiding or delaying remediation, the Department shall assist impacted communities to ensure that a beneficial reuse occurs. Where appropriate, the Department shall utilize its enforcement authorities to require remediation. Where a municipality determines to acquire a warehoused property through condemnation, the Department shall, in appropriate circumstances, partner with the municipality a) by allowing the municipality to assume a lead role in implementing remedial action, b) by providing appropriate assurances concerning the scope of liability, and c) by ensuring that responsible parties pay for the cost of remediation.

The Assistant Commissioner for site remediation shall report to the Commissioner on progress and achievements in implementing this directive on or before January 1, 2004.
This directive is a statement of policy intended for the fair and efficient administration of the Department of Environmental Protection and shall not be construed to create any legal or equitable rights or to provide the basis for any judicial or administrative remedy.

Date: November 25, 2002

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Bradley M. Campbell
Commissioner
Department of Environmental Protection

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Office of freight Management: www.ops.fhwa.gov/freight
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State Senator Betty Karnette (Long Beach, CA).
democrats.sen.ca.gov/senator/karnette/
US EPA Brownfields: www.epa.gov/brownfields

# Appendix F: Brownfields Financing

**Prepared by Peter Zimmermann,**

**Consultant to the BER Project**

It is no secret that Brownfields redevelopment poses challenging finance issues. Freight-related Brownfield projects add another challenge, which is their need to generally follow the market demands of the industry as opposed to being able to generate demand for their services on their own. From the environmental perspective, even the perceived (as opposed to substantiated) environmental risks or other impairments present significant barriers such as limiting the marketability of the property and the number of appropriate buyers, blunt an effective community planning process, and increase the chances of transactional failure.

Still, the overall finding is that the general market strengths of the geographic study area clearly favor freight-related Brownfields. That being said, it needs to be noted that financing is forced to deal with the site-specific factors pertinent to the location and immediate surroundings. It is at this scale that the many concerns affecting successful financing arise. The list of these concerns is long, but a few examples demonstrate the real potential for intractable equity and debt lender issues with respect to financial risk identification, quantification, and management. Major uncertainties can exist with respect to:

- The extent of contamination
- Environmental agency remediation termination criteria (e.g., requirements For No Further Action)
- Timing and length of remediation
- Remedy success and cost/timing of cure
- Remedy cost variance (e.g., estimated 65% of remedies go 10% or more over budget)
- Long-term and (potentially indeterminate) environmental risk exposure
- Incomplete Disclosure Risk
- Buyer/Seller Liability Transfer Failure
- Business Interruption Risk (rental loss/income loss)
- Buyer/Seller Remediation Control Risks (e.g., seller may have incentive to do less stringent remediation)

In addition, Brownfield projects often requires multiple layers of equity and/or debt financing, with all the commensurate lender take out, facility divestiture, equity partner contact(s) and other risk transfer structures. Another complexity can arise from the need for a combination of public as well as private funding to make a freight-related Brownfield project feasible, in part because the larger projects can benefit so much from transportation infrastructure improvements. In summary, from a real estate finance perspective, these and other issues make Brownfields financing more complex that that for competing assets with lesser impairments.

This has resulted in a situation where the most financially viable Brownfield projects have a reasonable chance of success due to an atypically favorable confluence of real estate transaction factors. Those properties that do not meet this profile have often languished or gone through a series of failed transactions, some lying fallow to this day. Significant work has been done to address this situation of the last few years in New Jersey, but more work and resources need to be brought to the task to move Brownfield projects.

The study took into account this real estate finance setting both in terms of general/regional aspects and site-specific analyses. The general finding was that the significant demand for appropriately located industrial space within the study area helped diminish a portion of the competitive disadvantage of Brownfield property. In addition, the properties location in the New Jersey/New York City metropolitan area means that some of the best financial and risk management expertise is available to assist Brownfield projects. This is not incidental, as historically; the successful solutions to the above-mentioned complexities of these projects are often tied to remedies provided by specific individuals or companies involved in a project.

Vital public funding and tax abatements/incentives are being put into place, and risk management instruments to address equity and debt providers' concerns are available, even in the current insurance environment. Also, new methods are being developed to solve long-standing problems associated with complex environmental liability structures (e.g., Superfund PRP groups) and assuring coverage of timing and cost risks associated with long-term operation, maintenance and monitoring (OM&M) for affected Brownfield properties.

Certain findings were discerned as priorities for additional discussion and subsequent action. The priorities were based on the potential for work in these financially related areas to significantly impact the success of freight-related Brownfield redevelopment. Conversely, failure to make progress in addressing these designated areas could adversely affect the potential for success of future projects and implementation of the related state planning objectives. Discussion of these areas is provided below.

**Financial Incentives in Current Brownfields Law**

Current laws with tax rebates favor retail development versus freight, as the tax savings are derived primarily from sales taxes. This has historically been very helpful for retail-related Brownfield projects, although not typically enough in and of itself to override the other basic underlying risks inherent in Brownfield work.

New legislation intended to assist industrial Brownfield redevelopment has been proposed and will offer tax abatement mechanisms that should ameliorate some of the costs and risks associated with freight-related Brownfields. In addition, the tax benefits stemming from developing mixed-use properties that include freight operations in these projects should also be considered. Discussion of the many additional benefits related to mixed –uses are provided in subsequent sections.

**Environmental Insurance Should be Evaluated as Risk Management Tool**

Environmental insurance, when integrated into the real estate financing of a project, can be an essential factor in the success of the effort. It should be noted that every insurance package is project-specific, and that parties to the transaction should be prepared to invest the appropriate amount of time in the planning, negotiation and binding phases of the insurance-related work.

Another general guideline is to begin the insurance planning effort even during the site selection or feasibility study portion of a real estate deal. The reason for this is that problems and their solutions can be identified early on in the process, often in a preemptive mode. This can save considerable time and money, which are both critical in such projects.

Also, since quality insurance brokers have access to considerable databases of past projects, they are able to offer valuable advice in the planning phase, including recommendation for investment partners that work in the Brownfields area, sources of debt capital, and specialty environmental consulting or legal assistance.

Finally, it will important to identify early on if the particular Brownfields project is a candidate for insurance or not, and what alternatives are available in the financing aspects of the project. For example, remediation cost cap policies may only be feasible if remediation costs exceed certain amounts, or available only under restrictive terms if the estimated costs are insufficient are the duration of the remediation is too short.

Solutions to this problem are often similar to those needed to address freight-related Brownfield issues of scale. Specifically, efforts to aggregate parcels to address the space needs of a freight-related property use can also be integrated into the insurance package to spread risk, increase the target coverage and buffer amounts, and obtain the best possible terms from underwriters. This may also significantly assist the overall project financing effort and increase the chances of success.

There are a multitude of insurance products that address in some cases the impact of environmental risks on the seller, the debt lender, the equity players, the developer, tenants, the ultimate owner(s) and third parties (e.g., communities). A detailed coverage of the means and methods of implementing environmental insurance products is well beyond the scope of the study. In addition, even the basic policy types may have specific exclusions that differ from the general descriptions provided here, because, as stated above, each product mix is specific to a particular projects needs and constraints.

Finally, it is important to note that the underwriting process will be significantly affected by the sufficiency of the environmental data and accuracy analysis for the subject property(ies). All underwriters will refer to decision tree analysis methods and probabilistic risk models to derive their negotiation conditions.

The stringency of the terms for the coverage will be directly related to the degree of uncertainty in the data and the characteristics of the areas of environmental concern. The study found that the use of real-time environmental data acquisition using quantitative field-analytical methods, can significantly decrease these uncertainties. When this approach is integrated with a dynamic interactive remedy and financial sensitivity analysis a marked positive impact on the eventual underwriting and financial viability, terms and schedule for deal closing can be realized.

The basic insurance products include:

- Remediation Cost Cap or Stop Loss (covers remediation cost overruns, including remediation of previously unknown off-site conditions),
- Pollution Legal Liability (flexible coverage including residual or legacy liabilities, 3rd party bodily injury, property damage and remediation costs),
- Contractor Pollution Liability (coverage of completed activities of the contractor for 3rd party claims, remediation costs, and legal defense costs), and
- Secured Creditor Insurance (coverage to pay loan balance or lesser of loan balance and remediation –triggered by default and environmental condition, 3rd part bodily injury property damage and claims, and 1st party claims for remediation costs if insured has foreclosed on the property).

Again, there are many variations of these policies that can cover other risks such as non-owned disposal sites, etc. and qualified brokers or underwriters should be consulted.

Coverages can be blended in many ways for most development needs. Finite programs offer a chance to eliminate escrow conditions for a Brownfield property and accommodate certain development schedule requirements. Under a finite program, the cost of the premium, buffer and estimated cleanup cost can be paid in advance to the insurance company. The funds then earn interest under a variety of investment arrangements at the same time that costs for remediation or

other development activities are submitted as claims to the policy and contractors reimbursed on a pre-determined set of conditions.

Cost savings realized at negotiated project completion milestones can be shared by parties to the policy and/or provided as incentive payments to the contractor for early completion inline with calculated financial advantages to the developer. These programs can be very sophisticated and require extensive effort to design and bind. However, they offer a powerful solution to many financial barriers to successful Brownfields projects.

As noted above, there can be limits to the effectiveness of insurance. These can only be addressed by development and or finance activities. Such activities are necessary on occasion to raise the level of the financial commitment to levels that allow entry into the insurance markets. These would include the pooling of risks and aggregating separately owned parcels, as briefly discussed in subsequent sections.

However, it is quite possible to use various financial methods to mitigate potential development barriers created by the need to utilize these and other techniques. Ultimately, the advantage that environmental insurance can bring to the freight-related Brownfields marketplace is significant, and means to continue its integration into relevant financing methods and the regional planning and implementation effort should be further explored.

**Reassessment of Environmental Remediation Scope and Costs and Financing Solutions**

Many candidate properties for freight-related Brownfield redevelopment have ongoing or completed environmental assessment or remedial planning activities. The study found that, in many cases, more precise or thorough determination of likely remediation activities might be needed under a Brownfields development scenario than that previously done in the absence of an anticipated property improvement and freight–related/mixed use.

In other words, the future use and financing mechanisms may be significantly influenced by the methods and considerations used to appropriately address a property's environmental risks.

For example, in the absence of a future use, residential soil cleanup criteria may have been applied. This could easily increase remediation costs to the point where a real estate asset already impaired by other value diminution factors could have the remediation cost greater the present or future value.

However, in the presence of a freight-related (i.e., industrial) use, where large amounts of paved areas are desirable and actually increase the property's value, then less stringent non-residential criteria could apply, and the property improvements provide acceptable engineering controls to mitigate the environmental risks.

Therefore, in the event that a property is being evaluated in a Brownfields context, existing remediation plans may need to be reassessed and refined with respect to the development plan and the planning-level pro forma financial analyses, as well as the other available risk management tools such as insurance options. In addition, another phase of investigation using the above-mentioned methods and analyses should be considered in order to gain the best financial and risk management terms possible.

**Financing analysis should be incorporated into the earliest stages of the Brownfields development planning process**

Redevelopment often requires more equity in the debt/equity arrangement than purchases and improvement of land with existing structures and uses. Because equity financing and payback terms are often sensitive to unanticipated changes in any of a number of development factors, equity funding has its own unique constraints and risks. This automatically makes any land or property development riskier relative to potentially competing properties without such require-

ments. When the possibility of contaminated land and environmental risk management requirements are added to this situation it only increases these risks on equity. In any case, the parties providing the debt side of the financing equation will have in many cases very well defined risk management data objectives that must be addressed for a Brownfield property transaction.

Therefore, it is imperative that financial planning be incorporated into Brownfield Redevelopment at its earliest stages. It is far better to learn that the "numbers just won't work" at the early stage, and begin to access the many tools and alternative solutions to resolve the situation, as timing risk remains one of the more significant development risks requiring management, and if not addressed in the earliest planning stage can lead to failure of the deal.

For example, the assessment of the maximum price that should be paid for a Brownfield property intended for future freight-related use can be significantly affected by:

- The estimated short-term remediation cost;
- The estimated schedule for remedy completion/effectiveness;
- The schedule for the related long-term remediation cost; and/or
- Estimates of short-term or long-term site disruption associated with remediation.

Each of these information categories typically has associated uncertainty; therefore, ranges of costs and schedules are used to quantify them.

The results of the study indicated that financial analysis and supplemental sensitivity analysis of those results should be used to assess the financial liabilities associated with the above-mentioned remediation scenarios. The results of these analyses should be assessed with respect to the proposed pricing and terms of the Brownfield transaction.

Example financial analyses include:

- Pro forma statements of cash flows for the remediation/construction portion of the project and the operating period of the development;
- Assessments of profitability before and after taxes of the projected life of the investment, including the effect of property transfer to sponsors with lesser risk tolerance;
- Required rates of return, and
- Depreciation and amortization schedules for applicable project costs.

The target maximum price of the land can then be assessed with respect to the results of the foregoing effort to determine its viability, and/or pricing issues.

In order to address the additional uncertainties that are often associated with Brownfield land development, the results of the pricing analyses can be assessed for its sensitivity with respect to variations in key industry-specific risk factors such as price per square foot rentable space. Conversely, the ultimate value of the project can be compared against variations in land price to assess opportunities to maximize value and/or identify areas of flexibility to help address environmental or other impairments to the project success.

The conclusion of the analysis may be that the project is not financially viable, or only marginal, under the currently projected remediation and site disposition plan. In this case, the results of should be fed back into the estimated remediation cost and schedule scenarios analyses to identify opportunities to achieve viability. For example, different remedial technologies may be assessed, mixes of passive and active technologies can be considered, or site use planning, grading or infrastructure can be revised.

It is important to note that early knowledge of the financial impacts of the preliminary financial plan will increase the value of the remedial planning effort. Using this information, subsequent

remedial planning efforts can make a significant contribution to the transactional negotiations and increase the potential for project success.

Similarly, this interactive process will be able to identify if remedial planning alterations cannot by themselves address the project needs, and that at this point financial risk management tools or other business solutions (e.g., property aggregation) may need to be considered to address the viability issues.

**Integrate Financial Planning into the Community Planning Effort**

As noted in several preceding sections, local rules and reaction to freight-related development can create barriers that can push redevelopment. However, this can be addressed in a classic win-win manner if mixed uses are considered in the community planning effort. Mixed uses can also provide the setting for addressing passive long-term OM&M needs related to ground water cures or other protective measures that can be integrated into the development.

Under this scenario, benefits of state programs could then be gained from both the tax portion of the transaction, as well as from the decrease in overall risk from blending of uses, increase of income generation, increased underlying land and property value growth, increased lender and equity base, and long-term upside in divestiture and securitization options. Not incidentally, it can also address important community-planning concerns that can follow proposals for freight operations, especially on Brownfield properties. Since these matters can have a profound effect on the financial viability of project, the implications of alternative use scenarios must be considered. At the same time, potential "deal killers" (such as overly conservative remediation end-points inconsistent with intended site use) offering minimal to no additional cost/benefit should be avoided.

**Consider Pooling and Assembling of Brownfield Properties to Solve Remediation Scale Issues**

As noted in previous sections, one major factor affecting viability is land area and its environmental character. The study found that issues concerning this factor for Brownfield properties can potentially be addressed via the same principals used in assembling traditional real estate investment trusts, loan facilities, or bond packages. That is, properties assigned a higher risk due to environmental or other impairments blended are into a pool containing lower risk assets.

In addition, many Brownfield sites by themselves can be too small to support ideal freight-related and/or warehousing use or, for example insufficient congestion-reduction benefits. Assemblages of properties can also address this need, at the same time lowering the incremental risk of an impaired asset. As noted in the community planning section, this approach can also be used to create mixed-use developments addressing profitability, cash flow goals of the investment, as well as community interest and quality of life objectives. That is, the risk of contaminated land is mitigated not only by the pooling with lesser risks but by the sometimes significantly greater value of those portions of the portfolio assigned to non-industrial uses. This type of approach then also creates the potential opportunity to add greater open space provisions, natural area improvements or extensions, and other quality of life amendments. Future work should explore Federal, State and local mechanisms and partnerships to assist such efforts, including land-banking programs.

**Consider tiered financial risk management in the financial planning**

The study also found that the assessment of the environmental remedy and cost estimates can be combined with a financial program that integrates a schedule for phases of risk reduction associated with phases of remediation completion and future site disposition strategies. As the properties risks are reduced by completion of phases of remediation or other improvements, they become more valuable and have greater flexibility with respect to equity/debt terms and types of

participating entities. It was observed that site owners can often look no further than the sale or lease of their Brownfield property, and in doing so, can often:

- Fail to complete a transaction;
- Fail to realize their investment goals;
- Significantly delay transaction completion;
- Fail to complete successfully against other properties; and
- Create an incentive for undesirable site use (e.g., inappropriately located container storage)

However, if this and other financial risk management approaches are is considered in the planning phase, then the potential to overcome the first phase activities, and highest risk/return barrier, can be significantly increased. That is, the certainty of having a number of participants predetermined across multiple phases of the anticipated project life increases the likelihood of total project success.

This can be ideal for single or multiple environmentally impaired assets. Many transactions have failed or come close to failure due to failure to consider all the options to get the money or term the seller needed. Significant owner advantages could be realized by use the traditional approach of accessing certain types of risk capital at certain times, then using a portion of the money to reduce risk, and make the development available to the next tier of equity players and debt providers.

The approach can also incorporate another development approach where options to liquidate holdings at pre-determined schedules are included, or sale-leaseback and securitization through the cash flow stream of the lease is added to address the needs of equity or debt partners.

As noted, this approach can be set up in advance in the planning process and analyzed in the pro formas, integrated with the environmental work, and other risk management activities. Future work should investigate how to get the knowledge of such approaches and to public and private participants in the freight-related Brownfield redevelopment effort, and customize it to the special needs of the marketplace and participants.

**Support Development and Implementation of Funding and Insurance for OM&M "long tail" remediation risks**

The study indicated that the uncertainties associated with the long-term management of environmental risks from the State and Federal regulatory perspective can pose significant barriers to a Brownfield project's success. While the advent of risk-based corrective actions has facilitated the remediation efforts in the country, regulators still bear considerable risk in connection with the final determination of remediation finality.

For example, there is no clear definition of how clean is clean or when monitoring of remedies will be definitively ended. This situation is likely to continue for the foreseeable future. The ability of regulators to enforce remedies and monitoring programs over the long-term is also uncertain, given incentives to cut environmental regulatory staff and the remaining staff's need to focus on more active priority sites.. In addition, solutions to address potential failure of institutional controls such as deed restrictions are also not consistently defined. As a result, true finality is absent from the majority of all but the most conservative environmental remedial solutions.

These conservative solutions are inevitably more expensive in terms of remediation and project financing. This leads to only the most ideally positioned Brownfields being developed, or significant delays in less than ideal locations. This can leave a substantial number of sites with low probabilities for eventual redevelopment.

Insurance programs exist that can address to a certain degree the private party risks concerning

the above. However, the observation was made that there are few if any vehicles that can consistently provide risk protection concerning this aspect of the public/private arena.

Conceptual test models for financial trust fund-based solutions have been proposed and tested in several states that seek to address this problem (e.g. the Guardian Trust ™). The study indicated that additional effort should be made to assess such vehicles, track their pending implementation in other states, and focus on ways to assist their implementation in freight-related Brownfield redevelopment. The possibility of instituting such trusts for a targeted portfolio of sites located in portions of the study area identified as having critical transportation needs might also be considered.

**There is a Significant Need to Provide access to expertise and experience to Municipal and Other Parties**

In all cases, public/private centers of excellence where the skills and resources would exist to assist parties in Brownfield transactions should be established such that these possible approaches can be used to the benefit of the region. Integration with existing state and federal organizations will be critical to the success of such efforts.

# Appendix G: Project Evaluation

**PREPARING MODERN INTERMODAL FREIGHT INFRASTRUCTURE SUPPORT**
Brownfield Economic Development Project

**Phase II Project Evaluation Report**

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**Prepared by:**

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GeoTrans, Inc.

**JUNE 2002**

## PROJECT EVALUATION REPORT – PHASE II

GeoTrans, acting as the Independent Review member of the Study team, was tasked with providing an independent evaluation of the Study Team's Phase II efforts (the Study) during the course of the Preparing Modern Intermodal Freight Infrastructure Support - Brownfield Economic Development Project (Project) as required by the US Department of Transportation's—Transportation and Community and System Preservation Pilot Program.

This evaluation report assesses the degree to which the Study goals developed at the beginning of Phase II of the Project were achieved. As part of this project evaluation process, GeoTrans has performed several tasks that included development of performance outcomes or goals to define what the Study intended to accomplish and development of performance measurement procedures to evaluate the success of these outcomes and consequently the Project's success. The evaluation report is intended to provide feedback to the Study Team members, FHWA personnel and other interested parties on the success and effectiveness of achieving the project goals as well as identify areas of the Project that would benefit from an altered approach.

The project evaluation process developed a set of desired performance outcomes that were evaluated through the end of Phase II of the Project. The performance outcomes were developed through an interactive process involving the Independent Reviewer and the core Study Team (NJIT/NJTPA). The Team also recognized that aspects of this project were evolutionary in nature and could result in adjustments to desired project and/or site outcomes during implementation. This evaluation specifically address's those instances where significant project events necessitated adjustments to the desired outcomes or goal measurements.

### Evaluation of Performance Outcomes

To ease the reader's review of this report, the performance outcomes that were targeted as a measure of success at the beginning of the Phase II are outlined below and followed by the evaluation of the success in achieving the desired outcome. The successful degree of achievement of these outcomes or goals forms the basis for defining the success the Phase II.

For the initial task under this evaluation, GeoTrans prepared a technical memorandum identifying performance outcomes and evaluation procedures for the Project. To the extent possible, performance outcomes were expressed in quantifiable terms and definable end-points within the timeframe of the study. In addition there were other events which, while not falling conveniently into one of the listed performance outcomes, collectively had an influence on the success of this project. These events which are discussed in the management and methodology outcomes section, are recognized as being important to the success of the project and were evaluated for their cumulative affect on the project.

A. Increased Awareness and Acceptance of Freight Related Redevelopment Initiatives for Brownfields.

The projects first step was the goal of raising the awareness of utilizing Brownfields sites as part of a redevelopment strategy to support the intermodal freight growth expected in the next decade. The project team set about to notify stakeholders of the inception of this project and at the same time make municipal governments and state agencies aware of the program's intent to combine freight related development with the identification of potential Brownfields sites. Early in the process a Steering Committee was formed composed of key state partner agencies in order to over-

see this work and coordinate the project with other ongoing transportation related programs. The Steering Committee and larger advisory committee met on a scheduled basis.

Large venue stakeholder meetings were also scheduled during the course of this project to disseminate information and solicit input from local communities, commercial developers and business leaders involved in the transportation industry. These meetings were held at important project milestones, during Phase I and Phase II of this project. These stakeholder meetings were well attended and provided helpful interaction with the Study Team. Numerous smaller meetings were also held with individual entities of agencies. These stakeholder meetings were successful in that they achieved their goal of allowing the Study Team to present the project concepts and status to the group, as well as to solicit input on ongoing activities and/or coordinate with other entities. Attendance at these meetings varied as would be expected with such a group composed of predominately public employees with many other public obligations and commitments which have little scheduling flexibility.

In the Phase I broad-based outreach activities, nearly 500 notice letters were sent to counties and municipalities as well as host community leaders advising then of the initiation of the project and offering to provide supplemental information and come to their community to provide a presentation on the project. A brownfields survey was also provided to over 220 transportation related business. Many presentations were given to municipalities or development authorities as a direct result of the outreach activities. Other outreach activities included establishing a booth exhibit at the 2000 Transportation Convention in Atlantic City, New Jersey to announce the Project and hand out informational brochures.

To assist in the outreach activities, project newsletters were prepared and sent out to a wide distribution mailing list. These newsletters and project updates were also posted on the project web-site (www.NJTPA.org). The newsletter activities were concentrated in Phase I of the project when broad outreach and raising the awareness level was most critical. Outreach activities focused in on specific geographic areas and target sites as the number of potential Brownfield redevelopment sites was narrowed down to the six demonstration or model sites. After the model sites were selected, informational briefings with local community leaders, site owners and related governmental agencies such as the New Jersey Economic Development Authority, the Carteret Redevelopment Authority and the Elizabeth Development Authority were held.

Another example of a successful broadly focused public outreach activity was the workshop held at the end of Phase I activities. The workshop was well attended and provided a presentation of Phase I results and Phase II activities as well as providing an opportunity for Senator Lautenberg and Representative Menendez to increase public awareness of the study, explain the importance of the Port area growth and voice their support for the project.

Since specific sites were identified at the beginning of Phase II, the outreach focus shifted to individuals and effected stakeholders. The indication of the success this project had with increasing the awareness of using Brownfields for transportation development support was demonstrated by several individual site owners/developers who came forward and met with the Study Team. The Town of Carteret and Tony Russo provided Brownfield study sites that became part of this project.

The project was successful in raising the awareness of and support for freight related growth in the North Jersey area and the ability of Brownfield sites to provide growth support through their redevelopment. At the leadership level there was clear support for the need to plan for this transportation growth and coordinate with other projects such as the Portway project and the Comprehensive Port Improvement Program. At the municipal level, the Carteret Redevelopment Authority provides a good example of how community needs (what to do with a large underdeveloped/abandoned tracts of land) can be compatible with this type of redevelopment.

Clearly there were some comments from stakeholders that questioned using their Brownfields sites to support freight related transportation growth or adamant in their desires to have a different redevelopment approach. The Study Team anticipated that there would be a number of incidences were there was not wide spread support for this redevelopment strategy and in those cases no further site evaluation were undertaken.

B. Redevelopment Interest in Specific Case Study Sites.

An evaluation of the success of this project outcome is difficult due to the nature of how individual sites evolve from being identified as a Brownfield site, through the evaluation of potential redevelopment approaches, to the point were there is specific redevelopment interest and parties willing to consummate a redevelopment deal. There are a number of factors that go into the redevelopment equation. The nature of the redevelopment process is fluid and is greatly dependent on timing and economics at any given point in time.

Clearly from the feedback received from business leaders and developers, there is interest in each of the case study sites agreement with the concept in general. The level of interest varies between the study sites and ranges from nearly completed negotiations for redevelopment of the site through the expression of general interest contingent upon a number of factors falling into place to enable a study site to be advanced past the conceptual stage. For those study sites with a conceptual level of redevelopment interest, one of the most critical factors was the nature of transportation access. As an example, the Koppers Coke/Diamond Shamrock/Standard Chlorine site provides an attractive redevelopment opportunity however, specific interest is directly related to the transportation access challenges presented by this site's location. As the transportation solution progresses past the conceptual stage almost certainly the specific redevelopment interest in this site will rise accordingly.

Certainly one of the redevelopment challenges has been the economics of site redevelopment in general. Several stakeholders have commented that there is strong competition for higher income generating uses such as office/retail space and as well as from the other end of the spectrum, the net cost prospective of leasing un-redeveloped land for container storage use. This latter site use is attractive to some property owners due to the low cost associated with developing the site for container storage (usually just pavement and fencing) verses the income it generates. A mitigating factor in utilizing vacant Brownfield properties for container storage is the general unwillingness of some municipalities to allow this type of property usage.

At the conclusion of the Phase II portion of this project, the Carteret site, the Arsynco site the Reichold Chemical site and the Albert Steel Drum site have specific redevelopment interests. The Koppers site also has received expressions of interest from developers although the interest is more conceptual in nature since this site is not as far along in the redevelopment process. At the time this report was written the Albert Steel Drum site had achieved a preliminary sales agreement between the site owner and prospective site developer. The point in the property redevelopment process that some of these Sites have moved to at the completion of Phase II is a demonstration that brownfield redevelopment projects to provide infrastructure support are viable.

C. Estimates of Increased Job Opportunities Related to Individual Brownfield Site Redevelopment

This performance outcome is presented by the prospective workforce analysis contained within the Real Estate Market Package prepared for each project site. These forecasts are based upon the assumptions and third party data for the expected future use(s).The forecasts were supported by interviews with similar industry representatives. Although each of the real estate market studies has

a workforce analysis component, the level of specificity will vary depending upon the extent of each development plan.

Each real estate market assessment provides a workforce analysis and employment projections for the area. To the degree that proposed uses are determined, the number of jobs has been approximated. Where no final proposed use(s) was determined, no forecast of increased job opportunities was provided.

The Carteret Site for example, has a job creation analysis that predicts approximately 400 jobs will be created by the proposed development. The jobs include 240 for a warehouse/distribution center, 90 for a travel center and 45 to 60 for a new hotel/restaurant.

Phase II of this study was successful in defining the current economic climate and demonstrating workforce availability. The Study also achieved the goal of providing reasonable estimates of increased job opportunities by polling similar industry representatives and trade organizations when the proposed use was defined.

The degree to which that workforce analysis projections were determined for each site is a function of the extent to which the market assessment can be completed. Sites with a lack of consensus regarding end-use or where agency cooperation is not confirmed also hinders the projection of job opportunities.

D. Proposals to Improve Transportation Access to Brownfield Sites.

The performance measurement for this Study goal will be the degree of development of a freight related redevelopment approach that identifies land constraints, transportation access (both freight and workforce related) and potential transportation improvements for each site.

Transportation issues associated with each site were provided in the Study report in the form of text and a conceptual design drawing of transportation improvements. Highway access constraints as well as freight rail connectivity issues were also discussed for each site. The availability of transit service and passenger rail access for workforce transportation needs was also analyzed.

The Study was successful in developing a conceptual transportation approach for each site. It was valuable in calling attention to the critical transportation issues that will need to be addressed by the redeveloper. The Study provided a list of recommended transportation improvements for each site and summarized regional recommendations as they related to the brownfields redevelopment concept. At the end of the transportation section a Transportation Problem Statement is included which could form the basis for future plans for transportation improvements.

More detailed transportation improvement plans seem to be impractical at this stage of the redevelopment process since so many factors (some outside the control of the site owner/developer) affect specific redevelopment plans. It was unfortunate that the Koppers Coke site and it's potential for marine transportation access has not progressed further since it could provide an excellent maritime example for future practitioners. The site's redevelopment potential is high but currently encumbered by environmental and access uncertainty issues.

This Project can only serve to provide the catalyst for the initiation of transportation improvement planning and should not be considered the region's final design. The support and resource contributions of state agencies and other transportation stakeholders are critically important to the success of access improvements and accomplishing the project's ultimate goals.

D. Development of promotional materials related to individual site redevelopment or areas of redevelopment that are attractive to site developers and municipalities.

The Study's goal was to attract redevelopment interest from site developers and municipalities to the potential that the identified brownfield site held. Developing interest was inter-linked with the initial outreach activities discussed earlier. In the initial stages, the outreach was successful in raising the awareness of the Project and it's ability to support other Port growth related activities.

The intention of this Phase was to create specific site related information that would provide a report or 'prospectus' on how the property could be utilized for intermodal freight support while outlining the associated redevelopment issues. For each site, the performance outcome was measured by the development of materials that presented a conceptual or planned redevelopment approach.

Components of the Real Estate Marketing Package were intended to include local market analysis for freight redevelopment, local land use and zoning, property appraisal with and without warehouse redevelopment, a conceptual view of the redevelopment scheme, identification of financing options, list of possible developers. Also to be included were forecasts of job creation, tax revenues from the reuse and income revenues from job creation. These materials incorporated elements that addressed efforts to improve air quality through greater transportation efficiencies and the protection of the environment. These materials could be a combination of electronic and/or hard copy media.

For each site, a Real Estate Marketing Package was developed which contained the components listed above. The only exception was the lack of data regarding revenue projections from future job creation. That information may have been broadly developed during the Phase I analysis and should have been developed for this Study.

From an overall viewpoint, the Study was successful in accomplishing its goal of preparing a package for each site. The level of detail varied between components. For instance, in the Carteret Report the property assessment and appraisal contained detailed, local information while the financing options section merely listed a synopsis of public programs without references or links to detailed descriptions of each program.

E. Development of the project methodology designed to facilitate municipal and private sector redevelopment of industrial brownfield sites by intermodal freight related businesses to support port growth.

The development of the project methodology for Phase II activities was prepared by the core Study Team. They accomplished their intended goal of describing how the study was implemented and provided insights on where the difficult and/or unanticipated events were encountered. Part of the methodologies employed during Phase I of the project (which could have received more attention in this report even though it is focused on Phase II activities) were holding periodic stakeholders meetings, preparation of outreach materials and the establishment of a web-site.

It would be interesting to follow the level of post-project interest expressed by stakeholders in other areas looking to duplicate this type of program, as well as tracking additional brownfield sites that are brought to the attention of NJIT/NJTPA.

G. Completion of Phase II Task Work Orders.

The Phase II implementation methodology evolved into a Work Order approach for accomplishment of specific tasks since each of the case studies had a unique status and was at a different point in the redevelopment process. Due to the unique circumstances of each site owner, each Work Order was crafted by the core Study Team for implementation by the consultants. The measurement criteria of successful performance are the completion of the case study Work Orders.

The task order approach requires some lag-time between initiating the case studies and preparing the Work Orders. The time gap allows the core Study Team to evaluate existing information (predominantly environmental) and identify what data is still needed. The work orders were issued and completed for each case study and therefore this performance goal was accomplished. (Note that one component of each Work Order, the delivery of a Power Point slide presentation to the core Study Team had not taken place at the time this evaluation was written)

While recognizing that each case study had specific issues which had to be resolved before the access agreement could be completed, once these agreements were in place the pace of Work Order completion and by extension Phase II seemed to be sporadic. Both the core Study Team and the consultants would have benefited from the inclusion of a schedule of deliverables and milestones for each Work Order.

# Appendix H: Phase I Evaluation on Market Analysis

**Draft Final Market Analysis Report for**
**"Preparing Modern Intermodal Freight Infrastructure to Support**

## A Commentary on the

## "Brownfield Economic Development"

Submitted by:
**Richard Roberts**
**Project Specialist: Freight and Intermodal Planning**
**Muller-Bohlin Associates, Inc.**

March 2001

DISCUSSION PAPER: EVALUATING THE FINAL MARKET ANALYSIS REPORT FOR "PREPARING MODERN INTERMODAL FREIGHT INFRASTRUCTURE TO SUPPORT BROWNFIELD ECONOMIC DEVELOPMENT"

**Introduction**

This paper will focus on three issues:

- The overall validity of the data and analysis conducted.
- The overall correctness of the findings and conclusions drawn from the analysis combined with interviews and case studies.
- The targeting of the knowledge obtained in this study to create a recommended set of steps for action by the North Jersey Transportation Planning Authority (NJTPA)

The overriding question is how well does this draft report help the NJTPA achieve the goals stated in the Request for Proposals. The specific analysis being evaluated in this paper is part of a larger multi-task phased study program being progressed by the NJTPA as part of their intermodal freight planning for Northern New Jersey.

The central issue being addressed is what should be done, if anything, to provide for distribution/warehouse facilities on brownfields sites in Northern New Jersey. Corollary questions on choosing sites; their size, location, etc. stem from working to answer the central question.

This assessment was conducted using the project goals as set forth in the Request for Proposal.

**The Data and Analysis: Does the Final Report provide the information needed?**

The simplest answer is yes. The data used and analysis performed by Moffat & Nichol indicates the changes and needs:

- on the movement of goods;
- on the logistics requirements;
- on the projected growth of goods movement flows focused especially on marine cargo;
- on the future transportation and distribution facility requirements for Northern NJ; and,
- for the development of candidate criteria distilled from assessments of other goods movement systems, especially the provision of distribution/warehouse space.

A meeting was held on July 7, 2000 at which a discussion ensued concerning general and specific comments on the draft final report. This paper, in the pursuit of brevity, will not detail those discussions. The major focus at that meeting was on taking the conclusions and findings and shaping them into strategy and actions for NJTPA to consider pursuing. There was a limited discussion about refining some of the data and breaking it out differently, especially some of the projections.

A major bottom line conclusion of the analysis is a projection that about 700 acres of land will be required to specifically accommodate "value added" type distribution facilities by the year 2040, see page 6-12. The analysis placed added emphasis on this type of activity associated with newer distribution facilities. "Value added" typically means that something is done to alter the item being shipped and stored that adds to its value before it moves to its final destination, an individual person or a business. The process of altering the item can be extensive enough to be considered a form of light assembly. The importance of this type activity at distribution facilities is significantly increased jobs at these facilities. The overall trend in distribution facilities is to employ fewer people to operate, although there are some exceptions with some forms of e-commerce distribution facilities. Northern New Jersey has very little "value added" activity occur-

ring in its distribution facilities a discussed in this report compared to the area around the Ports of Los Angeles and Long Beach in California. (See pages 3-17 to 3-27, 5-2 & 5-6 for more information.)

The progression of steps leading to this major conclusion that about 700 acres are needed in 2040 follow a rational progression of steps. The major findings concerning what the mix of commodities are at the Ports of Los Angeles and Long Beach versus those coming into the Port of NJ and NY are correct. By combining with this information with information on how much coming into each port is consumed locally and how much is shipped longer distances, it becomes evident why the Port of NJ and NY has not caused much "value added" activity. The Port of NJ and NY serves more of a local consumer market mostly within a few hundred miles of the port. (See pages 2-22 through 2-26 for the full discussion.)

The absolute correctness of this projection should not be the focus in determining a candidate set of future actions. This number is sufficiently far enough into the future that any number of factors could cause it to go up or down. The importance of this number is that its size suggests that a substantial increase in "value added" activity at distribution facilities is possible. This amount of land could equate to about 6.0 million square feet of space that is significant. This projected demand is in addition to a demand for distribution space to handle domestic goods movement, including newer space to replace outdated space built thirty and more years ago. The projection of 700 acres provides a benchmark to work towards in thinking about strategy and actions.

Other analysis points to the increases in the number of containers to be handled in the Port of NJ and NY. The numbers, appearing in Figure 6-6, page 6-11, are generally in line with those seen in other recent studies of future port activity. The forecast suggests a huge increase in the volume of containers moving through the port using a set of assumptions about future shifts in manufacturing to Southeast Asia and the Indian subcontinent and the increased use of the Suez Canal. The assumptions, which support this forecast, are being used by others, including the Port Authority of New York and New Jersey. Realizing these increases however assumes the other implications and needs mentioned in this report are addressed, especially improved landside intermodal facilities and connections.

The future increase in air cargo is only briefly mentioned. The point is made that the volume of air cargo, even if it grows tremendously, will always be small compared to marine, rail or truck volumes is true. It is also said that commodities being moved by air are less likely or not at all likely to require "value added" activities. This is currently true. Nonetheless, there will be a substantial need for more land to support air cargo facilities, especially around Newark International Airport. The commodities handled by air are usually high value and require priority handling. This requires sites close to the airport that are as directly connected to it as possible be made available for air cargo related activities. Air cargo facilities can also generate a large number of good jobs that like those associated with "value added" activities should be planned for and encouraged.

**Findings and Conclusions: Are they correct?**

Again, the simplest answer is yes. In a few instances, it is suggested that they be modified to reflect local conditions or be expanded in their scope or offer added flexibility. Here are a few recommendations:

**Port Dredging -** Not all of the potential for growth is dependent on dredging the channels to fifty feet. Some demand will exist in the future even if the channels are only forty-five feet. It should be stated clearly that while Northern NJ will best and most fully realize the economic and other benefits of the expanding world-wide trade and commerce if the dredging occurs, there is still a future without it that requires some action be taken.

**The Role of the Existing Highway Network and Portway –** One finding from the surveys of port related distribution space in the vicinity of the Ports of LA and Long Beach is its closeness, about fifteen minutes drive, to the port. This finding becomes a conclusion about the area surrounding the marine terminals in Northern NJ where siting of distribution facilities on brownfields sites should occur. The use of distance as a measure would be too limiting. Travel time is a better measure to determine the area. Also, whether it should be fifteen minutes or something a little more should be left open to avoid getting trapped. Certainly, fifteen minutes driving time becomes a benchmark.

The issue of how the highway network presently functions and the proposed future improvement of that network to accommodate goods movement is easily derived from the preceding discussion of "how large an area do we consider?"

Portway is proposed as a truck priority road linking the Port/Airport Complex with the area rail/truck intermodal sites and providing improved truck access to an area that could accommodate new distribution space. There are sites along Portway that are candidate brownfields sites. The road is being designed to handle the heavier marine containers that are considered overweight and not allowed on other New Jersey highways and roads except with use of a special permit. Portway provides a potential key to creating a distribution corridor north and south of the Port/Airport Complex and also connecting to the proposed marine terminal expansion in Jersey City and Bayonne.

Definition of "Value Added" Activity - The definition of "value added" might be expanded to include any processing of a product prior to sale/shipment to the customer. This would then take in packaging and allied activities necessary for the item to move to its final destination, e.g. ironing fine clothing and placing it in plastic bags. Also, there are allied activities possible, such as repairing items that are returned because they have some problem. For a while, companies importing electronics through the Port of NY and NJ did some assembling of components and light repairs in communities within twenty miles of the Port. The fundamental issue is encouraging additional job producing activity so that containers are not just being loaded/unloaded at the Port and moved through Northern NJ.

**Role of Air Cargo -** Air cargo typically is high priority and comes essentially "ready for sale" or it is parts for some high value equipment, etc. However, there are forms of air cargo, e.g. the handling of check clearing by the Federal Reserve in East Rutherford, NJ or the testing of medical specimens at laboratories both in close proximity to Teterboro Airport. They rely on specially scheduled aircraft movements to bring in the materials for processing from all over the country, mostly in the late PM. Both types of activities employ hundreds of highly skilled people. The future growth prospects for this type of air cargo processing may be less predictable because it is less tied to a trend and more episodic. It is tied to breakthroughs both in logistics and fundamental ways of doing business. It might be useful to acknowledge these activities in this report as a complement to "value added" activities.

**The Importance of Developing a Strategy and Action Plan** - This report documents what Northern NJ could gain in attracting new types of distribution facilities and itemizes some of the broad types of actions needed to achieve the optimum benefit. Absent a realignment of government policies, investments and regulations, it is likely that distribution activity will spiral out farther from the Port/Airport Complex in Newark/Elizabeth/Jersey City and environs. This is not just as simple as this activity centering at locations like in Jamesburg at Interchange 8A. It is already apparent thisactivity will locate even further south, west and north, places like New Castle, Delaware, Allentown, Pennsylvania and Newburgh, New York. A scenario where the outward spiraling continues clearly benefits Northern NJ the least. Fewer jobs, more burden on the

transportation network, more transportation investment and a clear lessening of the potential benefits of accommodating an international gateway.

**Northern NJ has strengths.** It has the NJ Turnpike that has its outer lanes available especially to handle trucks. It has several key interstates that intersect with each of those points of intersection surrounded by extensive distribution activity. In many ways I-287 marks the outer boundary of the inner ring of that activity. There is a substantial existing freight railroad network; and of course, the Port/Airport Complex. The components of this system need improvement and increased capacity that will require a series of major investments by government and the private sector. The size and duration of such an investment program mandates that more benefits be derived than " just moving freight".

**Linked Policies** - The European Union and the individual member countries have given considerable attention to their gateways, connecting transportation system and logistics capability. They have developed a series of comprehensive plans that encompass everything down to specific load points and intermodal transfer locations. The transportation investment plans link to the economic development plans that in turn link with the environmental improvement plans. This example is one for Northern NJ to consider following. This is very similar to the intent of the State Plan. The proposal would be to develop a strategic vision for goods movement with brownfields development, redevelopment, transportation investment, labor force availability and accessibility and economic development as its focus. The plan would also include attention to improving the environment through use of improved intermodal logistics, use of less polluting technologies and effectively locating terminals and distribution facilities to increase overall efficiency.

Good planning requires that attention be paid to labor force availability and its ability to access jobs. The future we are looking upon is one where the supply of labor will not be growing because the overall working age population will not grow. Businesses that locate far from major supplies of labor will find it difficult to attract people. Government has a role to encourage through regulation, zoning and investment an effective pattern of residential and business development. Allowing the current outward spiral of distribution activity to occur will place one of several added burdens on government and the citizens it serves. For example, providing transportation access for that portion of the labor force that is still seeking a job but is economically or otherwise not able to own and drive a car is both very difficult to accomplish and expensive to do on a per trip or per person basis. Providing more residences in proximity to these distribution facilities too often eats away at remaining open space. Such expansion of residential development may also require other infrastructure investments. The human dimension of this issue includes maximizing the job opportunities for a workforce that may not always be as mobile as the job market requires, as well trained as the job market expects and specifically trying to support the built-up developed areas of Northern NJ. It is also economically important for businesses to be able to attract workers from as large a labor pool as possible to insure they get the skilled workers they need. (See pages 5-3, 5-5, 5-7 & 5-8 for mention of labor issues.)

Interesting examples of public/private partnerships used to create intermodal distribution centers can also be found in Europe. For example, Guterverkehrszentren (GVZ) are being developed at several locations in Germany. One such GVZ has been developed near the port of Bremerhaven. Government and the private sector form a partnership to acquire the land. Government funds and builds the basic transportation infrastructure. The private sector develops the specific sites for distribution centers, truck servicing facilities and other supportive activities. The private sector organizes and operates a management system offering logistics support. Different distribution businesses work together to serve areas where demand from any one distributor would not fill a truck. By combining their shipping needs distributors reduce sending half-empty trucks to these areas and empty backhaul movements. Government and the private sector share the profit generated by the GVZ. This example could be used to demonstrate what could be done. This could

be combined nicely with the following proposal.

**Proposed Planned Unit Developments -** The use of Planned Unit Developments (PUDs) for intermodal/distribution facilities is both practical and effective. Many municipalities in NJ use this zoning designation for residential, retail and commercial land uses. The utility of advancing PUDs would be enhanced if they can be tied to other government initiatives - - either projects like Portway that is a designated project, or new planning/funding projects like Transportation Development Districts. Assemblyman Alex DeCroce sponsored legislation that formed a special commission, the Regional Intergovernmental Transportation Coordinating Study Commission (RITCSC). The RITCSC has just released their interim report that could lead to actions that would closely complement the establishment of PUDs.

The PUD designation could offer an opportunity to provide added regulatory and decision making certainty for the private sector investors. For example, the establishment of time limits that encourage quicker reviews and granting of permits, or developing a clearer definition of the required information that must be submitted are possible. Given the difficulties often encountered with developing brownfields, such improvements to the regulations and decision making could act as an offset or even an incentive to entice private sector interest in the candidate projects.

**Candidate Opportunities -** Here are a few such candidates:

- The Hackensack Meadowlands Development Commission is now considering redeveloping the portions of Carlstadt and Moonachie (located about 12 miles north of Newark and immediately adjacent to Teterboro Airport) that are zoned for light industrial and distribution. This area contains millions of square feet of older warehouse and light industrial space that does not meet today's market requirements. A number of miscellaneous chemical processing plants are also located in this area that have left behind a polluted and scared land. This area is being considered as a form of redevelopment zone or PUD.

- Similar in intent but not called a PUD, are plans evolving in Elizabeth for the property located west of the New Jersey Turnpike, south of Newark International Airport, east of Route 1& 9 and north of the old CNJ rail line through Elizabeth.

- Newark has focused on redevelopment along Doremus Ave. Private developer interests have focused periodically on east of the Ironbound section of the city that is wedged between Routes 1&9 and the New Jersey Turnpike.

There are yet other opportunities in communities in Bergen, Essex, Hudson, Middlesex, Morris, Passaic and Union counties. With careful consideration of a driving time limit to circumscribe the boundary of the area of focus, the candidate list will be large enough to insure projects will be identified.

**The Future Strategy and Action Plan: The Potentials for NJTPA -** The myriad of actions required to coordinate policy, regulation and investment where it has not existed is like creating a "string of beads" as John Ricklefs, Moffat & Nichol, has stated in our conversations with him. There is no other governmental body as well situated as the NJTPA to perform this advocacy/coordinating function. NJTPA has the responsibility for coordinating the transportation planning and investments in Northern NJ. The siting and development of distribution facilities is directly related to both these responsibilities. The membership of the NJTPA board includes many of the critical government stakeholders and its ability to establish committees provides an easy means of involving other stakeholders, e.g. railroads, trucking companies, marine shipping firms, third party logistics businesses, etc.

The advocacy portion of the responsibility includes education of key people, legislators and citizens, concerning the need to focus efforts on locating distribution and other goods movement facilities in locations that support the Port/Airport Complex. The coordinating responsibility has two tasks. One is to assemble the critical stakeholders, i.e. transportation agencies, private businesses, state, county and municipal officials and organizations focused on goods movement, to gain their support on a coordinated action agenda. This should not be too difficult given the attention some legislators, e.g. Majority Assembly Leader Paul DiGaetano, have devoted to issues of redevelopment. The other task is to refine the action agenda and establish a structure that will cause the level of coordination desired among all these stakeholders.

The outcome of this work by NJTPA and others could be up to six immediate term projects, each with the appropriate levels of specific coordination and support, and possibly planning work focusing on another six. Critical is that NJTPA place the spotlight on these efforts as they are initiated and progress so a constituency of support is created that offers encouragement and critical support.

It may also be necessary for NJTPA to play another role providing technical assistance or funding to hire necessary expertise to effectively advance the identified candidate projects. The need for NJTPA to assume this responsibility needs to be assessed on a project-by-project basis.

**Focusing on the Issues** - As highlighted in the report by Moffat & Nichol, there are major risks and many missed opportunities if where distribution facilities are located, redevelopment and brownfields development are not addressed. Some of the central points are to improve local connectivity between the major terminals and intermodal facilities. This comes down to three measures: reducing travel time to the minimum practical, increasing reliability that travel time will be achieved to the maximum, and keeping costs reasonable. If travel times are reduced and they are very reliable, some increased costs may be accepted in the marketplace. But the value of these actions in terms of benefits to the private sector must be greater than the increased costs or at a minimum resistance will result from the private businesses.

Mentioned in the report is the issue of handling overweight containers. Accommodating these containers that come on ships from overseas is a very effective incentive to gain private sector interest in the development of brownfields or other properties.

Earlier the issue of regulation, permitting and decision making were highlighted. These must be addressed or plans will not progress and private sector support will diminish or be lost.

Funding incentives must be one of the beads on the string. These incentives can take many forms. It would be especially useful to provide funding for the “soft cost planning” necessary to define a project and determine if it is a “real” project. This reference to “real” means that the private sector is activity interested in advancing the project and has some hope it will succeed. Government may determine it has broader reasons for advancing a project and alternately could assume a fuller burden for developing the project scope and parameters. (See pages 6-1 through 6-7 for more on the issues and needs that need attention.)

**Partnering** - In discussing the role of the NJTPA, their role as an advocate and coordinator is highlighted. Only slightly is their role of partner suggested, mostly in terms of planning and technical assistance. A more proactive role for NJTPA to consider is partner with the array of government agencies and the private sector. This would require only some adjustment in the level of NJTPA involvement and would still encompass many of the same specific roles. A major difference is NJTPA would be more upfront in causing projects to advance. This is justified since NJTPA will otherwise be making transportation investment decisions that may trace a substantial portion of their need back to these projects.

**Setting Priorities** – This activity requires that the roles of advocate, coordinator and partner be filled. The projects to be advanced will likely be complex with overlapping requirements and issues to be addressed. It is important a simple process and the right players be structured to make the decisions about priorities. The priorities to redevelop a brownfield property must be linked to transportation investments that are also clear priorities.

# Appendix I: Case Study Executive Summaries

## Summary of Case Study

## Site Name: Arsynco Site
## Location: Carlstadt, NJ

### 1.0 General Site Description

The Arsynco site is located in the New Jersey Meadowlands Commission (NJMC) District in the Borough of Carlstadt. The street address is 511 13th Street. The property is identified as block 91-Lot 1 on the Borough of Carlstadt tax records and is approximately 12 ac in size. The site is a mid-block lot and is mostly rectangular in shape with the exception of the southwest corner. The Northern Eagle Beverage Co., Inc and the Henkel Corp site border the property on the north. The Pascack Valley Railroad line borders the property to the west and on the east are several large warehouse distribution faculties. On the south and southwest are various industrial and manufacturing facilities (Figure1). Additionally, the Arsynco site surrounded by a number of other Brownfield sites and it part of the Patterson Plank Road Brownfield Pilot Study Area, an EPA funded pilot program administered by the NJMC. Figure 2 shows the site in relation to other Brownfield sites in area.

The Zoning Ordinance of the Borough of Carlstadt and the NJ Meadowlands Commission indicate that the site is located within the Light Industrial and Distribution B Zone, which allows for warehouse and distribution activities. Wetlands are present in the eastern portion of the site and the site is within a flood hazard zone (100 year flood). Currently surface elevations average between 4 and 6 ft above MSL. Various utilities are available in sufficient capacity to support redevelopment include sanitary sewer, public water, electric service and natural gas. Storm water sewer lines are available along 16th Street.

The property has been owned and operated by a number of chemical companies since the early 1900's. Arsynco has owned and operated the site since 1969. Arsynco is a subsidiary of Aceto Corporation, Lake Success, New York. Operations on the site ceased in 1993. The Arsynco site was involved in the manufacture of specialty organic chemicals and pharmaceutical intermediates, propylene imines and derivatives, hair dyes, silicone intermediates, a quaternary ammonium salt, propiophenone and isobutyrophenone.

### 2.0 Transportation Access

Arysnco is served through a network of local streets, NJ Route 17 and Paterson Plank Road. Additionally, there is an existing rail freight siding that runs adjacent to the property. Several bus lines operate near the site, providing access for a potential transit user workforce. In addition, the Pascack Valley commuter rail line would serve as an additional means for workers to access the site. Although the site is accessible via NJ Route 17, use of the network of local streets is recommended as a principal means of highway access. Freight rail access is possible, but is problematic due to increasing competition with anticipated increased passenger service on the Pascack Valley line.

### 3.0 Environmental Assessment

Several phases of soil and groundwater investigations have been performed at the site since 1993. These investigations have determined that the site is underlain by 4 to 6 feet of historic fill,

a meadow mat layer, a clay layer then a silt formation. Shallow groundwater is encountered in the fill overburden at depths between 0.5 to 3 feet below grade. Deeper groundwater is encounter on site between depths of between 12 and 21 feet in the confined aquifer beneath the meadow mat and the first subsurface clay. Water level measurements at the site indicate that the groundwater flow direction is to the east and southeast towards Berry's Creek. The site groundwater is subject to tidal influences and is characterized by salt water intrusion and as a result is not potable

Numerous Areas of Concern (AOCs) were identified at the site and investigated. Contaminants of Concern (COCs) include VOCs, PCBs and metals. For the purposes of environmental investigations, the site has been divided into several areas. These areas have been investigated extensively. Based upon these investigations, possible remedial actions have been identified. These include:

a. Excavation and off-site disposal of soil containing PCBs over 500 mg/kg
b. Excavation and on site disposal in an engineered containment cell of soil containing PCBs between 50 and 500 mg/kg
c. Installation and operation of a air sparging/soil vapor extraction system (AS/SVE) to remove VOCs in soil and shallow groundwater
d. Covering the site with an approved cap
e. Deed restriction institutional controls
f. Monitored natural attenuation for groundwater with low concentrations of VOCs

Several important components of the clean up proposal are still in discussion and the outcome will greatly impact the remediation cost. Principally is the approval for on site containment of PCB impacted soil. Arsynco is currency in discussion with Region 2 EPA regarding the design of an on site containment cell. Another issue is contaminated sediments in a former pond. Indications are that a low permeable clay layer underlay this pond and the contaminants in the sediment are not migrating. Finally, the extent of the AS/SVE system has not been finalized. Thus, there are still significant issues that remain to be resolved with regard to the final remediation program.

### 4.0 Market Assessment

The site is located within the Meadowlands industrial sub market in Northern NJ. This is one of the strongest industrial real estate markets in the NY/NJ Metropolitan region, with asking rents for industrial space averaging over $7.00/sq.ft in the third quarter of 2001 in Bergen County. Additionally, due to minimal land for construction, Bergen County has lagged behind other northern NJ counties in terms of industrial space growth, with only a 0.84% increase in 2001. Along with this is the fact that much of the growth in warehouse and distribution space in Bergen County has been redevelopment of old functionally obsoletes buildings. These conditions fuel the demand for modern distribution centers in this area and this site offers the opportunity to build, at a minimum, a 200,000 sq ft building that would be an important step in satisfying this demand (Figure 3 provides a conceptual design for a warehouse and distribution center on this site). This would be done with a building that would greatly exceed the average building size in the area, which is only 61,000 sq ft. Not only would redevelopment of this property have important effects on the market demand, but it would also provide approximately 200 jobs and up to $150,000 in tax revenue to the local municipality.

Additional market factors effecting redevelopment of this property is the fact that it is within the Patterson Plank Road Redevelopment District and the future of the Meadowlands Sports Complex. This site is within a group of properties that the NJ Meadowlands Commission has designated for redevelopment in conjunction with the development activities that are planned for the Sports Complex. Thus, while there is strong demand for warehouse and distribution space in the area, there is the potential that these other factors could effect reuse options for the site.

# Summary of Case Study

## Site Name: Albert Steel Drum Site
## Location: Newark, NJ

### 1.0 General Site Description

The 13.7-acre Albert Steel Drum (ASD) Site is located in the "Ironbound" section of Newark on the southeast corner of Wilson Avenue and Avenue L intersection. The ASD site consists of three parcels of land defined as Block 5038, Lots 70, 108 and 109 of the City of Newark Tax Assessor's map. Two of the lots, Lots 70 and 108 were sold by the Newark Housing Authority (NHA) to Tony Pallet, Inc in May 2000 while the third lot, Lot 109 is still owned by the NHA (Figure 1). The site is bordered on the north by Wilson Ave. to the east by an active railroad owned by Conrail, to the south by the Welch, Holme and Clark Company and to the west by Ave. L. Abutting the property to the southwest is an active chemical manufacturing facility (Troy Chemical Company). Trucking, chemical manufacturing, meat processing, and various other industrial activities surround the site. The nearest residential/commercial area is located approximately one-quarter mile to the west across a major limited access highway (Rtes 1&9) (Figures 2 and 3)

Currently, the site is vacant. However, the site has been industrialized since the early 1900's. Aerial photography shows that by 1951 the site was occupied by numerous industrial buildings, perhaps associated with an American Cyanamid facility. The Prentiss Drug and Chemical Company (PDC) and Albert Steel Drum (ASD) eventually used these buildings. The PDC operated on the site from 1956 to 1982 and manufactured pesticides. Albert Steel Drum leased their facility in 1974 and operated a drum recycling and reconditioning business until 1977. The site was purchased by the NHA in 1980 with the intention of rehabilitating the property for future industrial activities.

The site is in an area zoned Industrial (H-3) by the City of Newark. This zoning classification allows for a variety of industrial uses including warehouse and distribution. Additionally, all major utilities are available in sufficient capacity to support redevelopment. These include sanitary sewer, public water, natural gas and electrical service. However, storm water management is an issue because the area floods. The City of Nearly has prepared designs for a storm water drainage system to be installed, with a major interceptor pipe to be located along Ave. L. There are no wetlands on the property.

### 2.0 Transportation Access

Close proximity to several key regional highways, including Doremus Avenue, Route 1 & 9, the New Jersey Turnpike and the future Portway, make the Albert Steel Drum site desirable for access to Newark International Airport and the surrounding marine ports. Although Wilson Avenue provides the vital link to these facilities, direct site access to Wilson Avenue is not feasible due to physical constraints in the immediate vicinity. Instead, it is recommended that driveway access be provided on Avenue L. The City of Newark has initiated efforts to reconstruct the intersection of Wilson Avenue and Avenue L as part of its overall plans to reconstruct Wilson Avenue. It is recommended that the city consider several improvements in the design and construction of this project.

The site is particularly important because of its accessibility to Portway. Currently, the first section of Portway is being built from the Port area to the intersection of Doremus Ave. and Wilson Ave. Included in this construction project is a rebuild of the Doremus Ave. Bridge over the Oak

Island Rail Yards. This bridge is designed to handle heavy weight trucks, which when complete will allow overweight containers to be trucked off the port directly into warehouse and distribution facilities. The ASD site is ideally located to enable trucks to move quickly from the port area to a modern building with out impacting major regional roadways. (Figure 4)

Although the Albert Steel Drum is relatively small in terms of being a viable rail service customer, there is a strong potential to serve this site from both the north and south with rail. Conrail maintains an active track along the east side of the ASD site, which connects to Brills Yard to the North and the Oak Island Yard to the south. Additionally, NJ Transit operates bus service along Wilson Avenue with designated stops where Wilson Avenue intersects Avenue L.

### 3.0 Environmental Assessment

This site has a long history of environmental investigation and remediation. Initial site investigations began in 1980 when the NJDEP Division of Water Resources installed 20 soil borings and collected 80 soil samples. From 1987 to 1993, a major RI/FS was conducted at the site by TRC Environmental Corporation. This effort included two phases of investigation and a feasibility study that identified clean up options. Investigations included collection of surface soil samples, excavation of test pits, collection of soil samples from test borings, installation of monitoring wells, groundwater sampling and sediment sampling. Volatile organic compounds (VOCs), PAHs, pesticides, PCBs and metals were found to exist in site soil and to a limited extent in shallow groundwater. PCBs were also found in the sediment in the drainage ditch located in the southwest portion of the site. Based upon the results of the sampling, several subsurface and surface “hot spots” were identified to contain site contaminates above site clean up levels (1000 ppm VOCs soil & 50 ppm PCBs soil). In 1994, NJDEP issued a Draft Decision Document which recommended clean up activities consisting of: excavation, stabilization and off site disposal of contaminated sediments; excavation of VOC contaminated subsurface soil “hot spots” with treatment and disposal; construction of a 1.5 ft thick cap over the entire site, demolition of the PDC building and groundwater monitoring. The building subsequently was demolished in the mid 1990’s.

In 1999 Kimball & Assoc. was contracted by NJDEP to perform additional investigations at the site to further define the “hot spot areas” and develop a 65% design document for the remediation. During this effort an additional PCB “hot spot” was identified and include in the final design. This effort estimated the volumes of soil needing removal, identified disposal options and provided more detail for the cap design. In May 2000, the NHA sold the site to Tony Pallet, Inc, which entered into an Administrative Consent Order (ACO) with NJDEP regarding the ASD Site in June 2000. The ACO specified the responsibilities of Tony Pallet, Inc for implementing the Remedial Action. A Remedial Action Work Plan (RAWP) was prepared and approved by NJDEP in August 2001. In the spring of 2002, the specified remedial actions were implemented. In October 2002, a revised RAWP was submitted to NJDEP that reflected changes to the cap design in order to accommodate the construction of a W&DC building.

Geologic strata at the site consist of an initial layer of historic fill that ranges in thickness from 6 to 12 feet. This layer is composed of a wide variety of materials including concrete, brick, plastic, metal and wood. Beneath the fill is the meadow mat, which is fairly thin (six inches to 1 foot). The geologic layer beneath the meadow mat is a silt layer. Permeability analysis of soil samples from this layer indicates a low hydraulic conductivity. Beneath the silt is red fine sand that is fairly thick. Bedrock beneath the site is shale and is encountered at 65 to 75 feet below the site. Groundwater consists of a shallow perched zone above the clay and a deeper zone in the fine sand. Also, the shale bedrock is a regional aquifer. Groundwater flow in the shallow perched zone is from south to north and the quality of the shallow groundwater is generally poor, containing low levels of VOCs. Groundwater in the area is not used for potable supplies.

## 4.0 Market Assessment

The site is within the Newark/Airport/Sea Port sub market of the Northern and Central NJ industrial real estate market. This sub market contains approximately 72 million sq. ft of industrial space as of 1st quarter 2002, consisting of 456 building over 50,000 sq ft. The availability rate was 6% and the average asking rent was $5.15 per sq. ft. However, the key market aspect of this site is it's proximity to the Newark/Elizabeth Port complex and the ease of access once the Portway construction on Doremus Ave. is complete. Overweight containers can be directly trucked from the port area to this site along an upgraded transportation infrastructure. Thus, this site holds tremendous potential for constructing a modern value added distribution center that can service the region's air and seaports.

Conceptual plans have been developed for a building that can range in size from 250,000 sq. ft to 350,000 sq. ft (Figure 6). The size of the building will be controlled by various factors including storm water management, building coverage allowed by zoning, truck access and geotechnical considerations. The market study indicates potential users could be spirits & wine distribution, clothing or dry goods repacking and distribution. Estimated land values when remediated to non-residential standards are $3000,000 to 350,000 per acre. Based upon possible building sizes, there is the potential to generate up to 300 jobs for the local urban workforce and between $ 500,000 to $ 600,000/yr in tax revenue to the City of Newark.

Of all the Case Study sites, this one has the most potential as an example of the concepts behind the study. It is within close proximity to the ports; it will be connected to modern transportation infrastructure designed specifically for truck traffic (thus trucks will not travel regional highways to access the site); it is within a heavily industrialized section of Newark (thus freight related redevelopment will not impact residential areas); it can provided much needed jobs for the urban workforce; the workforce can use existing mass transit; a large modern W&DC can be built on the site which will be designed to support modern logistics requirements and the site will redeveloped with an environmentally friendly use.

# Summary of Case Study

## Site Name: Reichhold Chemical
## Location: Elizabeth, NJ

### 1.0 General Site Description

The Reichhold Chemical Site is an assemblage of three (3) tax lots located in southern Elizabeth, with a small portion in Linden. The property is identified as Block 4, Lots 63 and 67 (comprising 12.3 ac) on the City of Elizabeth tax map and Block 586, Lot 1 (comprising 7.2 ac) on the City of Linden tax map. Based upon the tax record the property contains approximately 19.5 ac. Reichhold Chemicals, Inc owns the property. The property is currently vacant with the exception of a warehouse building on the northern side of the property. A majority of the site is covered by impervious surface. Figure 1 provides a map of the site and surrounding land uses and Figure 2 is a tax map of the property.

Bayway Ave. borders the northern edge of the property and Conrail's Chemical Coast Line (a major north/south freight line) borders the western edge of the site. To the south the site is bordered by Morses Creek and east of the property is the Phelps Dodge facility and furniture warehouses. The site is in an industrial area of southern Elizabeth that contains the Joint Meeting wastewater treatment plant and other manufacturing and bulk fuel storage facilities. A small residential area lies to the north. The site is traversed by a Class Two short line railroad (Sound Shore Line) and the southern portion, which falls within Linden, is only accessible through the Elizabeth component.

The Elizabeth portion falls within the M-2 Medium Industrial Zone and the Linden portion is in the HI Heavy Industry Zone. There appears to be no wetlands on the property and the topography is generally level. Public sewer is available and provide by the City of Elizabeth Sewerage Authority and public water is supplied by the Liberty Water Company. An 8" main runs along Bayway Ave. Adequate electrical service is available and provided by PS&G and natural gas is available from Elizabethtown Gas Company. The site does not appear to be within a flood hazard area and is not restricted by either the 100-year or 500 year flood boundary.

### 2.0 Transportation Assessment

The Reichhold Chemical site presents both many challenges and opportunities for transportation access. Bayway Avenue borders the site to the north and First Avenue to the east. To the west, the Chemical Coast rail line, a major north-south freight rail line owned and operated by Conrail on behalf of CSX and Norfolk Southern, borders the site. The Reichhold site is bifurcated by a short line railroad called the Sound Shore Line.

While the site is within close proximity to several key highway links, including the New Jersey Turnpike and the Gothels Bridge, highway access is limited due to a number of undesirable highway geometric and traffic control features along likely trip paths. And other alternative trip routes require use of narrow residential streets and substandard bridges.

Several initiatives are planned in the area that will enhance roadway access to the site. These include realignment of Relocated Bayway, widening and reconstruction of First Ave. and replacement of the First Ave. Bridge over the Elizabeth River. These improvements could enhance roadway access to the site. Rail access can be obtained from the Chemical Coast Line through the Class Two short line that exists on the site. The Chemical Coast Line extents north to the Trumbull Yards and the Oak Island Yards and intersects with the North Jersey Coast Line near Perth Amboy. Limited existing bus transit is available.

### 3.0 Environmental Assessment

Industrial operation began on the site in the early 1900's. Initially the site was used for metals manufacturing operations or was left undeveloped. Reichhold began operations on apportion of the site in 1936. During Reinhold's operation, several types of resins and chemicals were manufactured at the site. Reichhold ceased operations in 1991 and a decommissioning program was initiated. All on-site structures have been demolished with the exception of a warehouse, which is used to store drummed and bagged raw material and finished products.

Initial environmental site investigations began in 1987. In 1998, a report was prepared that presented the results of investigations at the site, documented remediated hot spots and propose a comprehensive remedial action for the site based on the results of the work to date. This report divided the site into ten areas. It described the sampling performed at the various areas of environmental concern and the remedial actions proposed. Contaminants of concern for the Reichhold site include VOCs, SVOCs, TPHC, PCBs and metals. In most cases the impacted soil was either excavated or capped with a deed notice. For groundwater, natural attenuation with a CEA is proposed. This is largely based upon the fact that a regional groundwater problem exists with respect to organics.

In November 2001, a Phase VI RIR/RAWP was submitted that addressed final issues with regard to the soil contamination and completed on-site groundwater delineation. Based upon this submittal, on site remediation of soils has been complete through a combination of excavation, capping and deed restrictions. Impacts to groundwater will be managed though a combination of enhance bioremediation using oxygen release compounds (ORP) establishment of a CEA and monitored natural remediation (MNR). However, at this point, a No Further Action (NFA) letter has not been issued for site soils nor has NJDEP approved the proposed groundwater program.

### 4.0 Market Assessment

The property is located in the City of Elizabeth Urban Enterprise Zone (UEZ). As such it is eligible for government support in terms of below market financing, tax incentives, tax abatements and employment credits and subsidies. Additionally, the property has other attributes that affect its marketability. These include its proximity to NJ Turnpike Exit 13, access to the Chemical Coast Line through the rail short line that bifurcates the site and the possibility to access the nearby Tosco-Phillips refinery plastic pellet manufacturing facility. On the other hand, discussions with Elizabeth officials indicate a strong concern on their part to minimize the impacts of trucking activities on residential areas that are north of the site.

Union County has the fourth largest amount of indusial space in the North and Central NJ market with 87 mm sq. ft., but has a fairly low vacancy rate. Asking lease rates are $5.00 per sq. ft. average building size is 84,000 sq. ft and many of the existing building are old style warehouse space. The proposed design for this site would allow for approximately 400,000 sq. ft of W&DC spread over two buildings (Figure 3). This would provide significant additional space to an industrial market that has a low vacancy rate. Also, this would provide a modern W&DC building in an area where the primary available space is not compatible with the changing trends in logistics. Another aspect that would enhance the market value of W&DC built on this site is planned transportation improvements in the area. In general a 400,000 sq. ft W&DC could provide 200 to 250 jobs and provide approximately $600,000/yr to Elizabeth in property tax.

A unique reuse opportunity for this site that was uncovered by the project team is plastic products manufacture. As mentioned earlier the site is near to the Tosco-Philips refinery plastics pellet manufacturing facility. Preliminary analysis indicates it is possible to move rail cars of plastic pellets from the refinery to the site through rail connections under the NJ Turnpike. Information

provided by the Society of Plastics Industry (SPI) indicates that transportation is one of the major cost components of producing plastic products. As such, plastic processing is usually located near the pellet manufacturing site or end user. The rail access to the Tosco-Philips facility would provide an inexpensive source of raw material and also allow easy shipment of finished goods.

# Summary of Case Study

## Site Name: Carteret Redevelopment Properties
## Location: Carteret, NJ

### 1.0 General Site Description

The property that is the subject of this case study is an assemblage of fifty tax lots that collectively comprise approximately 137 ac. It is Phase I of a two-phase redevelopment project. The property is located north of Industrial Road, near NJ Turnpike Exit 12 in Carteret, NJ. The site is irregularly shaped with road frontage along the southern perimeter and its boundaries include the New Jersey Turnpike/Chemical Coast Line Railroad to the west, the Rahway River to the north and Industrial Avenue/Tank Farms to the south (Figure 1). Of the 137 acres only approximately 50 to 70 acres are developable and these consist of former landfills. Topographically, elevations range from 4 to 48 ft msl, with the highest elevations corresponding to the location of the landfill material.

The property is located within the HI-A (Heavy Industrial) Zone. Permitted principal uses include industrial or manufacturing as well as a permitted conditional use as a regional mall. The original intent of the mall development was that it would be consistent with the Borough's comprehensive development plan, which was developed to minimize traffic impacts on local rods. Development by freight related use may require modification to the existing development plan and zoned permitted use.

With the exception of the landfill area the site is with the 100 yr and 500 yr floodplains. The Carteret Borough Sewage Authority would provide public sewer. Sewer lines are available at the Harrison Avenue pumping sub station. The Middlesex County Water Company would provide public water. Currently water is provided to both the Dauman and GATX lots. A 12-inch main services the site via Industrial Avenue. The site is serviced by electricity and GPU indicates that adequate facilities are available to service the proposed development. Elizabethtown Gas Company provides natural gas. The closest main is located on Roosevelt Avenue. Carteret Land Development regulations require that adequate storm water management capacity be incorporated in the reuse design. Storm water controls will be integrated with the landfill cap design.

As mentioned previously, the redevelopment site is composed of numerous lots. The Borough of Carteret does not own all of these lots. A portion of the landfill is occupied by an active recycling business called Dauman Recycling, Inc., which stores mulches and distributes various wood landscaping products. In addition to the mulch, scrap metal and other debris are stored on the landfill site. CDI Industries, GATX, Industrial Reclamation Inc. and Middlesex Landfill Corp own other lots within the redevelopment area. Thus redevelopment will require purchasing and assemblage of lots owned by various entities.

### 2.0 Transportation Access

Carteret Redevelopment Properties is located within close proximity to the New Jersey Turnpike, Interchange 12. Portions of the site are currently active and are served principally through the existing network of streets, including Industrial Avenue and Roosevelt Boulevard, which connect to the interchange. The New Jersey Turnpike Authority is pursuing extensive improvements to Exit 12 including reconfiguration of the ramps and construction of a new roadway that would provide direct access from Exit 12 to a large complex of industrial sites north of the Carteret and across the Rahway River, more commonly referred to as Tremley Point (Figure 2). Several alignments and interchange reconfiguration scenarios are being considered but all include substantial increases to vehicle storage areas, intersection improvements and elimination of problem-

atic intersections. The required Environmental Impact Study (EIS) is underway and should be completed in the beginning of Year 2003. Following completion of the EIS, the project will move to final design, which is expected to take 1-2 years, and then construction, which is expected to take 3-5 years.

The proposed improvements to Exit 12 will also include designs to access any redevelopment that will occur on the former Carteret landfill through the use of the new roadway that will serve Tremley Point. However, the remediation of the landfill will include capping which will possibly place building floor elevations at 45 ft msl. Any roadway design to access the redevelopment on top of the landfill must consider the elevation difference between the site and the surrounding land area. This is particularly important with regard to providing adequate truck grades.

The site is also located within close proximity of a major regional rail freight line, the Chemical Coast Rail Line. However, the substantial amount of fill needed for a likely environmental remediation scenario would make a direct rail connection impractical. Due to the significant and likely elevation difference, rail access to the Carteret site could only be achieved through innovative loading and offloading operations, or made viable by a remediation scenario that minimizes the elevation difference between the existing track and off-load facilities.

The Carteret site is bordered to the north by the Rahway River, which enters the Arthur Kill approximately 1 mile east of the site. The Arthur Kill provides marine access for several key industrial ports along the western coast of Staten Island and New Jersey.

The Rahway River, which borders the site to the north, accommodates limited barge traffic, but transport via deep draft hull vessels is not feasible due to the shallow controlling depths and river geometry. Dredging of the Rahway River is also unlikely due to probable toxic dredge contaminants.

Several nearby bus routes with stops along Roosevelt Avenue could provide transit service for the Carteret site. Service is provided on weekdays with limited weekend service. Bus service should be coordinated with work schedules to ensure that efficient worker transit access is provided.

### 3.0 Environmental Assessment

Approximately 70 of the 137 acres are former landfill. These comprise three solid waste landfills, the Carteret Landfill, the Cranbrook Landfill and the Middlesex Landfill. These landfills officially terminated active disposal operations in 1985, 1966 and 1979. According to 1997 Remedial Investigation Report, the Cranbrook Landfill was closed in accordance with NJDEP requirements, but the other two have never been properly closed.

In 1997 a remedial investigation was conducted of the three landfills. Soil borings were advanced into the landfills and they were found to consist of a heterogeneous mix of wood, soils, house hold refuse a d construction and demolition debris. A leachate mound exists within the landfill material with discharge along the east, north and west sides of the landfill mound. Groundwater monitoring wells were installed in the landfill to sample the leachate. It was found to contain VOCs, SVOCs, metals and PCBs. Sediment and surface water samples were collected from nearby creeks. The sediment was found to contain low levels of metals and pesticides. Arsenic was found at significant levels in two surface water samples.

Two engineering firms have developed conceptual designs for landfill closure by capping. Both consider the closure to include preparation of the landfill such that building foundations and other site improvements can be constructed. Methods suggested for landfill material consolidation include Deep Dynamic Compaction or surcharging (preloading). It is estimated that 2 mm cubic yards of compacted fill will be required to cap the landfill. The material proposed for the capping

fill would be dredged sediment. This material would have to be properly conditioned before being used as placement fill. Additional closure items include landfill gas collection and treatment system, asphalt cap on top of the landfill, groundwater monitoring, leachate collection and treatment, relocation of two creeks, creation of new wetlands and enhancement of existing wetlands. A deed notice will also be required with regard to the landfill material and the site soils. Costs for impending this program range from a low of $19 mm to a high of $36 mm. This program would result in the creation of approximately 50 acres of land on top of the landfill (in the form of a plateau) that would be available for redevelopment.

### 4.0 Market Assessment

The success of the redevelopment of this parcel is closely tied to the proposed reconfiguration of the NJ Turnpike Exit 12 interchange. Transportation access to the site is dependent upon integrating into the design a roadway to the north that will match the proposed grade of the final landfill capping. One possible access option is shown on Figure 3. This figure also provides a reuse design that consists of a 670,000 sq. ft and a truck service travel center.

Market research indicates the need for a full service travel center proximate to the ports and the New York City area. According to the American Trucking Association, the number of trucks on the road has doubled since 1970. This is reflected in northern NJ where there is a significant dependence on trucks to service the port complex. A travel center at this location would allow truckers to stage up before access the ports as well as obtaining needed services. The concept proposed in Figure 3 includes hotels, restaurants, fueling area, truck service area, internet access, laundry and other amenities. Based on the concept provided it is estimated that the proposed travel center would yield approximately $2mm in annual taxes and provide employment for low to moderate-income workers in Union and Middlesex Counties.

The other component of the proposed redevelopment is a 670,000 sq. ft modern warehouse and distribution center. In the last two years Middlesex County has experienced the largest increase in industrial space in the North and Central NJ market. The majority of this increase has been in the Exit 8A sub market, which has seen the construction of several large (over 500,000 sq. ft) buildings recently. In the northern Middlesex sub market, where this building would be located, there is an abundance of smaller buildings (between 5,000 and 20,000 sq. ft) but only three buildings over 250,000 sq. ft. Thus there are only a few buildings with the ability to accommodate a large end user who requires space in excess of 250,000 sq. ft. Developers and realtors indicate that the demand for large state of the art buildings with 36 foot high ceilings and cross dock capabilities is very strong.

As part of this study a limited appraisal was performed on the property. The appraisal was performed under two conditions, “as is” (defined as remediated to industrial clean conditions but not developed) and “as if” (defined as developed in accordance with the concept design). Considering approximately 50 buildable acres, the “as is” estimated value is $15.4mm and the “as if” estimated value is $64mm. Estimate total annual tax revenue to Carteret from the development concept would be approximately $2.9mm.