

The Complexity of Urban Waterfront Redevelopment



Barry F. Hersh
Clinical Associate Professor

New York University
Schack Institute of Real Estate
New York, New York

About the Author

Barry F. Hersh

Barry F. Hersh is a Clinical Associate Professor at the New York University Schack Institute of Real Estate, where he teaches Real Estate Development, Land Use and Environmental Regulation, Green Buildings and Sustainability, and the Development Capstone. Mr. Hersh conducts research on environmentally responsible real estate development and is a core faculty member of the NYU Center for the Sustainable Built Environment. He also participates in international programs, most recently in China and Poland. Mr. Hersh has a special interest in waterfront redevelopment, including work with the Waterfront Center and an academic paper presented to the American Real Estate Society in 2010.

Previously, Mr. Hersh was vice president of Dames & Moore/Brookhill where he participated in more than 50 successful brownfield redevelopments. He consults on redevelopment projects nationwide, participates in the federal Sustainable Community Initiative and leads seminars for community officials working on Brownfields and Waterfront programs.

Mr. Hersh is a Certified Environmental Planner and holds a Masters Degree in Urban Planning from New York University's Wagner School and a Bachelor's in Urban Studies from CUNY.

The Complexity of Urban Waterfront Redevelopment

Prepared for and Funded by the
NAIOP Research Foundation

By
Barry F. Hersh
Clinical Associate Professor
New York University
Schack Institute of Real Estate
New York, New York

July 2012

About NAIOP

NAIOP, the Commercial Real Estate Development Association, is the leading organization for developers, owners and related professionals in office, industrial and mixed-use real estate. NAIOP comprises 15,500 members in North America. NAIOP advances responsible commercial real estate development and advocates for effective public policy. For more information, visit www.naiop.org.

The NAIOP Research Foundation was established in 2000 as a 501(c)(3) organization to support the work of individuals and organizations engaged in real estate development, investment and operations. The Foundation's core purpose is to provide these individuals and organizations with the highest level of research information on how real properties, especially office, industrial and mixed-use properties, impact and benefit communities throughout North America. The initial funding for the Research Foundation was underwritten by NAIOP and its Founding Governors with an endowment fund established to fund future research. For more information, visit www.naiopr.org.

© 2012 NAIOP Research Foundation

There are many ways to give to the Foundation and support projects and initiatives that advance the commercial real estate industry. If you would like to do your part in helping this unique and valuable resource, please contact Bennett Gray, senior director, at 703-904-7100, ext. 168, or gray@naiop.org.

Requests for funding should be submitted to research@naiop.org. For additional information, please contact Shirley Maloney, NAIOP Research Foundation, 2201 Cooperative Way, Herndon, VA, 20171, at 703-904-7100, ext. 107, or Maloney@naiop.org.



Printed on recycled paper

Table of Contents

Section	Page Number
Executive Summary	4
Problem Statement	5
Case Studies	8
Harbor Point, Stamford, Conn.	8
Delaware River, Trenton and Camden, N.J., Philadelphia, Pa.	12
Maumee River East, Toledo, Ohio	15
Reynolds Industrial Park, FEDEX, Troutdale, Portland, Ore.....	18
Brief Case Notes	20
Analyses and Strategies for Waterfront Redevelopment	23
Leadership and Building a Team	23
Approval Strategies.....	24
The Role of Stakeholders	26
The Need for Innovative Financing	26
Site Acquisition Strategies	29
Synergies Between Remediation and Redevelopment.....	31
Maximizing Waterfront Benefits and Creating True Mixed-Use	34
Key Factors in Success or Failure	35
Conclusions	37
Appendix A	41
Sources	43
Publications.....	43
Interviews and Links.....	45
Endnotes	48

Executive Summary

The mixed-use redevelopment of formerly contaminated waterfronts has become an important, but challenging part of urban revitalization, and also a significant real estate opportunity. This research project looks at the complexity of waterfront brownfields from the developer's perspective and analyzes several cases as well as previous research, to suggest specific strategies for dealing with the process of remediating and redeveloping waterfront brownfields.

There's been a remarkable renaissance on America's urban waterways. The decline in industrial use has led to the opening up of waterfronts for increased residential, recreational and commercial use. In an era when traditional suburban development has become difficult due to transportation costs, environmental concerns and market shifts, in-city waterfront brownfields have often shown themselves to be significant opportunities. While there have been outstanding projects completed over time, the challenge is to provide a framework, so waterfront revitalization can be expedited and made more common, with greater emphasis on long-term sustainability.

Waterfront brownfield revitalization is extraordinary complex, incorporating real estate economics, land use, community benefits, ecology, hydrology, sustainability metrics, design, and politics across a variety of associated disciplines. Also involved are an array of regulatory and funding agencies, at the federal, state and local levels, and often elaborate impact analyses and mitigation strategies must also be employed. Developer concerns such as site analysis, land re-use approvals, market analysis, financing, remediation and liability approaches, project organization and sequencing, waterfront design and shoreline improvements, as well as a host of regulatory reviews are all involved. This study looks for systemic concepts that facilitate private sector-led urban waterfront redevelopment. After a careful literature review, including quantitative analyses as well as projects, this study uses case studies and interviews to provide information for developers.

Among the strategies discussed are:

- Leadership roles and team building;
- Innovative financing tools, including government programs;
- Techniques such as charrettes, checklists and critical paths to aid information flow and support creative planning and design; and
- Specific approaches to difficult aspects such as acquisition strategy and synchronizing remediation and redevelopment.

While there is no silver bullet, there are a set of strategic pathways toward successful redevelopment of waterfront brownfields.

Problem Statement

Remediating and redeveloping contaminated sites has, for the past 20 years, been recognized by planners as a key to promoting sustainable reuse of urban land and avoiding sprawl. One benchmark study found that it took 4.5 acres of Greenfields to accommodate the same growth as one acre of brownfield redevelopment¹. What has changed is that the real estate community now sees in-city or older suburbs, especially relatively dense, transit-oriented development, as a stronger market opportunity. Many observers, such as the Brookings Institution's Christopher Leinberger,² see exurban development as not only gobbling open land, but also requiring much more new infrastructure and auto driving and contributing to the housing recession. Finally, there is a real estate truism that waterfront "always sells." So it is not surprising that there is more developer interest in urban waterfront brownfield sites from New Jersey to Oregon. That interest extends into communities from Trenton to Oakland that have not seen much private development in many years — but whose waterfronts are coming alive.

The definition of brownfield is relatively loose — "a vacant or under-used industrial or commercial property whose redevelopment is complicated by real or perceived contamination"³ — making efforts to quantify brownfields very difficult. The EPA Brownfields program has supported assessments at 18,000 properties and estimates roughly 25,000 acres are ready for reuse.⁴ However, most brownfield and other contaminated sites are under state jurisdiction. The Northeast Midwest Institute estimated in 2008 that roughly 50,000 brownfield sites had been remediated, and that between 6,000 and 7,000 additional sites are completed each year.⁵ An earlier (1994) estimate of 450,000 brownfield sites in the United States has been oft-quoted, including by the Government Accounting Office.⁶

Broader, recent measures of contaminated sites indicate an even greater number of sites that could be considered brownfields. The U.S. EPA ACRES data base of "tracked sites" includes all EPA and State programs, and totals over 500,000 properties, with over 15 million acres, as of 2011; close to one million acres have reached cleanup goals in all programs.⁷ HUD 2005 data indicates five million acres of vacant industrial land in the United States.⁸ Environmental Data Resources, a private company that provides environmental information, has 23 million records of property contamination from 1990 to 2010.⁹ Waterfronts have often been industrial and often contaminated; a 2005 study of New York City found that over 40 percent of brownfields were along waterways,¹⁰ although this is likely a higher percentage than occurs nationwide.

The U.S. EPA "Handbook on the Benefits, Costs and Impacts of Land Cleanup and Reuse" did make full use of EPA ACRE and other



data sources and provides the equilibrium analysis in Appendix A that quantifies land values of brownfield sites in relation to the center, or 100 percent location, in real estate analysis. The same concept could be applied by measuring distance from waterfront or any other desirable real estate center. The “dip” in the center of the graph illustrates a decline to no value for a property with known, severe contamination. As the remediation occurs and is documented, the value returns to the same pattern. This is, on the ground, exactly what redevelopers try to do — restore a brownfield so that it becomes, and is valued, as conventional real estate.

The statistics and graphs illustrated in Appendix A demonstrate the issues of quantitative analyses, whether using hedonic or equilibrium techniques, based on the data available. It would take an entire study to fully quantify and analyze total brownfields and another to attempt to segment those on waterfronts. There are a significant number of properties with some level of contamination. While a relatively smaller number of sites have been remediated, substantial waterfront brownfield opportunities remain. The analyses (see Appendix A) do indicate that contaminated sites, even waterfronts, will essentially fall off the table in terms of value, but can return to the overall pattern after remediation and redevelopment. There needs to be both the reality and perception that the location is safe.

That a brownfield is defined as property where redevelopment is “complicated” not only results in a large number of brownfield opportunities, but also points to the challenges to restoring value to a waterfront brownfield property. Real estate development is inherently a complex and risky endeavor, involving site selection, design, land use planning, market feasibility, financing and more. Working on brownfields adds an additional layer of complexity: assessing site contamination, remediation method selection and perhaps most importantly, environmental liability issues.

Waterfronts have their own layer of concerns:

- Preservation of maritime activities;
- Shoreline access and treatment;
- Ecological concerns; and
- Design constraints and opportunities.

Finally, brownfield redevelopment has inherent sustainability features. For example, LEED certification for both buildings and neighborhoods recognize and value brownfield remediation. However, there are further steps, especially related to energy conservation and stormwater design, necessary for recognition as “green.” Gaining the full value from an environmentally distressed asset is a challenge, indeed.

Perhaps most disconcerting to traditional developers, a sustainable waterfront brownfield project is subject to a whole new set of regulators. The chart below illustrates the major categories of review, and the regulator at the federal, state and local levels.

Waterfront Brownfields Review Process

LEVEL	CONVENTIONAL	BROWNFIELD/ENV.	WATERFRONT	GREEN
FEDERAL	FHA, Fannie Mae, Freddie Mac Tax Credit (Low Income, Historic, and New Market) via State, CDBG	EPA-CERCLA Brownfield Assess and Tax Credit Endangered Species	Corps of Engineers, Coastal Zone, Floodplain, Wetlands, Ports, U.S. Fish and Wildlife	EnergyStar Renewable Energy
STATE	Environmental Impact Statement, Major Traffic Issues	Voluntary Clean-up programs Brownfield Incentives	SPDES Discharge Shoreline Design Water Transport Wetlands	Energy Incentives
MUNICIPAL	Land Use Permits, Traffic and Parking, Transit-Oriented Design, IRBs, Tax Increment Finance	Brownfield Incentives	Public Access Wetlands Stormwater	Weatherization, Green Codes, Stormwater
PRIVATE NON-PROFIT ORGANIZATIONS	EIS Comments, Public Hearings	Environmental Justice and Stewardship	Environmental Advocates	LEED
FINANCIAL	Equity/Partners Debt/Lenders	Environmental Insurance	Insurance	Green Funds

Legend

CDBG – Community Development Block Grant

IRB – Industrial Revenue Bond

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act, 1980 (Superfund Law)

SPDES – State Pollution Discharge Elimination System (New York and similar in other states)

The developer must pick his way through this entire array of reviews in order to successfully maximize the value of the redevelopment. The case studies that follow illustrate how that process can work and how sometimes projects fail — and what can be learned from both.

Harbor Point, Stamford, Conn.

Is the fourth developer the charm? An early visionary (Arthur Collins), a stalled site (Yale & Town/Heyman), an overly-aggressive developer (Antares) all tried and failed. Then in 2008 strong financing supporting the Harbor Point project, Lubert-Adler and initially Goldman Sachs, chose to bring in an experienced developer, Building and Land Technology (BLT), and the project has since moved ahead. On the Long Island Sound peninsula, known as Stamford's South End, with highway and rail service, the 80-acre Harbor Point project proposes 1,000,000 square feet of commercial space and 4,000 residential units in five distinct areas. The total project value exceeds \$3 billion, one of the largest developments in the Northeast.



Courtesy Harbor Point, LLC.

Harbor Point is well underway, and has already remade the South End, with close to 1,000 units built, a successful Fairway supermarket, other retail and several new or renovated office buildings. The set of “villages” conceived by noted planner Andy Altman, then of Goldman Sachs, are now apparent. The project continues to wind its way through a complex set of city, state and federal regulations, the latest issues being a perceived commitment to save a local repair boatyard as distinct from a marina, public access and the nature of a proposed hotel. Many aspects of this project are worth noting:

- A former utility site directly on the water;
- The 19th Century Yale & Town Lock assembled property including historic loft buildings that laid largely vacant for 40 years;
- A master planning process that started with a City plan; and
- A design for the former industrial facilities of Pitney-Bowes adjoins their I.M. Pei designed headquarters.

Stamford is a growing suburban “edge city,” 45 minutes by train from New York. It has reinvented itself from an industrial town to a corporate research community, to a financial center featuring Swiss Bank, RBS, SAC and GE Capital. Most recently, a media center with television studios now adding NBC Sports. The South End peninsula is surrounded on three sides by Long Island Sound, with views as far as Manhattan. It is separated from downtown and served by I-95 and a major train station served by Amtrak and its Acela, second only to Grand Central in the Metro North rail system.

The approval process moved relatively swiftly for such a massive project. The Harbor Point team, led by General Counsel John Freeman, included highly regarded architects Perkins-Eastman as well as local counsel, planning, housing and environmental experts. Stamford is a sophisticated city, and had earlier prepared master plans for the South End, recognizing that the South End was a hodge-podge of outdated and underutilized properties awaiting redevelopment. The

project had little initial local opposition and was primarily concerned about competition from the downtown business district. Harbor Point was strongly supported by then Mayor, now Connecticut Governor, Dan Malloy. As Robin Stein, the long-time Stamford Planning Director and now Chair of the State Public Utilities Regulatory Authority noted, this developer's approach was to focus on speed and push the envelope in the field. With strong political support and little opposition, many items, such as providing parks, affordable housing and environmental sustainability requirements, were agreed to and negotiated quickly for a project of this size. **By moving both remediation and redevelopment simultaneously, the developer was able to achieve a synergy that effectively reduced the cost of the remediation.** Project issues include:

- Environmental work procedures;
- Certificate of occupancy disputes;
- Efforts to limit use to residents only;
- Removal of a full working boatyard;
- Labor practices; and
- The conference function of a proposed hotel, raising an earlier concern about competing with downtown But, while the community concerns are noticeably louder, none has stopped the project.

By fall 2011, the Fairway supermarket was doing well, and a few other retailers had also opened. The totally rehabilitated 200-unit Lofts building rented out very quickly. This long, narrow historic building had recently housed only a number of artist studios, which were relocated by BLT to a nearby old, but not historic, structure. Rentals of a new 316-unit high-rise farther from the train station moved somewhat slower. Another 300 units of housing are under construction. The new, long-promised Waterside elementary school is open. Two office buildings are complete, but there have been only limited office rentals, despite office being BLT's strongest experience. However, this is understandable given Stamford's now 20 percent office vacancy rate. BLTs South End portfolio also included a number of existing office buildings, one of which has been sold. Harbor Point has achieved a LEED-ND (Neighborhood Development) Gold certification and some individual buildings are also LEED certified.

Perhaps the most interesting financial process was the successful issuance of Tax Increment Financing (TIF) for infrastructure improvements of \$145 million, in January 2010. This process was all but complete in late 2009, when Malloy's term was over. The new Mayor, Michael Pavia, was cautious, and wanted all the bond paperwork (and credit) to be done before he took office. Underwritten by a west coast firm, Stone and Youngberg, the bond includes \$16 million under the Federal Recovery Zone program with a subsidized interest rate



of 6.78 percent. The remaining \$129 million was raised through the sale of tax-exempt special obligation revenue bonds, a class of municipal bonds. Within that category, \$113 million of the bonds had a 7.87 percent interest rate and a maturity date of 2039, while \$15.9 million had a seven percent interest rate and a maturity date of 2022. As with most TIFs, the bonds are not backed by the full faith and credit of the City of Stamford, though the City's AA+ rating may have helped the issuance. As a result of the TIF financing, roads, infrastructure and parks have been built this past year. In late 2011 the City received a \$10.5 million grant to upgrade the existing train station¹. It is all about the timing: will the project move quickly enough to keep creditors, including the \$10 million annual TIF payments that start soon, at bay? Despite the recent flurry of criticism, Harbor Point has already dramatically changed the South End of Stamford, so perhaps the fourth developer is the charm.

Harbor Point, Stamford, Conn. Fact Sheet

Location: Connecticut
Region: Lower Fairfield County, New York Metropolitan Area
Municipality: Stamford

Neighborhood: South End
Water Body: Long Island Sound

Infrastructure

Transportation: Road: I-95
Rail: Amtrak and Metro North
Water: Ferry service proposed to NYC
Utilities: Sewer, water, storm water, power
Older community, utilities in place, but in need of upgrades
Site Characteristics: Peninsula south of downtown Stamford, some historic fill

History: Previous uses, plans and condition upon purchase

Generally previous uses were industrial, Pitney Bowes, utility, Yale & Town
Several older mill buildings retained for rehabilitation, other areas cleared
Variety of earlier plans by City and three previous developers
Stamford has gone from industrial, to research, to finance center (UBS, RBS) and recently added media

Development

Market Analysis and Feasibility: Stamford is a strong “edge city” with excellent rail and road access to New York City
Land Use(s): Office: Two new buildings, total 120,000 square feet, more planned
Retail: 60,000 square foot Fairway Supermarket, 30,000 square feet of other retail, more planned
Residential: 1,000 units built, 3,000 additional units planned
Value: Total estimated value of entire project is \$3 billion +

Environmental Issues

Wetlands: Very limited
Water Quality: Strong storm water and other controls to protect Long Island Sound
Flood Plain: Very limited
Contamination: Brownfields, no Superfund; former industrial area
Fill areas: Require extensive CT DEEP (Dept. of Energy and Environmental Protection) review and approval
Sustainability: Transit-Oriented Development, close to major train station

Design

Shoreline, extensive rip-rap, behind flood control barriers
Public Access: new park areas

Financing

Equity and Debt: Lubert Adler, Goldman Sachs
Government Loans: \$145 million Tax Increment Financing

Approval Process

Federal: Corps of Engineers for waterfront; Sustainable Community Initiative for transit-oriented development
State: Connecticut DEEP for environmental remediation
Connecticut DOT for train station and service, underpass, highway access
Municipal: City of Stamford Land Use, local infrastructure
Community: Many meetings, Loft Artist relocation, new Waterside Elementary School

Leadership: Building and Land Technology
Carl, Paul and Kurt Kuehner
John Freeman, Esq.

Team: EEK Architects
Perkins-Eastman Architects
Sasaki and Associates, Landscape Architects
Fuss & O'Neill, Civil and Environmental Engineering

Complexity: Extraordinary

CASE STUDIES

Delaware Waterfront: Trenton and Camden, N.J. and Philadelphia, Pa.

The Delaware River separates New Jersey from Pennsylvania and Delaware, and Philadelphia from Camden, before it runs to the Chesapeake Bay. A series of projects along the Delaware, some successes (Trenton, Philadelphia Navy Yard) some failures (Camden/Pennsauken-Cherokee), mark the effort to re-use the historically industrial river.



“Trenton Makes — the World Takes.” So reads the famous sign on Trenton’s Delaware River Bridge. Further south, the historic Philadelphia Navy Yard was once a major military and industrial facility. Camden is still home to Campbell’s Soup, but earlier featured a host of industrial uses, including RCA records. All of the governments along the Delaware have endeavored to reuse former industrial properties for new, mixed-use development projects.

The City of Trenton has won a record six EPA Phoenix awards for brownfield redevelopment, most recently for the Magic Marker site. Prior Phoenix Awards were given for:

- Waterfront Park (1999);
- Crane Site (2001);
- Lafayette Yard Hotel (2002 the first new hotel in downtown Trenton in decades);
- The Battle Monument Area (2004); and
- Three Hutchinson Industries facilities (2008).



City of Trenton: Before and After

In total there have been over 60 brownfield projects, including a new arena and redevelopment of the former Roebling Steel site. Half of these sites were along the Delaware and its tributaries. A city that lost most of its manufacturing base in past decades, Trenton has used innovative land use and remediation approaches to redevelop sites. An early (1999) master plan focused on the waterfront and brownfield redevelopment, easing the land use process.

As the state capitol, Trenton received considerable state as well as federal support; the state housing finance building is located on a former brownfield. Innovative remediation techniques, such as the use of mustard plants for phyto-remediation, were effectively utilized. Alan Mallach, the long-time planning director, saw redevelopment in terms of a series of urban, mixed-use villages, projects that build neighborhoods and eventually the entire city.

The 11-acre Crane site was one award winner. A former pottery plant re-used for industrial facilities by developer Jeffrey Faigle, who was able to effectively utilize an initial EPA \$200,000 assessment grant, as well as another \$60,000 New Jersey grant and New Jersey’s Voluntary Cleanup Program. James Mack of NJIT noted that the environmental remediation of the Crane site was far less than early fears,



MS&R Architects



MS&R Architects



Courtesy of O'Neill Properties

under \$200,000. Each of the brownfields projects contributes to a near-downtown neighborhood. Trenton still has a way to go, but it certainly has established a track record for brownfield redevelopment.

Alan Mallach was the Commissioner of Planning and Development in Trenton when these projects were initiated and, in some cases, completed. He determined from the onset that a dedicated specialist was needed — someone who understood brownfields — and felt that having such a specialist was key to the city's relative brownfield success.

Philadelphia also has its share of brownfield success stories, as well as more work to be done. One notable success is the Philadelphia Navy Yard, in particular the 2006 redevelopment for the new headquarters of Urban Outfitters and related brands Free People and Anthropologie. Five historic buildings totaling 250,000 square feet are now occupied by over 600 employees.

This reuse of a waterfront brownfield was also a “green” project. The reused historic industrial buildings are 50 percent more energy efficient than typical. Reused material (building rubble and perforated matting) were utilized for bioswales that filter rainwater flowing into the Delaware River. A waterfront walkway provides public access as well as an amenity for employees. This project won awards from: Urban Land Institute, the Waterfront Center and the National Trust for Historic Preservation.

There are numerous other brownfield redevelopments in Philadelphia, not all on waterfronts. The new Philadelphia Wholesale Produce Market, by O'Neill Property Group is noteworthy because of its public-private partnership, an innovative refrigerated facility, which ties in to use of local produce on a formerly very contaminated site.

Another success story is the former Chester Electrical Generating Station, which is on the Delaware River. This 90-acre site was formerly owned by a provider of energy services, PECO, now Exelon Corporation. Chester, Pa., located south of Philadelphia and its airport, is a poor, largely minority community that was seen as lacking environmental justice due to the disproportionate number of waste-related facilities.

The Chester Electric Generating Station was remediated under an innovative brownfield Resource Conservation and Recovery Act (RCRA), often considered a particularly difficult federal statute, not amended by the Brownfield Act of 2002. The property owner PECO was responsible for the remediation, and sold most of the site for one dollar to the developer, Preferred Real Estate Investment, led by Michael O'Neill. The existing building was rehabilitated and now serves 1,500 employees, including the headquarters of Synegy, a software company and other high-technology tenants. Exelon continues to operate a substation. A riverfront walkway, connecting to the adjacent new soccer stadium, was also part of the project.



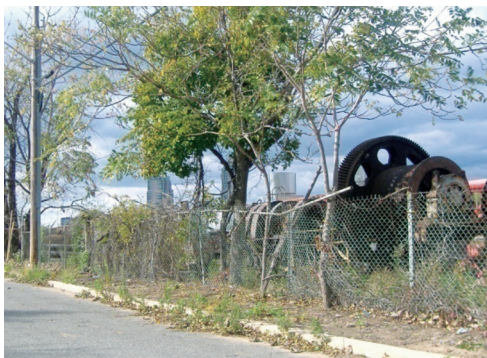
Camden, N.J., across the Delaware from Philadelphia has struggled even more than Philadelphia or Trenton. A proud industrial history, featuring Campbell's Soup (which remains), RCA Records and a host of industrial uses, has given way to urban decline. There have been some pioneering efforts toward redevelopment — the state-supported aquarium, Coopers Ferry and the Heart of Camden, led by a local priest. Much of the city, especially the waterfront, has become a series of scrap yards and abandoned properties.

In 2002, the largest brownfield developer in the nation, Cherokee, started to look at Camden and its northerly neighbor Pennsauken, and came up with a sweeping vision for 2,700 homes, 500,000 square feet of office and retail space, a conference center and a golf course. Cherokee put an enormous amount of effort into the project. There was broad support from local and state elected officials and the community — but several issues arose. Rather than starting to buy properties, Cherokee sought a comprehensive acquisition agreement, offering above-market pricing, but with the threat of condemnation lurking.

Then there was the 292-acre Petty's Island, part of Pennsauken Township but separated by the Delaware River and visible from the major bridges to Philadelphia. Including Petty's Island as part of the overall plan made some sense, but became a metaphor for the project. A nesting eagle pair was found to be on the island, which is part industrial and part woodland. Cherokee, which prides itself on its sustainability commitment, faced environmental concerns about the eagles. Seeking a solution, Cherokee hired a falconry expert who camped on the island one weekend when an eaglet fell out of its nest and died. That resulted in a large fine from NJDEP, litigation and eventual dismissal in court. Also, Hugo Chavez of Venezuela, which controls CITGO and never agreed to the plan, later made an offer to donate the island to New Jersey as an environmental sanctuary.

Meanwhile, there was also opposition from some property owners, including scrap dealers. When a procedural land use issue arose and the grand acquisition strategy faltered, the project began to fail and was abandoned as the economy began to stall. In some sense, the scrap and drug dealers won: a reputable company seeking to invest millions into a deteriorated waterfront brownfield community was rejected. There are lessons to be learned in terms of acquisition strategy, land use planning, community and political involvement.

While one private developer has withdrawn from Camden, efforts to revitalize its former industrial waterfront have moved forward. Long standing efforts, notably the Heart of Camden, led by the Catholic diocese, continues to work on social and health goals as well as redevelopment issues. Cooper's Ferry Development Corporation proceeds with its strong efforts in downtown and near the state supported aquarium project. More recently, North Camden was named a Brownfield Development Area, bringing resources from several state agencies and hopefully renewed developer interest.



Camden Photos by John P. Sullivan

Toledo, Ohio – East Waterfront

It is easy to talk about innovative financing approaches, but Mayor Michael Bell of Toledo — the epitome of a rust-belt, auto-based city — accomplished the far more impressive task of actually using a new financial tool. The EB-5 program was created by Congress in 1990 and essentially grants a temporary visa (green card) to those who invest \$1 million (\$500,000 in targeted areas) to create at least 10 jobs. In Toledo, the east (heavily industrial) side had Main Street and limited waterfront reuse efforts over time. The West (downtown) side of Maumee River saw a series of long-term urban renewal type projects, some successes and many struggles. As Toledo Community Development Director Brad Peebles said, “It all started when Mayor Michael Bell went to China in 1998 and came back with potential EB-5 investors to acquire and develop the proposed marina district site in East Toledo.”

In 2002, First Energy gave around 120 acres of land to the city along with \$8 million for environmental cleanup. The site, formerly the home of the Toledo Edison power plant, had many environmental concerns including remediation of fly ash ponds and asbestos removal. Over the last 10 years, the city had spent close to \$40 million, which included building infrastructure as well as remediation, and a new two-foot cover of clean soil. This project has now spanned three different mayors.

In 2009, discussions between a Chinese investment company called Dashing Pacific (DP) and Mayor Bell, former fire chief of the city, began, focused on existing restaurant venues. It led to the \$2.1 million purchase of a waterfront restaurant in a former warehouse that was part of earlier renewal efforts. Dashing Pacific then agreed to consider an acquisition of 69 acres of the former First Energy site, but shied away after a few city councilmen made questionable public remarks in the news media. The Mayor traveled to China to court the company and brought them back to the table.

The remediation addressed PCB, heavy metal, coke and emissions. Pellets were designed to promote in-situ bioremediation but had limited effectiveness in the former lagoons and shallow estuary. Later, large geo-fabric tubes were used to take dredge materials, seal and dewater them to be treated as a pozzolan (a cement-like material). The stabilized building material was then used as the center of dikes to handle excess water flooding and channeling of the storm water flow that is a problem in the flat, low-lying lake topography.

The deal was 60 acres for \$3.1 million all cash, EB-5 eligible but no loans. The laws of China state that no one is allowed to transfer more than \$250,000 out of the country in a week, so after 13 weeks, DP had enough cash to buy the land. The land also came with an option





Skyway (formerly Glass City) Marina, U.S. Fish and Wildlife Service

to buy another 13 acres, which after remediation by the city, will be turned into green space. Six of those 13 acres have an old Acme power plant on them, which also has fly ash. Their plan is to build multifamily residential while blending commercial space. The model they are using is called the “international village” where stores and restaurants reflecting many different cultures will provide an exciting venue for shopping and recreation. The east Maumee waterfront, long industrial, is being redesigned after extensive environmental assessment and remediation, with new shoreline treatments and extensive upgrades to the Skyway (previously Glass City) Marina.

There are other projects all aimed at bringing new economic activity to Toledo. Chrysler recently announced a \$500 million expansion of the Toledo Jeep plant. A casino is being built about 1.5 miles east of downtown on I-75, but not connected to the east side riverfront development. The casino group does not yet have plans to build a hotel on the site, but could if room occupancy rates downtown reach around 70 percent. Meanwhile, the Marriott has agreed to put in a Courtyard Hotel in the former Fiberglass tower downtown. The Park Inn, another downtown hotel, has been bought by Chinese investors and is going to be turned into an international business center. There is some long-awaited downtown residential movement happening: 200 market-rate single units are coming online, with possibly 250 more coming next year. In other hard-hit parts of the city, urban agriculture is being utilized as an interim use. While there are many moving parts, the east side riverfront is at the core of the city, and represents a key component of the rejuvenation efforts. The east waterfront projects, with extensive environmental and redevelopment costs, would not be possible without the infusion of new capital.

East Toledo Waterfront Fact Sheet

Location: Ohio

Region: Northwest Ohio

Municipality: City of Toledo, Lucas County

Neighborhood: East Toledo

Water Body: Maumee River, Lake Erie

Infrastructure

Transportation: Access to Interstate

Rail and Water: Ferry service across Great Lakes

Utilities: Sewer, water, storm water, power

Site Characteristics: Extensive remediation

History: Previous uses, plans and condition upon purchase

Industrial, including electrical generating plant

Tony Packo's Restaurant, Glass City Marina

Development

Market Analysis and Feasibility: Toledo Port Authority

Land Use(s) Proposed or development: Casino, Museum (in ferry terminal)

Value: \$3 million for land, total project

Environmental Issues

Wetlands: Some

Water Quality: Stormwater controls

Contamination: Brownfields, Superfund

Design

Shoreline: Conversion of formerly industrial riverfront to walkways, marinas, commercial uses

Public Access: Much improved on East Side, including walkways, view point and marinas

Financing

Equity: EB-5 Visa

Conventional Debt: None

Approval Process

Federal: Superfund

State: Ohio EPA

Municipal: Toledo, Active neighborhood community organizations

Leadership

Mayor Michael Bell

Complexity

Significant

Portland, Ore. – Troutdale Reynolds Industrial Park, Troutdale



Courtesy Reynolds Metals Development Company

The former Troutdale Aluminum Smelter was a World War II vintage industrial facility built and operated by Reynolds Metal Company. In 1998, it was acquired by Alcoa who closed the facility in 2002. The site is located within the Portland Metropolitan Area Urban Growth Boundary, but in the small community of Troutdale, near the western edge of the scenic Columbia River Gorge. The site was in the federal Superfund program. Christopher Grace, who was real estate director for Reynolds Metals Development Company, saw the potential in the site and convinced two corporate hierarchies that there was value in the property. Working with environmental consultants, they were able to control remediation costs at industrial re-use standards.

Troutdale had its own ideas for the property — some grandiose, including a theme park or a NASCAR track, for which there was no real developer. The Portland Port Authority, represented by Joseph Mollusky, was initially interested in an intermodal facility and acquired the site for \$25 million. There was considerable concern from the community and in terms of finding appropriate uses and financially capable participants.

When the opportunity came for a substantial portion of the site to be used for a new FedEx distribution facility, things moved very quickly. On-site contamination had already been characterized, and remediation was being done by the environmental engineering firms Tetrattech and CH2MHill, with Reynolds/Alcoa as the responsible party, within the Oregon voluntary clean-up program. Much of the site area that had been remediated to industrial standards was approved for reuse by FedEx.

The Port had bought the 700-acre site property based upon the approved cleanup and sold the first 77-acre parcel to FedEx Ground, which built a 507,800-square-foot regional distribution center. The center opened in October 2010 and currently supports a workforce of 800, with employment projected to increase by several hundred in coming years. The Port plans to develop an additional 280 acres of the site property for industrial uses, with the rest of the land set aside for infrastructure, open space, wetlands and a recreational trail. The Port was the recipient of a national Phoenix Award in 2010 for achievement of excellence in Superfund site reuse.

As the site had such an industrial history, was far removed from neighbors, yet within the Portland Growth boundary, the land use approval process was greatly accelerated. It involved only a site plan review process, though significant road improvements to handle increased truck traffic were agreed upon. The environmental remediation was already far enough along. The project was approved in just a few months and constructed almost as quickly.

In 2011, the remaining portion of the site has been proposed for two natural gas energy facilities. At this point, proximity to the western end of the Columbia River Gorge has been raised as an issue.

Troutdale Aluminum Plant Fact Sheet

Location: Oregon
Region: Portland Metropolitan Area
Municipality: Troutdale
Neighborhood: Troutdale
Water Body: Columbia River, Sandy River

Infrastructure

Transportation: Road Interstate 84 interchange, upgraded
Rail: Yes
Water: Yes
Air: Near Troutdale airport (height restrictions)
Utilities: Sewer, water, stormwater
Power: Located near Bonneville Dam Power Lines

History: Previous uses, plans and condition upon purchase

Built in 1941 by Reynolds Metals Company to expand wartime production of aluminum and aluminum products
Within Portland metro urban growth boundary
Site and design review process (no public hearing)

Development

Market Analysis and Feasibility: FedEx built new, larger facility
Land Use(s) Proposed or development size (so) for each use: 77 acres, 570,800 square feet (FedEx)
Value: Approximately \$75 million

Environmental Issues

Wetlands: Significant in total land
Flood Plain: Small percentage
Contamination: Brownfields
Superfund: Yes

Financing

Equity: Port Authority of Portland, FedEx
Conventional Equity and Debt
Government Grants: Oregon Land Conservation and Development Commission

Approval Process

Federal: Superfund
State: Brownfields Voluntary Clean-up
Municipal: Troutdale expedited Site and Design Review — no public hearing

Leadership

Chris Grace: Reynolds Metals Development Corporation
Melissa Friedland: US EPA Superfund redevelopment

Complexity

Minimized land use process time, Accelerated Superfund process

1. Asheville, North Carolina — River Arts District

Over a 20-year period, Asheville and its communities have adopted plans for a set of community amenity projects, improving parks and public access along the French Broad River. The River Arts District is a near-downtown neighborhood in transition that has seen an influx of artists, the redevelopment of a former mill site and the establishment of four community parks. The actual site remediation required was limited, and EPA brownfields assistance helpful. The project had positive impacts on stormwater runoff and water quality. The project is useful, as a model of community planning, ties to the regional planning agency (Land of Sky Regional Council) and a study of land-use alternatives, ranging from luxury housing to public waterfront access. To date, Asheville continues to seek significant private development in the River Arts District, interest increasing as the economy improves.

2. New York City, New York — New Municipal Brownfield Program

There are numerous major waterfront brownfield success stories in New York, especially along the East River from Williamsburg, Brooklyn to Long Island City Queens. All benefited from a strong, resilient and high barrier-to-entry market as well as the highly lucrative, and now suspended, New York State Brownfield Tax Credit Program. In 2010, New York City became the first municipal brownfield program reaching Memorandums of Agreement, initially with the New York State Department of Environmental Protection and then with the United States Environmental Protection Agency.

The New York City Brownfields Program focuses on lightly contaminated properties and uses a set of templates to efficiently evaluate environmental conditions using the same standards as New York State. In its first 18 months of operation, 50 properties were reviewed by the expert staff at the New York City Mayor's Office of Environmental Remediation, most with turn-around times of a month. The program does include some modest (\$50,000 or less) grants, but it is the prompt provision of environmental review and liability protection that is the key feature of the program.

3. Denver, Colorado — Bayaud Street

The Bayaud Street General Chemical Facility had a long industrial history and a strategic location near new light rail and bordering on the Platte River. The City of Denver acquired and reused the site. Environmental insurance from International Risk Group, LLC (IRG) protected both the seller and the buyer within the very tight time schedule. Denver, through their public-private partnership with the IRG, was able to integrate a significant environmental cleanup with the site preparation and construction of their new facilities. Denver constructed their new facilities in a compressed time frame and met schedule constraints presented by the complexities of this project. The end use includes:

- Public works offices;
- Public works maintenance facility;
- Storage for snow plows and other equipment;
- Centralized fueling facility for the city maintenance fleet;
- Animal shelter; and
- Storage facilities for road salt and road de-icing chemicals (all opened by 2011).

These facilities cover the majority of the 37 acres with buildings, roadways or asphalt parking lots, helping to form a protective cap on the site. The facilities are fully integrated into and part of the environmental remedy. They, along with a two-foot thick soil cap within the unpaved portions of the site, effectively form a barrier to exposure to subsurface materials, prevent direct human contact with contaminated soil and prevent infiltration that would come into contact with waste and ultimately impact groundwater at the site. The project was completed in 2011.

4. Portfields, Intermodal Transportation in Tampa, Florida and other locations

Tampa, Fla. is among the numerous communities where the local Port Authority has taken a lead role in brownfields remediation. Projects include not only clean-up but also reuse of brownfields, often for intermodal transport. Such locations allow for cargo, usually containers, to be transferred among ships, trains, planes and trucks. These projects are often significant economic generators. The Port Authorities involved range from the huge (i.e., the Port Authority of New York and New Jersey, Los Angeles Port Authority) to the tiny (i.e., the Ogdensburg New York Port Authority on the St. Lawrence Seaway).



Port Authorities are generally self-sufficient, receiving a revenue stream from the docks and harbors, and sometimes work with private developers. In some communities, Port Authorities are involved in numerous projects that go beyond just shipping, because of their financial capabilities. Some private logistics developers, notably Prologis and Centerpoint, have successfully focused on intermodal facilities. These are sometimes brownfield sites such as CenterPoint's former Joliet Arsenal project.

Numerous other projects were considered for detailed review, but were not included either because the project was not far enough along or because the federal government had played a decisive role. Among these were:

5. Washington, D.C. — Anacostia

6. Vallejo, Calif., Mare Island — Lennar Builders

7. Cincinnati, Ohio — The Banks

Analyses and Strategies for Waterfront Redevelopment

One of the attributes of a complex system is that there are no straightforward rules, only approaches that coordinate numerous aspects of the project, work within that context and seem to have broader applicability with adaptation. The following is a set of analytic themes aimed at bringing order to a level of complexity that can seem to approach chaos, but which developers must and can overcome in order to succeed.

Leadership and Building a Team

Real estate development never just happens: Leadership that pushes the project forward is always required. Waterfront brownfields demand a key leader who is fully committed, can see the broad scope of issues, and is both persistent and flexible. Developers are most often that key leader in taking on these complex projects, but mayors, planners and community leaders may also be that long-term champion. Experience is very helpful, but repeating what has worked in the past may not be sufficient to find each project's unique path to success on all the issues. Sufficient resources are important, and the flexibility and ability to deal with extraordinary complexity is essential.

J. Brian O'Neill stands out as a regional developer who has successfully focused on a series of brownfield redevelopments. In Harbor Point, the BLT leadership is clearly the Kuehner family, but John Freeman, as Executive Vice President and General Counsel, is essentially the public face of the project. In Toledo, Mayor Michael Bell took it upon himself to find a way to finance an important but stalled project. In Portland, the corporate owner's representative, Christopher Grace of Reynolds Metals Development Company, drove the process and found the user. Both Trenton and Stamford had strong planning leadership; it is not coincidental that both were among the first to receive EPA Brownfield assessment grants and had updated master plans — before the developers appeared. Each developer must find the right role for himself, and for the project team members.

These complex projects also require not just one, but usually several public/private efforts, whether formal partnerships or regulatory. Having relationships with elected officials, both executives and legislators can be crucial — note Dannell Malloy's support for Harbor Point as Mayor and Governor. **But mid-level relationships, with environmental and land use regulators can also be critical. Managing those relationships, having the right team members from architects to hydrologists, makes all the difference.**



The team required for a waterfront brownfield is larger and has a broader range of skills than most developments. In addition to the civil engineer, there will be environmental engineers, hydrologists, sustainable stormwater designers and possibly other specialists. The legal team will need to be expert not only in real estate transactions and land use approvals, but also in dealing with environmental regulators and liability protection. An insurance broker specializing in environmental policies is often used. The architectural team will not only have to deal with building design, but also waterfront issues, green certifications and possibly historic preservation.¹¹ And the developer gets to pay for all of them.

The importance and potential of designing a waterfront is special — standard “big box” or other cookie-cutter plans maximize opposition rather than profits. Views of the water, access, the unique history and feel of waterfronts are extraordinarily valuable. Successful projects bring the community back to its waterfront. A designer with the expertise to maximize that value, to coordinate with the coastal and remediation requirements, can be the key to a successful project. The Waterfront Center Award winners, waterfront.com, offer a world-wide set of examples, ranging from major redevelopments to small projects.

As with other aspects of waterfront brownfield redevelopment, each component is important, as is the interaction between each part. So finding, hiring, supervising and incentivizing a team that has skill, creativity and can function effectively together, becomes one of the developer’s most important roles.

Approval Strategies

Waterfront brownfields offer special opportunities for developers. By cleaning up a property, re-opening the waterfront to the public and building a sustainable project, the developer has the unusual chance to wear the white hat. Many communities will be hungry for, or at least open to, this type of investment and activity. At some sites, especially those with transit capabilities, greater intensity of use may be allowed than in other parts of the city. One key note is that cities, such as Trenton and Kansas City, that had dedicated brownfield specialists tended to be more responsive and effective in dealing with the complexity of brownfields and their approval process.

The environmental review process, whether done under the National Environmental Policy Act, signed by President Nixon in 1970, or various federal and state environmental review laws, has become well-known as a lengthy process, sometimes stretching for not just years but decades. In 2011, the White House Council on Environmental Quality initiated a pilot program to employ “innova-

tive approaches to completing environmental reviews more efficiently and effectively.”¹² As noted, innovative programs range from empowering licensed environmental professionals to certify remediations, to presumptive remedies for area-wide issues, and efforts such as the New York City’s new brownfields program for lightly contaminated sites that have turnaround times measured in days. What is clear from the developer’s perspective is that finding an approach that gets to an appropriate, safe remediation, in a relatively short time frame, is crucial.

The use of the latest technologies, such as sophisticated Geographic Information Systems (GIS) and three-dimensional modeling, improve not only project management but also project communication. Allowing everyone, including agencies and community organizations, to see and understand what is going on with the remediation and the redevelopment.

Some successful case study projects did everything to move ahead quickly, agreeing to land use or remediation requests, even at additional cost, in order to move ahead. On large projects, such as Stamford’s Harbor Point, this appears to have helped. It’s not that the developers did not negotiate hard, but they consistently opted for a viable settlement, rather than spend time on additional negotiation and approvals. Being brought in as the fourth developer, they succeeded in hitting the ground running, moving construction quickly and creating a momentum for the project that was supported by early residential and retail success. Similarly, a negotiated, fast planning approval helped get FedEx on to the former aluminum plant in Oregon.

The importance of accelerating the land use and environmental approval process can be significant. Projects build momentum, political support and market awareness; slowing down is almost always a negative. Trenton’s advance planning allowed projects to move relatively quickly. Stamford’s Harbor Point expert team utilized a series of land use strategies and a combination of entitlements following existing provisions in innovative ways. The team sometimes negotiated specific code revisions and dealt with a number of land use boards. In Troutdale and elsewhere, developers have been able to, in effect, write specific zoning provisions to move a project forward.

That means knowing the limits including innovative government efforts, selecting consultants and attorneys who share the goal of a quick resolution and not getting tied up fighting over details. A sustainable project, one that meets LEED or other standards, may be advantageous. Going from brown to green has appeal to stakeholders, as well as some tenants and lenders.



The Role of Stakeholders

Waterfront brownfields involve a complex set of participants, some of whom most real estate developers are not familiar with. Transportation issues may involve not just cars, trucks, buses and trains, but also ferries. Boaters and fisherman have specific concerns. Some environmental advocates are concerned about all developments; a waterfront brownfield will bring out different organizations concerned about the remediation, water quality and public access. The community may well have environmental justice concerns about the nature of the clean-up and the type of facilities to be included and the jobs generated. Of course, all the normal land use issues must be addressed. **Do not ever think that a waterfront brownfield will quietly proceed; even the projects that had strong support and limited opposition still attracted headlines and blogs. The developer cannot just rely on traditional supporters and contacts. Rather, he/she must reach out to these disparate groups and address their concerns as early in the process as possible, using new media like websites and blogs, as well conventional public relations.** Face-to-face contacts, and the use of charrettes in early stages can help. Bear in mind that each constituency has contacts with elected officials and reviewing agencies, such as the Department of Environmental Protection and Coastal Zone Authorities. The overall sustainability of the project, building certifications, infrastructure such as stormwater control and the sufficiency of the clean-up may accelerate the approval process if done and communicated properly.

The Need for Innovative Financing

The complexity of waterfront brownfield redevelopment is reflected in finance. **Typical private developer financing, mostly equity for site acquisition and up-front development costs, a construction loan and a permanent mortgage taken out upon completion, are not a sufficiently applicable formula, even when adding mezzanine debt or preferred equity.** The risks are too great. Financing is needed earlier and for longer time periods. There is often a gap between what conventional private financing, both debt and equity, can provide and what the project's multiple stakeholders require. Clearly, under-capitalized projects are at a severe disadvantage. That being said, there have been numerous examples of both large and small waterfront brownfield success stories.

The following are financial mechanisms that have helped waterfront brownfield projects succeed.

Assessment Funding: The first step may be the hardest — Who will pay for the initial environmental assessment? Often neither

the property owner nor the prospective developer is willing to take the first step, an environmental assessment that will allow a realistic evaluation of the costs and time required for remediation and may constrain redevelopment. The U.S. EPA Brownfields program, along with numerous state programs, provides assessment dollars. EPA alone has provided just over 2,000 assessment grants, usually \$200,000, for an approximate total of \$480 million. The Omnibus spending bill for fiscal year 2012, signed into law in late December 2011, continues the Brownfield program with a relatively minimal five percent cut. EPA also funds revolving loan and job training funds to municipalities. Among the many communities that have benefitted from these EPA assessment funds is Trenton. The new Waterfront Park baseball stadium project and the Crane industrial redevelopment were started with such assessment funds.

Finding Additional Equity: The Toledo East Riverfront project went way outside the box, using Chinese investors to fund acquisition and development. The EB-5 program provides foreign nationals a two-year visa “green card” in return for a significant investment: \$1 million in most areas, \$500,000 in a targeted economic area such as East Toledo. Created by the Immigration Act of 1990, the program requires that each visa result in a minimum of 10 jobs. Administered by the United States Citizenship and Immigration Services, the program has historically not been as frequently used as anticipated — but Mayor Michael Bell went to China, and came back with parties interested in several Toledo projects. The EB-5 investments are planned to allow total equity financing of the East Toledo marina project.

The HUD Brownfield Economic Development Initiative: Essentially, a loan guarantee program for municipalities to support major brownfield projects. It has been effectively used by quite a few developers. This program might be consolidated into other HUD programs in the 2012 budget year. Similarly, the Sustainability Community Initiative grants which started in 2010 are the subject of annual federal budget negotiations.

Land Acquisition: Many brownfield developers is to acquire property cheaply because of contamination concerns. In some cases the owner is more interested in avoiding environmental liability than in the sale price. As noted below, it may behoove a developer to take title and control of the property and the clean-up.

Assembling land for urban renewal has been a government role for 60 years. Some brownfield developers have obtained properties at a minimal purchase price — but usually in exchange for dealing with remediation or taking on an important but risky eco-



conomic development project. The Small Business Liability Relief and Brownfields Revitalization Act of 2002 provided additional and considerable protections for municipalities that take title of brownfields. Today, governments are more likely to acquire brownfields, including waterfront assets, by negotiated acquisition or tax foreclosure. Again, owners most interested in avoiding clean-up costs and liability — rather than by eminent domain. It is interesting to note that the infamous *Kelo vs. New London* “taking” case did not involve many environmental issues — but in 2011 the U.S. EPA provided an assessment grant for a portion of the subject Fort Trumbull redevelopment. In New York City, in a relatively rare exercise of eminent domain, a developer recently broke ground on the Willets Point project. That condemnation, thus far upheld by state courts, was based significantly on long-standing contamination, flooding, infrastructure and other environmental concerns. While not impossible, condemnation can be a slow, politically risky and litigious route. Developers and municipalities seem generally to utilize other tools to assemble properties for redevelopment. Dealing with RFPs or other procedures to work with governments and non-profits involving site assembly is discussed in the Acquisition Strategies below.

Building Financing: In general, government funding for actual construction is tied to the end use, i.e., industrial revenue bonds are based on the business to be relocated, rather than the developer. That being said, there are a host of tools available for redevelopment in general, particularly if located in a targeted community. Residential projects may be eligible for low-income housing tax credits and other various housing subsidy programs. Similarly, commercial projects may receive New Market Tax Credit benefits. Waterfronts are often the oldest part of a city; if the project involves building rehabilitation, it may be eligible for historic tax credits.

Remediation Assistance: In general, assistance will not be provided to a party potentially responsible for the contamination, but may go to an “innocent purchaser” who has done “all appropriate inquiry” before acquiring the property.¹³ Environmental justice and community factors are important in the allocation of remediation assistance at both the federal and state level. Under the 2002 federal brownfields law, a taxpayer may fully deduct the costs of environmental cleanup in the year the costs were incurred (called “expensing”), rather than spreading the costs over a period of years (“capitalizing”). Unfortunately, only a relatively small number of developers have found this provision sufficiently attractive to utilize.¹⁵ This provision has technically expired but may be extended by Congress as part of the final budget legislation. A number of states, including New Jersey,

Pennsylvania and Michigan, reimburse part of brownfield remediation costs when the environmental regulators have certified the clean-up.

Waterfront Assistance: Federal and state coastal zone management programs may provide assistance — as well as permitting requirements — for planning in coastal zone communities. There is often additional assistance to retain maritime businesses and facilities — so-called water dependent uses. In addition, there are other categories of support for waterfront amenities, including parks and promenades.

Corridors and Area-wide Planning: An increasingly useful approach is to focus on not just one property, but an area or corridor, sometime along a shoreline or greenway. These efforts are led by the HUD-DOT-EPA Partnership, which provides support for housing, community revitalization, transportation improvements, economic development and environmental improvements — either thru Sustainable Community Initiatives or various existing federal programs. New York State’s Brownfield Opportunity Areas, legislated in 2003, was an early model, and provides planning grants and preference for other funding in communities with “brownfields by the bunch”¹⁴ and administered by the same agency that supervises coastal zone efforts and state environmental quality reviews. Numerous other states now have similar programs, such as New Jersey’s Brownfield Development Areas, which includes and is now assisting 31 communities such as Camden, Pennsauken and Trenton along the Delaware River. The area-wide approach supports redevelopment of areas that have a number of relatively “low priority” sites such as gas stations and dry cleaners, but which can benefit from a coordinated cleanup effort.

Site Acquisition Strategies

Finding the right waterfront development opportunity is the first challenge. Some of the best projects are located in cities, or neighborhoods within cities, that have not seen a great deal of private development in recent years. From Trenton to Oakland, waterfronts in troubled communities are being redeveloped. Developers seeking sites have to go far beyond the obvious, or “me too” sites and look at the fundamental assets: waterfront, access, infrastructure, market demographics and a community that is open to revitalization. As Tom Darden of Cherokee noted post-recession, there is less interest in “aircraft-carrier” size projects, and more focus on projects with a shorter time horizon.



Developers generally seek to control property for as little up-front cost as possible. Use of options, purchase and sale agreements with long due diligence periods, refundable deposits and contingencies are preferred. Looking at waterfront brownfields or similar complex redevelopment suggests rethinking acquisition strategy.

While actually acquiring property is generally more expensive, it comes with several advantages, and has become more common for these complex projects. Often a developer, who understands the environmental issues and liability, can negotiate a lower purchase price by buying the property quickly. As noted above, there may be government assistance to support assessment and reduce the front-end risk of losing substantial dollars on investigation and design. The number of agencies involved, and the interplay between them, tends to draw out the process and go beyond what seemed to be reasonable expectations of an option period. Economic and political cycles may intervene. Any rights that have a termination date encourage opponents to stall the project and put pressure on the property owner to kill the deal. This was part of the strategy that foiled Cherokee's vision for Camden and Pennsauken, while some more successful projects, such as Harbor Point, enjoyed the expensive advantage of owning the property as it moved through the process. An owner is taken more seriously by regulators, government officials, neighbors and prospective tenants.

Another category of alternatives is to consider a joint venture with a property owner, which might avoid the expiration risk of an option, but shares the long-term upside in the development. Of course much depends upon the private seller's choice — an immediate gain or a later, more risky, higher price.

In some cases control of the property rests with a governmental or non-profit agency, so the joint venture means securing control via some form of public-private development agreement, often following a Request for Proposal and sometimes performance benchmarks. These make the government entity effectively a partner in the project which may mean a powerful ally, but one whose interest in jobs, open space, environmental protection and design might differ from the developer's interest in return on investment.

Public-private partnerships come with their own set of risks. The City of Toledo ended a long-standing development agreement with minimal investment when a new Mayor found interest from a Chinese company willing to actually buy the property. If there is an RFP selection process, the criteria are likely to be quite broad. Concerns such as public access to waterfront and amenities provided, as well as affordable housing, the type of retail encouraged and design features, such as not "walling off" water views by maintaining viewsheds from the existing community, are just a few.

While there are advantages of ownership, developers understand there are very real risks. Actual site acquisition can leave a developer “land poor” — owning potential valuable property but short on cash or over-committed to public amenities. Lenders vary in their willingness to fund land purchases or construction of an environmentally challenged parcel. **Looking at the complex waterfront brownfield projects suggests that the likelihood of success is greater with firmer property control, whether actual acquisition, or a contractual commitment as part of a public- private development agreement.**

Synergy Between Remediation and Redevelopment

The intuitive approach is first you clean it up and then you build, often the first thought of neighbors, regulators and most developers — but is often inefficient. At more than one project a newly installed remediation cap was soon broken to install utilities and foundations. In terms of management of complex systems, can two complicated tasks — remediation and construction — be done in parallel rather than in series? Information on remediation informs the plan, i.e., put a parking lot over the hot spot and a day care center in the clean area. There are ways to coordinate the site remediation and the site design, using the shoreline treatment, whether rip-rap, sheet pile or natural as a design element, allowing public access and simultaneously supporting the site remediation/encapsulation. In some cases, as in Harbor Point and Troutdale, the remediation and redevelopment site work may be done by the same construction contractor.

Brownfield remediation has significant environmental benefits including:

- Removing hazards to public health;
- Reducing sprawl by environmentally responsible infill development;
- Improving air quality by reducing both traffic and reduced release of methane and other gasses; and
- Improving stormwater run-off.

A proper remediation is crucial to successfully marketing the property to users, lenders, insurers and public officials. Developers need to get their arms around the “how much” and “when” of remediation to prepare a realistic pro forma analysis. “All Appropriate Inquiry,” a legally defined term, requires sufficient due diligence to assure that the developer is treated as an “innocent purchaser” rather than a polluter.¹⁵

Estimating remediation costs is especially tricky, each site being unique and complicated by coordination with redevelopment. The



Northeast Midwest Institute in 2008 estimated remediation costs at non-petroleum sites to be between \$600,000 and \$1 million.¹⁶ The U.S. General Accounting Office (GAO), using EPA estimates, stated that average petroleum sites, mostly former gas stations with leaking underground storage tanks, cost approximately \$125,000 to remediate.¹⁷ Average costs must be considered carefully. There are very expensive outliers, especially sites that involve off-site, groundwater, PCB (polychlorinated biphenyls) and DNAPL (dense non-aqueous phase liquids) contamination. Most developers are justifiably cautious, but several case study projects, including the Crane site in Trenton, illustrate that remediation cost may be less than first anticipated. New technology and sophisticated environmental testing help make remediation more efficient and less risky.

It is important for the waterfront brownfield developer to carefully select the remediation team that meets the project's needs. Sufficient understanding of the remediation/redevelopment process to make certain that the most beneficial approaches are being utilized is also required. A sound remediation plan must be based on robust and accurate data. The remediation/ redevelopment plan needs to make effective use of various techniques that help accelerate the process, such as:

- **Self-certification:** Several states including Mass., Conn., Ohio and N.J. have licensed environmental professionals that are allowed to effectively self-certify routine clean-ups subject to audit. This can substantially shorten the review and remediation process and should be used when possible.
- **Presumptive Remedies:** Most states have some form of presumptive remedies, areas where the nature of the contamination has been established and there are a set of specific guidelines for clean-up. Where presumptive remedies have been established, as they sometimes have for waterfront corridors, these can help accelerate the design, remediation and redevelopment.
- **Triad:** An approach encouraged by the U.S. EPA for the past decade that deals with managing uncertainty in a manner that relates to the theme of this report. Triad coordinates site investigation with remediation so that a conceptual remediation program is agreed on. As work proceeds and data gaps identified, new information can be ascertained in the field. The remediation is refined in real time, in the field and in accordance with standards and commitments to stakeholders. Triad remediation tools were used to expedite remediation in both Stamford and Trenton.
- **New Technologies:** Technologies are constantly being created in environmental remediation. Because no one solution fits all situa-

tions, new technologies offer a sophisticated approach that selects the most appropriate and efficient remedy for the specific situation. Some of the new technologies include bio-remediation and phyto-remediation (as in Trenton), which utilize natural organisms (bacteria, bugs, plants or fungi) to reduce or eliminate contamination, such as the mustard plants used in Trenton. These natural solutions are often desired, as they reduce the impacts and energy use of remediation; however they tend to be relatively slow and less predictable than engineered solutions.

- **Environmental Liability Protections and Insurance:** The risk of litigation and costs due to potential environmental liability frightens many potential developers and lenders. The environmental liability protections in so-called “no further action letters” and “covenants not to sue” issued by state or federal regulators are important tools, but one-at-a-time protections are time consuming. Environmental insurance has proven to be a useful tool in many projects, providing a level of protection, especially to lenders. Developers need to take advantage of all the protections available, including the site specific as well as broader protections available on an area-wide, community, state or federal level.
- **Institutional Controls:** Not every molecule of contamination can be removed from many sites. Often contaminants are encapsulated to protect the environment. Such encapsulation and sometimes active treatment systems provide what is called an institutional control, allowing the bulk of the property to be safely redeveloped but incurring ongoing costs and potential risks. While contamination, sometimes in concentrated “hot spots” is removed to approved disposal facilities, in situ remediation with institutional controls can also be effective.

In general, environmental regulators appear to be moving toward a more nuanced approach:

- A clear set of standards for relatively lightly contaminated routine sites;
- Some form of self certification; and
- Increasing flexibility on how to achieve those standards.

The New York City Brownfields program initiated in 2010 exemplifies this approach and has already resulted in 50 redevelopments, some on waterfronts. More difficult and heavily contaminated sites require complicated technological approaches such as risk-based analyses and individualized approaches, and are most often done at the state and occasionally the federal level. While waterfront brownfields will sometimes require more lengthy site-specific approaches, use of the faster approaches should be considered whenever possible.



Maximizing Waterfront Benefits and Creating True Mixed-Use

Many waterfront redevelopments, as reflected in the case studies, are mixed-use. They include a combination of residential, commercial (retail, office and hotel), recreational, maritime and institutional uses that actually support one another. So while each property-specific component must be financially feasible, there needs to be synergy and true benefits among these components for the overall project to succeed. This is why expert waterfront design is essential, understanding the interactions between land and water, public access and private use, that are important for success. Strong consideration of water-dependent uses such as marinas are often required by coastal zone plans, and may add to the overall value, even if not the highest and best use from an economic value. Stamford's Harbor Point is a true mixed-use development — already having residential and retail uses that support one another. The residential is all rental, no condominiums as initially planned. The office market has been sluggish, and the maritime use and public access concerns became controversial, representing the complexity benefits and risks of mixed-use development. As in Trenton and other locations, there was a need to re-introduce the community to its waterfront, including special events.

Dealing with a waterfront location complicates remediation as well as design, access and other aspects of the redevelopment. There are approaches that utilize the waterfront. One example is that ground-water/surface water interactions can be exploited. Let water go where it wants to, and use features such as tidal/lock and dam influences to be helpful.

Historically, many cities have been built or expanded on to fill dirt with former wetlands or even open water built up and usually protected by some sort of static seawall. While this “reclaimed land” may seem an expedient solution, places from New York to Hong Kong have effectively banned waterway filling. Wetlands protections, at the federal, state and local level generally restrict wetlands filling, or at a minimum require a wetlands mitigation bank — restoring twice as much wetland as will be lost by fill. There are very specific and limited circumstances where filling will be allowed to create or substantially expand a development site.

Similarly there are numerous examples of creative design that incorporate flood control. Providing features ranging from a golf course to a sloped shoreline with a secure angle of repose minimizes hard construction in flood prone areas, while also being an amenity to the project.

Key Factors in Success or Failure

- **Developer Preparation and Building a Team:** Numerous projects have failed at least in part because the developer had not done sufficient strategic planning, was spread too thin, lacked capabilities or was too far removed from the project. Waterfront brownfield projects require multiple skills and lots of hands-on attention. Each of the successful case studies had a strong development leadership team. While each development team is different, it is important to have the skill level necessary in all of the specialties involved. The developer also needs to have confidence and be in close communication with team members to assure coordination.
- **Project Size:** Harbor Point is a mega-project, as are some earlier successes such as Atlantic Station in Atlanta, Ga. and Mare Island in Vallejo, Calif., started before the financial crisis. These mega-projects now seem the exception rather than the rule. It takes an extraordinary location, deep pockets, and sometimes more than one developer for such large projects to proceed. On the other end of the scale, very small projects are sometimes simply not worth the time and costs. With the real estate bubble behind us, it appears that projects in the middle — say \$10-\$250 million, like those in Trenton, Portland and elsewhere seem to now have a greater likelihood of success. Large projects are often accomplished in phases, reducing capital requirements and building towards an area-wide revitalization.
- **Meeting the Market:** All development projects must satisfy market demand and attract end users. Waterfront redevelopments must utilize the water as an asset, rather than an access barrier. The mix of uses, attractive design and events that bring a community back to its waterfront — all these have been key to successful projects.
- **Role of Government:** As cited many times, waterfront brownfields involve multiple government agencies at all levels, certainly as regulators. Most successful waterfront brownfields also have government as a partner. While there are relatively few direct government grants (brownfield assessments are an exception), there are often government loans, guarantees, financial mechanisms, land and infrastructure.
- **Multiple Financing Streams:** Make use of not just conventional equity and debt, but also government grants and loans, and specialized project funds such as those for waterfront amenities. Managing such financing — having sufficient funds at the necessary moments, especially from government sources — is clearly a significant challenge.



- **Municipal Capacity:** Cities that had functional, timely approval processes were more likely to be successful. Certainly leadership committed to redeveloping waterfronts and brownfields, including having the right personnel in the planning and economic development departments, was an important factor.
- **Design Quality:** A waterfront brownfield redevelopment requires a highly sophisticated, multi-talented design team. The design team needs to be fully cognizant of environmental constraints; waterfront visual, access and ecological opportunities; community context, as well as all the normal market and cost considerations. The developer needs to select and support the unique design, a shared vision, which will maximize return on investment.

Conclusions: Managing a Complex Process

Developers would like the modern equivalent of Alexander's mythical sword, to cut through the "Gordian Knot" of waterfront brownfield approvals. Case studies and research do not suggest that any one approach, power broker or legal process can magically make a project happen. Rather, There is a set of techniques to help developers more effectively manage the waterfront brownfield complexities.

One illustrative model is the Triad remediation methodology. The model improves the remediation process by filling information gaps in real time in the field so that the remediation can be immediately and constantly refined until completion. This can be considered as a conceptual approach to the entire waterfront brownfield remediation/redevelopment process. Similarly, the HUD-EPA-DOT Partnership represents an approach that "breaks down silos" and allows information and decision-making to flow across bureaucratic boundaries. That interactive tactic can also be utilized to accelerate a specific project. Both these models suggest approaches for developers:

- The ability to quickly modify based upon actual conditions; and
- The need to coordinate the process among different aspects of these projects.

Most developers multi-task, spending their days hurrying from meeting to meeting, dealing with each aspect of a project: design, financing, remediation, public approvals, tenant negotiations, marketing and more. Typically the developer has a small team and acts as the coordinator, juggling the various concerns and relaying information — and too often muddling through, rushing to address the crisis of the day — and possibly creating a new crisis tomorrow. Roger Lewin's book, *Complexity, Life on the Edge of Chaos*¹⁸, begins to capture how the process actually works in different arenas. One has to look at the interactions as well as the components.

One frequently noted illustration is that projects seem to move through the process at what feels like glacial speed, but then as physical work nears, seem to erupt. No matter how many hearings, articles and blogs, there are always those who are suddenly concerned. The well-orchestrated project has built a strong record and good level of consensus to have the resilience to withstand the generally predictable concerns that will appear as the project approaches reality, as well as external events such as financial and election cycles. The ability to adjust to changed conditions, and to coordinate among review agencies can be invaluable. This requires a tight, well-knit team with the range of expertise necessary.



Often developers have, in their head and sometimes in writing, what is effectively a critical path method chart that identifies key decisions and benchmarks significant in moving the project ahead. In a complex set of approvals and decisions, can mad fire-drills to address immediate crises be minimized, even if never completely avoided? To what degree can the process be codified, and made transparent so that various professionals working on different aspects of the project are fully informed and are able to interact and advise one another to reach decisions? All of the development projects operate behind the curtain, attempting to present a smooth, organized image. It is only when things go wrong that the curtain is pulled aside and failure to address an issue becomes apparent.

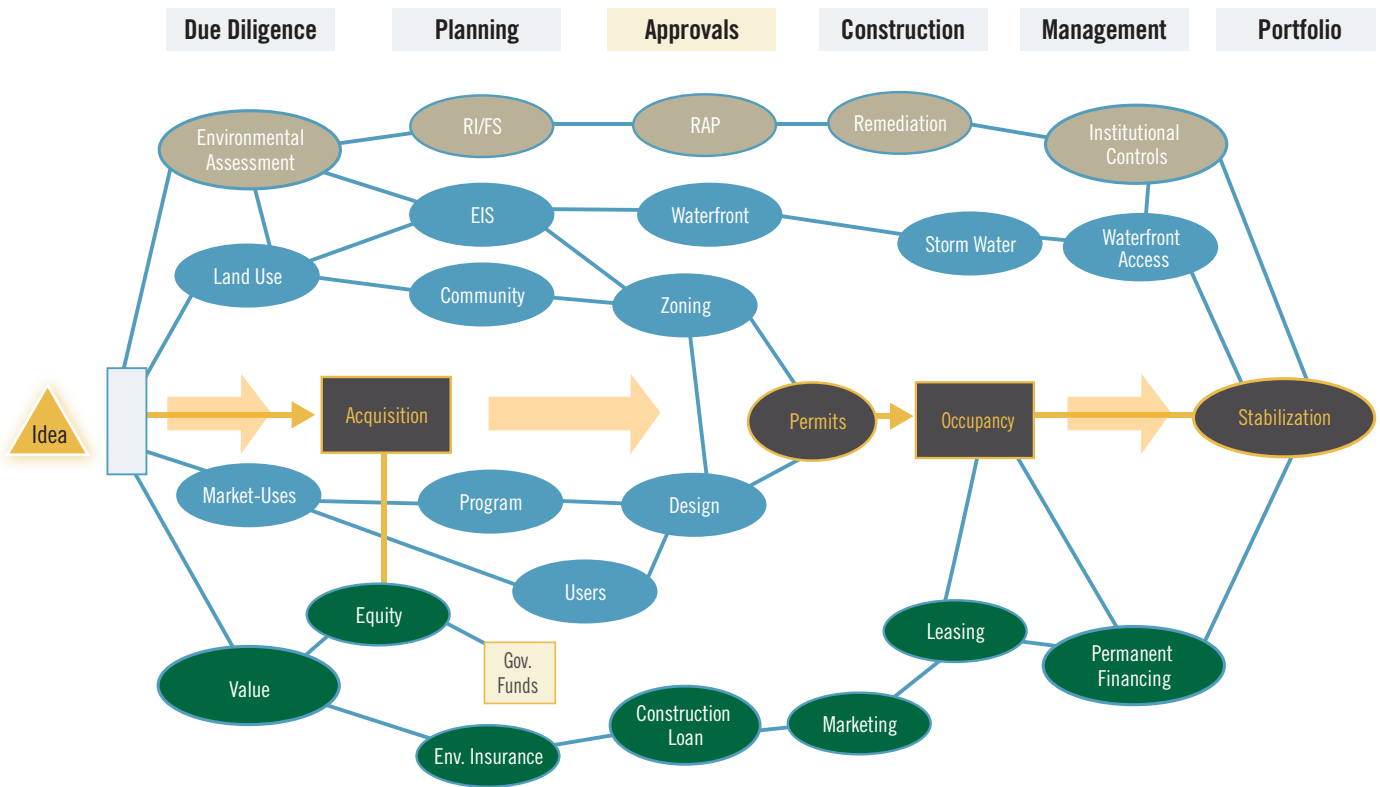
The simplified flow chart on page 39 illustrated how the early stages of the process are highly complex and relatively risky. Typically, the developer has most control early in the process, when withdrawal is more an option. As the project proceeds, and incurred costs grow, the developer has less effective control. Decisions have been made, plans approved and harder to modify while withdrawal would become far more painful. **Planning and creating a structure that can deal with all of the complexities is crucial. Trying to deal with each issue only when it appears is a recipe for failure.**

The waterfront and sustainability aspects add complexity, but are best addressed early and throughout the development process. From the brownfields perspective, once the developer knows how much the remediation will cost, when it will be done and how liability concerns will be addressed, the project becomes more conventional. As the quantitative studies suggest, one way to look at these projects is that resolving environmental concerns restores the property to its full real estate value. Sometimes the environmental resolution must be resolved very early, before the deposit goes hard, which also allows for environmental constraints to inform the design effort. **During the design and construction phases there are chances to gain synergy by coordinating the redevelopment and the remediation. Any institutional controls for remaining contamination have to become part of the long-term operation — and costs — for the project.**

Similarly waterfront access and amenities have to be thought of early, well-designed and maintained. This often becomes a key part of the approval agreement with the municipality. Community concerns, whether about typical land use and traffic issues or environmental or waterfront issues, must be addressed early and are relevant not just when seeking approvals, but throughout the project. While it is impossible to do everything first, it is possible to have a complete early checklist, begin the right solutions and move the project forward on multiple tracks.

The flow chart reflects that there is also a financial track. Raising the equity to gain site control, incorporating government funds, convincing construction, permanent and possibly mezzanine lenders plus insurers, is one of the biggest challenges. For commercial projects, the developer would most likely need some strong tenants, so those negotiations and considerations also get fed into the design and construction aspects of the project.

Waterfront Brownfields Flow Chart



This type of flow-chart does not fully reflect the reiterative nature of development, especially waterfront brownfields. There is constant feedback — problems, changes and adjustment. Just as a pilot goes through a very specific checklist before the plane takes off, the developer needs to have his/her own checklist of what needs to be in place to deal with the many anticipated issues and also help prepare for the unexpected and critical decisions.



Financial feasibility is always on the checklist, but other factors also re-appear. As noted, for a brownfield project, the contamination has to be identified and the remedial plan understood. Special waterfront and sustainability concerns will permeate the often long and cumbersome, approval issues, and will often require sophisticated design resolution. The decision system may not be elaborate, but must be capable of dealing with the number of variables and complexity of the project. Think of a three-dimensional Building Information Management (BIM) system applied not just to building design and construction but to the entire project process.

Another type of approach that accepts somewhat organized chaos is assuring constant communication. Can interaction be supported to the extent that the various professionals are in constant communication, or can one leader be the hub for decisions? To some degree the effort to break down silos can be applied to the various internal aspects of the project, as well as among reviewing agencies. Among the methods that can effectively move things along, the use of charrettes, (i.e., design workshops) are among the most effective. Several projects along the Delaware utilized charrettes to help build community support. Numerous large, multi-aspect projects, including the new World Trade Center, have design, engineering and construction teams sharing space to mimic the charrette approach and facilitate communication.

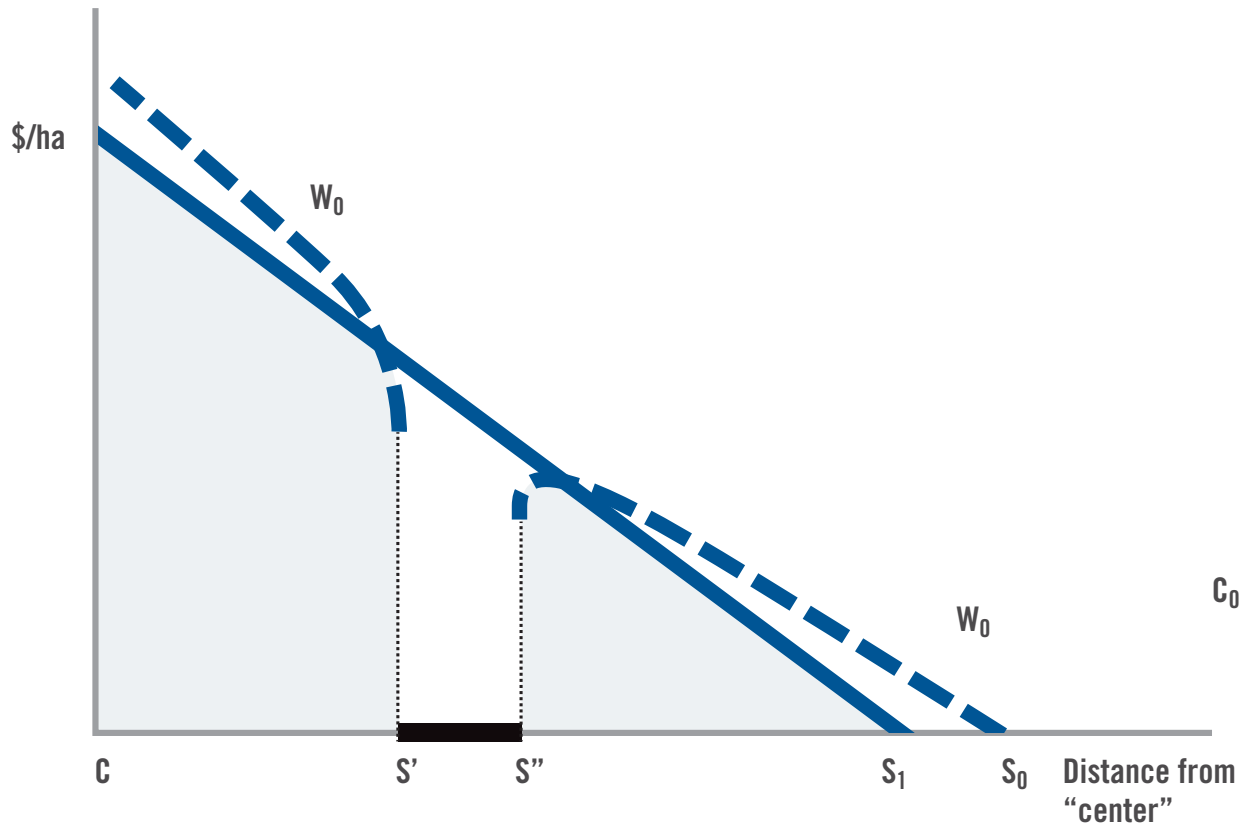
As demonstrated, successful waterfront brownfield projects work at many levels:

- Functionally serving the market;
- Designs that amplify waterfront and other attributes;
- Fully protective remediation; and
- Most importantly, financial return.

To accomplish successful projects requires developers to think strategically and use techniques that reflect the unique nature of these projects, maximizing financial, aesthetic and community benefits. There remain many waterfront brownfield opportunities with enormous potential, awaiting the developer with the right skills, strengths, perseverance and a little bit of luck.

Appendix A

Willingness to Pay for Urban Land After Site Cleanup: General Equilibrium Analysis



The general equilibrium benefits measure, represented by the dotted area in this figure is smaller than the partial equilibrium benefits measure in (a previous chart) because of this decrease in land values throughout the market. Of course, this benefits measure is still positive even if equilibrium property prices throughout the urban land market fall relative to the baseline scenario. The fall in prices at properties not directly affected by the cleanup, represented by the two dashed areas in this figure, leads to a transfer of resources away from current property owners. Some of the transfer would go to current renters and the remainder to future buyers. The dashed areas represent a pecuniary effect rather than a social benefit or cost of the land cleanup program.



This example illustrates a more general result that estimates based on property values that do not account for general equilibrium adjustments can overestimate the benefits of land cleanup and reuse. The size of the discrepancy between the two estimates depends on the quantity and importance of the remediated land compared to the size of the property market as a whole. Cleanup programs that target very large sites or many parcels throughout a real estate market are more likely to have far-reaching effects on prices than programs targeting smaller or fewer sites. Equilibrium effects are also more likely if residents cannot easily move between cities, or if cleanups occur in multiple cities simultaneously, both of which raise the total quantity of remediated land relative to the area over which people make decisions about where to live.

Changes in prices throughout a real estate market make it more likely that residents decide to move as a result of the cleanup. For instance, an improved appearance and lower health risks that are capitalized into higher housing prices near a cleaned up site could spur some renters to move away in search of cheaper housing, while other residents who previously avoided the neighborhood due to the contamination move closer. Such spatial sorting can complicate the empirical analysis of land cleanup benefits using property values. Evidence has been found of residential sorting in response to improved air.¹⁹

Sources

Publications

- ACRES Database, United States Environmental Protection Agency, 2011
- Bartsch, Charles and Elizabeth Collaton, "Brownfields: Cleaning and Reusing Contaminated Properties," Northeast Midwest Institute, 1997
- Breen, Ann and Rigby, Dick, *Waterfronts: Cities Reclaim their Edge Second Edition*, Washington, D.C. The Waterfront Press, 1997 and *The New Waterfront, A Worldwide Urban Success Story, and London Thames and Hudson*; New York: McGraw-Hill, Inc. 1996
- "Brownfields Road Map" United States Environmental Protection Agency, 2011
- Buckley, Michael, "Waterfront Redevelopment Guidelines," 1986
- Crocker, Diane and Michael Wallace, EDR (Environmental Data Resources), presentation at National Brownfield Conference, April 2011
- CUED (Council on Urban Economic Development) "Impacts of Brownfield Redevelopment," 1999
- Davis, Todd, *Brownfields, A Comprehensive Guide to Redeveloping Contaminated Property*, American Bar Association, 2002
- Deason, J.P., Schad, T.M., and Sherk, G.W. "Water Policy in the United States: A Perspective," *Water Policy Journal, Volume 3, Number 3* (2001), pp. 175-192.
- Deason, J.P., *Restoring Contaminated Urban Rivers Using an Intergovernmental, Public-Private Approach, Management of Environmental Quality, Volume 20, Issue 6* (2009), pp. 649-657
- DeSouza, Christopher, "The Benefits of Waterfront Brownfields Revitalization: Economic, Social, and Environmental," 2005
- Dustman, John, *Waterfront Brownfields (An Environmental Perspective)*, 2009
- Edwards, Amy. "When Brown Meets Green: Intergrating Sustainable Development Principles into Brownfield Remediation Projects," *18 Widener Law Journal* 859 (2009)
- Government Accounting Office, GAO-05-94, *Brownfield Redevelopment Report*, 1994
- Government Accounting Office, GAO-07-152, *Leaking Underground Storage Tanks*, 2007
- Guwande, Atul, *The Checklist Manifesto: How to Get Things Right*, Holt, 2009
- Hersh, Barry "Brownfields by the Bunch" *Brownfield Renewal*, April, 2010
- Hersh, Barry, "New York City Brownfields," City of New York, 2005
- HR 5368, 2010 Waterfront Brownfields, proposed legislative bill
- HUD Office of Community Planning and Development, Brownfield Economic Development Initiative, 2011
- ICMA, "Navigating the Waters: Coordination of Waterfront Brownfields Redevelopment", 2002
- Lewin, Roger, "Complexity: Life on the Edge of Chaos," University of Chicago, 1999
- Leinberger, Christopher, "The New Slums" *The Atlantic*, 2008
- Lindbloom, Charles E., "The Science of Muddling Through," *Public Administration Review*, 1959
- Mack, James, "Brownfield Success Stories," New Jersey Institute of Technology, 2008



- Mallach, Alan, "Bringing Buildings Back," Rutgers University Press, 2010
- Mallach, Alan, Ed, "Rebuilding America's Legacy Cities; New Directions for the Industrial Heartland," *The American Assembly*, Columbia University, 2012
- Marshall, Richard, ed. "Waterfronts in Post Industrial Cities," Spon Press. London, 2001
- Meyer, Peter, "Environmental Insurance Products Available for Brownfields Redevelopment, (with K. Yount)," U.S. EPA, 2006
- Netherlands Ministry of Housing, *Spatial Planning and the Environment, Designing on the Interface Between Water and Spatial Planning*, Hague, 2009
- New York City Office of Environmental Remediation, 2011
- Northeast Midwest Institute, (E. Paull) "The Environmental and Economic Impacts of Brownfields Redevelopment," 2008
- Novotny, V and Brown, P, *Cities of the Future: towards integrated sustainable water and landscape management: proceedings of an international workshop held July 12-14, 2006 in Wingspread Conference Center, Racine, Wis.*
- Sami, William, "Greening Brownfields: Remediation through Sustainable Development, New York," McGraw Hill, 2010
- Simons, Robert, "Turning Brownfields into Greenbacks: Redeveloping and Financing Contaminated Urban Real Estate" Washington D.C.: Urban Land Institute, 1998
- United States Environmental Protection Agency, *Handbook on the Benefits, Costs and Impacts of Land Cleanup and Reuse*, 2011
- Waterfront Center Awards Programs, 2008 – 2011
- Watson, Donald, FAIA and Adams, Michael, P.E. "Design for Flood Control: Architecture, Landscape and Urban Design for Resilience to Climate Change," New York, John Wiley & Sons, 2011
- Watt, Maria, Burlingam, M., Beattie, J., Koberle, M., Carlson, B. "Expediting Sustainable Brownfields Redevelopment by Applying Triad Using the Membrane Interface Probe," *Remediation*, Autumn 2010
- Brownfield Renewal Awards, 2008 – 2011
- EPA Phoenix Awards, 1997 – 2011
- Waterfront Center Awards, 1986 – 2011

Interviews and Links

National

Mathy Stanislaus, U.S. EPA Deputy Administrator, OSWER, supervises Superfund and Brownfields nationwide

Tom Darden, CEO Cherokee Equity Investors

David Lloyd, U.S. EPA Director of Land Revitalization and Brownfields

Charles Bartsch, U.S. EPA Special Advisor on Brownfields

Evans Paull, National Brownfields Coalition

Daniel, Walsh, Ph.D, Director, Mayors Office of Environmental Remediation, New York City

Stamford

John Freeman, Esq., General Counsel and Executive Vice President, Harbor Point

Kurt Kuehner, BLT

Dean Shapiro, Former Vice President, Harbor Point

Robin Stein, Stamford Planning Director (retired)

Barry Trilling, Esq. Wiggin and Dana

Kim Morque, Spinnaker Development

Robert Bell, Connecticut DEP

harborpt.com

www.bltooffice.com/press13.html

www.bltooffice.com/press38.html

www.swinter.com/services/documents/HarborPointCaseStudy.pdf

www.collins-llc.com/portfolio.htm (Admirals Wharf)

www.unitedfundadvisors.com/project_waterside.php

www.sasaki.com/what/works.cgi?fid=504&page=2

Toledo

Brad Peebles, Commissioner of Development, City of Toledo

Alan Bannister, Special Projects Manager, City of Toledo

Paul Toth, President, Port Authority of Toledo

Lynn Sherman, Comprehensive Logistics, Toledo, Ohio

John Widmer, Principal Planner, Toledo Lucas County Plan Commissions (ret)

Richard Barga, Real Estate Toledo

Carty Finkbeiner, former Mayor, City of Toledo

Stuart Dawson, Sasaki Associates, The Toledo Riverfront, Case Study in Downtown Waterfront Revitalization, 1984

Schneider, Keith, Infusion from China for Toledo, Ohio; New York Times, May 25, 2011

Social Compact, Toledo Drill Down Report, 2010



clean.ohio.gov/BrownfieldRevitalization/MarinaACME_ProjectPhotos.htm#

nepis.epa.gov/Exe/ZyNET.exe/P1002PE2.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=500F02068&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=pubnumber%5E%22500F02068%22&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=pubnumber&IntQFieldOp=1&ExtQFieldOp=1&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5Ctxt%5C00000017%5CP1002PE2.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=10&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

www.presspublications.com/special-sections/progress/6253-casino-maritime-museum-coming-to-east-toledo

www.urbanohio.com/forum2/index.php?topic=2004.150

www.nytimes.com/2011/05/25/realestate/commercial/riverfront-in-toledo-ohio-gets-infusion-from-china.html?_r=1

www.toledoblade.com/Real-Estate/2011/10/27/Chinese-investors-herald-grand-plans-for-Toledo-Marina-District.html

Trenton, Philadelphia, Camden

Patricia Adell, Principal, Real Estate Solutions Group, Princeton, N.J.

Anselm Fusco, Sr. VP Madison Marquette, formerly with Cherokee Northeast

John Conley, formerly Philadelphia Economic Development Corporation

George Carfagno, formerly of Kushner Companies, and Cherokee

J. Brian O'Neill, O'Neill Properties

Michael O'Neill, Preferred Real Estate Investments

Glenn Brill, FTI and formerly Ernst & Young

Colleen Kokas, New Jersey DEP

Monsignor Michael Doyle, Heart of Camden (Board)

James Mack, formerly New Jersey Institute of Technology

Alan Mallach, former Director of Planning, City of Trenton

John P. Sullivan

aolsearcht4.search.aol.com/aol/imageDetails?s_it=imageDetails&q=magic+marker+trenton&img=http%3A%2F%2Fwww.brownfieldrenewal.com%2Fuserfiles%2Fimage%2FBR201006_21.jpg&v_t=comsearch50&host=http%3A%2F%2Fwww.brownfieldrenewal.com%2Fprint-features_regional_report_tri_states__magic_marker__catherine_s._graham_square__trenton__n.j.-960.html&width=104&height=83&thumbUrl=http%3A%2F%2Fimages-partners-tbn.google.com%2Fimage_s%3Fq%3Dtn%3AAND9GcTbnXlgB_C9LuVCahKTGuU01aUXj_YDyYsWuPNw5WJD5IMFicONgsUrmQ%3Awww.brownfieldrenewal.com%2Fuserfiles%2Fimage%2FBR201006_21.jpg&b=image%3Fq%3Dmagic%2Bmarker%2Btrenton%26v_t%3Dcomsearch50%26s_it%3Dsearchtabs%26oreq%3D00c233be720a411c903475a7c02b8efc&imgHeight=159&imgWidth=200&imgTitle=Tri-State s%3A+Magic+Marker+%28Catherine+S.+Graham+Square%29%2C+Trenton%2C+N.J.&imgSize=19679&hostName=www.brownfieldrenewal.com

www.nj.gov/dep/srp/brownfields/bda/
www.epa.gov/brownfields/success/ss_trent.pdf
www.trentonnj.org/Documents/PR%20Trenton%20Wins%20Phoenix%20Award2.pdf
www.brownfields2011.org/en/MobileWorkshop/9/The_Camden_Waterfront_Creative_Reuse_of_Waterfront_Brownfield_Sites
www.ci.camden.nj.us/departments/Waterfront%20South%20Brownfield%20Redevelopment%20Project.pdf
www.brownfields.org/discussion/recapturing-waterfront-philadelphia%E2%80%99s-drive-establish-greenways-along-schuylkill-and-dela
www.brownfieldrenewal.com/story-news-features_regional_report_the_navy_yard__it_rsquo_s_philly_rsquo_s__sea_change_rsquo_-1030.html
www.epa.gov/renewableenergyland/docs/success_navyyard_pa.pdf

Portland

Neil Goldschmidt, Former Mayor of Portland and U.S. Transportation Secretary
Chris Grace, Real Estate Manager, Reynolds Metals and Alcoa
Joseph Molluskey, Port of Portland
Henry Ashforth, Ashforth Group
Kim Morque, Spinnaker Development
www.portlandonline.com/bps/index.cfm?&a=59769
www.portlandonline.com/ohwr/?a=292997&c=52352
www.sustainablebusinessoregon.com/articles/2011/04/ports-troutdale-project-wins-national.html
www.portlandonline.com/bes/index.cfm?c=35008

Tampa

Marjory Buckholtz, U.S. EPA (retired)
Michael Goldstein, Esq., Goldstein Brownfields Group
Ron Weaver, Stearns & Weaver
Robert Musser, Port of Tampa
response.restoration.noaa.gov/book_shelf/1675_tampa_projects_1pager.pdf
www.oppaga.state.fl.us/MonitorDocs/Reports/pdf/1115rpt.pdf

Ashville, N.C.

Abigail Emison, Architect
Stephanie Monson, Planner
David Spector, P.E. CDM Smith
Austin Tyler, Broker



Endnotes

- ¹ Deason, J.P., Schad, T.M., and Sherk, G.W. “Water Policy in the United States: A Perspective,” *Water Policy Journal, Volume 3, Number 3* (2001), pp. 175-192
- ² Leinberger, Christopher, “The New Slums” *The Atlantic*, 2008
- ³ Public Law 107-118 (H.R. 2869) — “Small Business Liability Relief and Brownfields Revitalization Act” signed into law January 11, 2002
- ⁴ United States Environmental Protection Agency, David Lloyd, Brownfield Program Directors, December 2011
- ⁵ Northeast-Midwest Institute (E. Paull) *The Environmental and Economic Impacts for Brownfields Redevelopment*, 2008
- ⁶ United States Government Accounting Office, 1995
- ⁷ United States Environmental Protection Agency, ACRES Database
- ⁸ HUD Office of Community Planning and Development, Brownfield Economic Development Initiative, 2011
- ⁹ Crocker, Diane and Michael Wallace, EDR (Environmental Data Resources), presentation at National Brownfield Conference, April, 2011.
- ¹⁰ Hersh, Barry, “New York City Brownfields”, City of New York, 2005
- ¹¹ Stone & Youngberg, Harbor Point Bond Issue, December 2009
- ¹² White House Council on Environmental Quality, February 18, 2010, <http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa>
- ¹³ Innocent Purchaser and All Appropriate Inquiry terms defined by federal statute aimed at assuring that brownfield benefits do not go to polluters, but rather to independent redevelopers, see <http://www.epa.gov/brownfields/aai/index.htm>
- ¹⁴ “Brownfields by the Bunch” by Barry Hersh, Brownfields Renewal, February 2010
- ¹⁵ United States Environmental Protection Agency, Brownfields Office <http://www.epa.gov/brownfields/aai/aaigg.htm>
- ¹⁶ Northeast-Midwest Institute (E. Paull) *The Environmental and Economic Impacts for Brownfields Redevelopment*, 2008
- ¹⁷ <http://www.gao.gov/new.items/d07152.pdf>
- ¹⁸ Lewin, Roger, *Life on the Edge of Chaos*, University of Chicago, 1999
- ¹⁹ United States Environmental Protection Agency, *Handbook on the Benefits, Costs and Impacts of Land Cleanup and Reuse*, 2011

SELECT NAIOP RESEARCH FOUNDATION FUNDED RESEARCH

Available at www.naiopr.org

The New Borderless Marketplace: Repositioning Retail and Warehouse Properties for Tomorrow (2011)

A Development Model for the Middle Ring Suburbs (2011)

How Fuel Costs Affect Logistics Strategies (2011)

Solar Technology Reference Guide (2011)

How Office, Industrial and Retail Development and Construction Contributed to the U.S. Economy in 2011

Trends in Global Manufacturing, Goods Movement and Consumption (2010)

Rooftop Revenue: Making Underutilized Space Profitable Through Energy Harvesting (2010)

Logistics Trends and Specific Industries That Will Drive Warehouse and Distribution Growth and Demand for Space (2010)

Assessing Key Employment Trends Driving Commercial Real Estate (2009)

Going Green: Tips, Tools & Examples from the Field (2009)

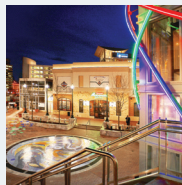
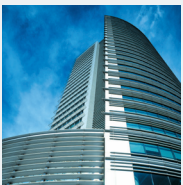
National and Metro Predictors of Commercial Real Estate Development (2009)

The New Age of Trade: The Americas (2009)

“The work of the Foundation is absolutely essential to anyone involved in industrial, office, retail and mixed-use development. The Foundation’s projects are a blueprint for shaping the future and a road map that helps to ensure the success of the developments where we live, work and play.”

Ronald L. Rayevich, Founding Chairman
NAIOP Research Foundation

NAIOP RESEARCH FOUNDATION



We're Shaping the Future

2201 Cooperative Way, 3rd Floor
Herndon, VA 20171-3034

tel 703-904-7100
www.naiopr.org